

GECEX RESOLUTION N° 155, OF FEBRUARY 11, 2021

Art. 2 The Ex-tariffs below the respective legal acts indicated are hereby revoked

| NCM        | N° Ex | DESCRIPTION   |
|------------|-------|---|
| 8419.89.99 | 299   | Stainless steel reactors for solid state polymerization (SSP) and decontamination of flakes and / or post-consumer PET resin (polyethylene terephthalate) by the extraction of volatile and increased molecular weight (intrinsic viscosity -IV), operating under vacuum at high temperature (min 160 ° C is max 220 degrees Celsius) and using nitrogen to help in the removal of volatiles and reducing oxygen levels in preventing discoloration of the material that is cooled in batches of about 200 kg (resin post consumer ) and 100 kg (flakes) process "first in - first out" in the lower reaction temperature (less than 180 degrees Celsius); complete with PLC, user interface with touch screen, control units and nitrogen generation process unit, the supply and discharge into storage bin by a vacuum system, heat exchanger, dust separator, filter cartridge and pipes; with maximum capacity equal to or greater than approximately 1.800kg / h depending on the reaction time, net internal volume of the reactor equal to or greater than the 14,2m3 (14.200L) and the final moisture less than 50ppm. |
| 8427.10.19 | 34    | Electric forklifts trilateral, with maximum load capacity of up to 1,500 kg and maximum lift height of the forks to   |
| 8414.80.12 | 16    | screw-type air compressors 2-stage, oil-free with a maximum pressure of 8.6 or 10,4bar, water cooling system with integrated cooler stainless steel equipment, mounted "skid" with fairing system with drive with high precision gears AGMA Q13 / DIN class 5, a motor with higher power and IP55 TEFC 930HP, integrated air filter to the engine, integrated frequency inverter equipment, control module; maximum flowrate exceeding 7.200m <sup>3</sup> / h and less than  |
| 8422.30.10 | 61    | labeling machines for cylindrical glass bottles with 2 or 3 adhesive stations for applying the label and contrarrótulo on separate reels and apply label and contrarrótulo the same coil and / or collar foaming, top closure with doors at a speed between 1,000 and 3,000 bottles / h, equipped with: distribution mechanism and smoothing or capsule contraction, with or without multiple fiber optic sensor electronic reading of the bottle through the amendment of glass or taca lower, with conveyor and with or without final buildup table with electronic panel with screen "touch  |
| 8443.39.10 | 352   | printing machines for inkjet printing on plain or photo paper, up to 70s print speed for A1 size, maximum resolution of up to 2400 x 1.200dpi, with 4 colors and one print head, printing capability line width of 0.04 mm, with feeding sheets or roll to 610mm wide and tray for sheets up to A3 size, capacity utilization media weight up to 280 g / m2, and 1GB memory to panel color display touch up to 4.3 inches.  |
| 8465.91.90 | 49    | Machine tools for sawing wood panels and the like, with numerical control (CNC), with "software" control with real-time visualization of 3D cutting planes, equipped with one or more cutting lines with air jets, containing one or more automatic and independent pushers, with electromagnetic measuring system by ensuring precision servomotor + - 0,1mm, provided with gripper fingers 2 or more, the car door with saws with adjustable speed of 1 to 130m / min or greater, with linear guide system with linkage to the main saw with electronic regulation of riscadora saw with integrated central aligner system directly to the saw carriage operating on the cutting line, with or without automatic feeding via a lift table 4 columns operated electro-hydraulically, with or without from 1 to 4   |

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|            |     | auxiliary hydraulic discharge tables.  |
| 8479.82.90 | 119 | Solid waste disposers of any kind, equipped with shaft mono rotor maximum speed of 355rpm, with knives type individual, reusable pads on the four sides, the size of knives 172 x 57 x 28 mm or 116 x 116 x 47mm, 87 x 87 x 38mm, 28mm x 65 x 65 or 43 x 43 x 19,5mm, 1 55kW 75kW motor or engine or 1 1 1 90kW motor or engine 132kW 200kW engine or 1 or 2 110kW 132kW 2 or engines or engines 2 engine 160kW 250kW or two motors, power transmission V-belt pulley with single or double pulley sieve embedded at least milling 4.000kg / h feed by hydraulic drive, the torque control device for safety clutch, door  |
|            |     | inspection and maintenance with hydraulic opening inwards, with or without frequency converter, controlled by a programmable logic control (PLC).  |
| 8483.40.10 | 201 | Gear boxes, exclusive for use in self-propelled trucks, assisted by hydraulic system with torque converter, semi-automatic, with electronic electric drive with mechanical drive clutch, working efficiency 0.8, higher working efficiency with 31Nm of torque, work "stall" with torque 33,5Nm, torque ratio "stall" $k^3 3$ , forward-reverse gear ratio 18.94, oil flow from the pump 27L / min and oil pressure inside the converter torque 0.5 to 0,7MPa, engagement pressure of 1.1 to 1,4MPa transmission system.   |
| 8474.80.90 | 132 | Hydraulic press for the production of ceramic coatings, a maximum weighing 49.000kN force equal to, the free distance between the columns of 1.750mm, and power device endowed with system - base for stamping, full of devices for mounting other components, maintenance and operating, partially disassembled for transport.  |
| 8426.41.90 | 78  | hydraulic cranes self-propelled on tires type broadband embankment style, computerized, driven by diesel engine, with 2 axles, 4 steerable wheels with "joystick" electro-proportional, containing main boom telescopic 4 sections, with minimal or greater reach the maximum 9,1m and less than or equal to 31,1m, or 5 sections, with a minimum range greater than or equal to 9.5m and maximum 37,4m or less, the maximum load capacity less than 35t but equal to or less than 45t, within an operating range of 3.0m.   |
| 8426.41.90 | 79  | hydraulic cranes self-propelled on tires type broadband embankment style, computerized, driven by diesel engine, with 2 axles, 4 steerable wheels with "joystick" electro-proportional, containing main boom telescopic 4 sections, with minimal or greater reach the maximum 10,3m and 34,0m or less, or 5 sections, with minimum range greater than or equal to maximum 11,2m and 42,1m or less, the maximum load capacity greater than or equal 65t but equal to or less than 75t, within an operating range of 3.0m.   |
| 8504.40.90 | 17  | Single-phase inverter frequency "on-grid", with 7,000 to 10.000W power without transformer topology, with passive cooling method (no fans) and operating temperature of -25 to 60 ° C for LCD operation, providing grade IP65 (protection against dust and water jets) and lower operating noise or equal to 40db, communication ports RS485 and WiFi stick, models with 3 trackers maximum power point (MPPT), maximum input of 600V direct current, efficiency between 97.6 to 98.1%, with a minimum current input voltage of 120Vdc continues with "range" output alternating current of 160 to 285Vac, with a nominal voltage of 220 to 240Vac with operation 50 / 60Hz, power factor at 1 and providing option to change, meeting the IEC62109-1 standards / -2, NB / T 32004 Grid Standard EN50438, G83 / 2, |
|            |     | VDE0126-1-1, IEC61727, VDE N4105, 16149 NBR / NBR-16150.   |

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| 8504.40.90 | 17  | Single-phase inverter frequency "on-grid", with 7,000 to 10.000W power without transformer topology, with passive cooling method (no fans) and operating temperature of -25 to 60 ° C for LCD operation, providing grade IP65 (protection against dust and water jets) and lower operating noise or equal to 40db, communication ports RS485 and WiFi stick, models with 3 trackers maximum power point (MPPT), maximum input of 600V direct current, efficiency between 97.6 to 98.1%, with a minimum current input voltage of 120Vdc continues with "range" output alternating current of 160 to 285Vac, with a nominal voltage of 220 to 240Vac with operation 50 / 60Hz, power factor at 1 and providing option to change, meeting the IEC62109-1 standards / -2, NB / T 32004 Grid Standard EN50438, G83 / 2, IEC61727, VDE N4105, 16149 NBR / NBR-16150.   |
| 8426.41.90 | 97  | hydraulic cranes self-propelled on tires type broadband embankment style, computerized, driven by diesel engine, with 2 axles, 4 steerable wheels with "joystick" eletroproporcional containing main boom telescopic 4 sections, with minimum range greater than or equal to 10, 1m and a maximum less than or equal to 33,7m, the maximum load capacity exceeding 50t, but equal to or less than 72,6t within an operating range of 3.0m.   |
| 8464.90.19 | 172 | Machines for cutting and polishing the glass 4 side plates with rounded profiles thickness of 3 to 8mm and / or 3 to 12mm, provided with: two bilateral lapidadoras, one with maximum workable dimension equal to 1,200 x 2,000 mm and minimum 80 x 140mm, and the other of at most 2,000 x 1,200 mm and minimum 150 x 80mm, with a maximum feed speed of 10m / min with framer and alignment of the glass sheets, with a device for trimming the edges of the blades using mandrels with wheels diamond independently set with automatic polishing wheels to advance triggered by electro command controlled by a programmable logic programmer (PLC), with the wheels cooling system in closed circuit water with the reservoir for recirculation of water, with the roughing device corners of the plate glass, with one angular translation table for transporting the glass sheets between the bilateral lapidadoras. |
| 8427.10.11 | 3   | Forklift self-propelled, alternating electric traction motor current (AC), counterbalanced for side exit tracionaria battery, the maximum load capacity between 6,500 and 8.000kg, the lifting height of the forks between 2.750 and 8.670mm, with or without prongs.  |
| 8427.10.19 | 143 | Forklift self-propelled, alternating electric traction motor current (AC), counterbalanced for side exit tracionaria battery, full charge capacity between 1,800 and 6.500kg, the lifting height of the forks between 2.750 and 8.670mm, with or without prongs.   |
| 8428.90.90 | 559 | Carriers, binders orders and / or different volume, computerized, tray-type, motor driven, controlled by programmable logic controller (PLC) used to move and sort finished goods and / or various volumes to their classification and automated dispatch or not fitted with mechanical separation system with approximately 54,5m length; stations input / bypass; impeller trays for sorting the articles; Output channel of the separator; rejection chute equipped with devices for scanning bar code reading through a server OST with mechanical separation capacity equal to or greater than 6.315bandejas / h with dimensions of 500 x 800mm.  |

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| 8430.69.90 | 41  | Hydraulic breakers, equipped with internal valves for piston movement control and automatic control of the piston stroke, manual or automatic starting mode selection and stop, may contain excess pressure protection valve, equipped with a nitrogen chamber on the piston, may have nitrogen accumulator rubber diaphragm and dust protection system, fixed connections or articulated to input hoses and hydraulic oil outlet, equipped with automatic lubricator canal for venting the percussion chamber or air connection tablet, equipped with splines tool attachment doubles the carriers for coupling excavator types of vehicles on wheels or tracks, demolition robot loaders, excavators generally fixed and articulated arms, operating weight of 750 to 10,000kg,                       |
|            |     | tool diameter of 100 to 240mm, inlet oil flow 80 to 530litros / min; operating pressure of 160 to 180bar, frequency of strikes from 550 to 2.300bpm.  |
| 8504.40.90 | 87  | Single-phase inverter frequency "on-grid", with outputs from 3.000 to 5.000W without transformer topology, with passive cooling method (no fans) and operating temperature of -25 to 60 degrees Celsius for LCD operation, weighing 7 , 0 and 17,0kg, providing IP65 (with protection against dust and water jets) and less than or equal operating noise to 40 db, RS 485 communication ports and Wi-Fi stick, models with 1 or 2 trackers maximum power point (MPPT), maximum input of 600V direct current efficiency from 98 to 99.5%, with a minimum current input voltage of 80Vdc continues with output alternating current range of 160 to 285Vac, with a rated voltage of 220 to 240Vac, with operation at 50 / 60Hz, power factor and supplying on one option to change, meeting the standards |
|            |     | Standard EN50438, G83 / 2, AS4777.2: 2015 VDE0126- 1-1, IEC61727, VDE N4105, 16149 NBR / NBR-16150.   |
| 8406.81.00 | 3   | Condensing steam turbine with axial exhaust flow, power 144MW, steam inlet pressure of 96bar (absolute) to 513 degrees Celsius, steam outlet pressure in the exhaust 0,10bar (absolute) with a controlled extraction medium pressure steam 14bar (absolute) with one axial exhaust flange diameter of about 4.450mm, with a vapor condensation system, high oil pressure unit, hydraulic lubrication unit, coupling elements, with instrumentation cabling , servo motors, junction boxes, pipes and accessories and mounting devices.  |
| 8421.39.90 | 128 | Respirators desiccant used in lubricating the gearbox speed wind turbine system with a diameter of 104mm and a length de257,2mm; with 1 inch multiple thread (NPT BSPT, NPSM); amount of silica gel: 0,84kg; adsorption capacity of 333ml; Maximum flow 453L / min @ 1psid; filter efficiency: 3m absolute (b3 <sup>3</sup> 200); operating temperature of -29 to 93 degrees Celsius; polycarbonate shell material, nylon, polypropylene, PVC, Buna-N.  |
| 8422.40.90 | 948 | Rotating Machines for filling and sealing packages of the type "stand-up-pouch" which receive the pre-formed package from packaging material flexible sealable accordance simultaneously to two individual containers in the magazine, with metering liquid or pasty and seal packages with the maximum production capacity of up 125embalagens / min with a maximum width of 110mm and a maximum height of 300mm, provided with: packaging the input module 2 transport to separator device with a storage capacity of 800embalagens / line ; inclusion of module automatic system dates; module for opening the bag; dosing module solids; module for dosing liquid; module for applying steam when available; module station with first sealing device   |

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|            |     | removing residual air from inside the package, heat sealing and adjustable temperature of 50 to 250 degrees Celsius with a pressure of 0.2 to 0.52 N / mm; Module for a second sealing station; Cooling module with circulating water system; automatic lubrication system, controlled by PLC (Programmable Logic Controller), controlled by HMI (Human Machine Interface) of the "touchscreen" and electric control panel detached from the machine body.  |
| 8426.41.90 | 125 | self-propelled cranes, forklift type "reach stacker", maximum power of 265kW engine / 2.100r / min, maximum torque 1.785Nm / 1.260r / min, equipped with telescopic boom and hydraulic special spreader, nominal lifting capacity 45t, maximum height lifting 15.100mm, a capacity increase of 39% without load, the maximum traction force 380kN, wheelbase 6,000 mm and the minimum turning radius of 8.000mm, and may carry ISO containers 20, 40 and 45 feet, with stacking ability to 5-5-4, the first line can stack five layers of containers 9 feet and 6 inches and the fifth layer has a lifting capacity of 43t; the second line may stacking layers 5 of 8 feet 6 inches containers with 30t lifting capacity and the third line can stack layers 4   |
|            |     | contêineresde 8 feet 6 inches with a lifting capacity of the fourth layer 14t.  |
| 8459.49.00 | 3   | Boring conventional cast iron provided with screw material which is refined by "electroslag" high quality steel, X axis, Y, Z with rectangle with hardened steel rib insertion counterweight installed within the column to ensure head stability and finish: spindle 13mm ISO50 taper (7:24), RPM spindle 18 Level 6.6 755r / min, main motor 15kW, 2.000Nm maximum torque, maximum axial resistance force 2.5000N, the central distance zone table 0mm , drilling spindle maximum diameter of 80mm, maximum diameter of 350mm transverse spindle drilling table travel (X) 2.000mm, vertical stroke of the spindle head (Y) 1.600mm longitudinal travel of the table (Z) 2.000mm, stroke spindle (W) 900mm, the course head slider from the front (U) 200mm, table rotation (B) 360 (random), load capacity 10,000kg, |
|            |     | rotation of the head 14 at level 4.4 165r / min, torque 3.000Nm head, maximum diameter of 700mm broaching face, and lateral axis and vertical feed table (for spindle) 12 Level 0.04 ~ 6mm / r and transverse axis and vertical feed table (by rotation of the head), 0.06 9mm level 12 / r, slider feed rate of the front head (a head) 12 0.04-6 level, positioning accuracy X, Y 0.02 / 30mm, full stroke 0,045mm, 0,005mm reading accuracy XY, total power 30kVA.   |
| 8460.23.00 | 30  | Grinding machines "centerless" CNC for the manufacture of fasteners, with servo motors and drives "encoders" absolute CNC-controlled with high precision spindle and automatic movements of balls 7 axes; maximum cutting wheel dimensions 610 x 203mm, carrier wheel head with 15HP and engine torque constant, programmable rpm until 1.450rpm; maximum diameter of 101,5mm for rectification; programmable system of dressing with rotary diamond roll, movement on two axes, programmable with graphic design capacity profile dressing and display on HMI touchscreen 15 "; regulating wheel with maximum dimensions of 355 x 203mm, with automatic dressing, programmable range 1 to rotations 300rpm, programmable speed dive to 38m / min., to offset correction or   |
|            |     | 0,0025mm displacement with precision; automatic compensation of taper; servo-controlled automatic adjustment of the approach and the regulating wheel dive; sliding guides with 0,005mm tolerance; moving parts / sliding of the machine automatically lubricated; Integrated automatic gantry carrier with mat, adjustable jaws to take manipulating fasteners 8 to 25.4mm diameter and lengths up to 190,5mm; filtering system for cutting oil; integrated mist collector; interface for remote access fault diagnosis and / or updating of "software"; communication interface "Ethernet link  |

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| 8474.90.00 | 56  | Sieve screens with mesh with rectangular layer 3, made of stainless steel, yarns, threads and edge measurements following proportions of 1.6: 1 (width x height), compatible with the specifications API RP 13C and spacing fabric with 41-390 micron aperture for passage of fluids and solids resulting from the removal of oil and gas well drilling process.  |
| 8477.10.11 | 117 | Electrical equipment for horizontal injection molding plastic parts monocolour, fully equipped electric lock unit with drive by the servomotor, double brace 5 points, closing force equal to 6.500kN opening 1.000mm course, distances (H x V) between columns of 1,080 x 1.080mm, size of 1.550 x 1.550mm plates, injection unit driven by high precision linear guides, lubrication closed circuit, with or without kinetic energy accumulation; fully electric injection unit, with injection movement driven by double servo motor, injection volume 2.863cm <sup>3</sup> / s, injection capacity of 2.605g, dosage and driven by an electric motor thrust hydraulic nozzle driven by servomotor and operation command with button multifunctional and monitor sensitive to the touch.   |
| 8481.80.99 | 104 | Gas lift mandrel of the side pocket type with one or more rooms for lifting pneumatic valves 1 to 1.75 inches in nominal diameter, with or without guidance in oval or round, nominal diameter between 60 and 177.8mm, made in carbon steel alloys, martensitic stainless steel or nickel alloys used for gas injection between the ring and the oil well production string to promote the extraction and production of oil in land and subsea wells. Pumps for liquids, for use in photovoltaic solar energy system in direct current, with current 24 to 380V, with current in the control panel goes on, system power between 210 to 16.500W, with a flow rate of 0.3 to 25m <sup>3</sup> / h height gauge between the 310mca  |
|            |     | upper and AISI stainless steel suction body 304 or bronze, with or without fittings used in the drinking water supply in deep wells with a diameter from 3 inches, with a maximum sand level allowed 100g / m <sup>3</sup> to work maximum temperature of 35 ° C. screen printing units (silk screen) and automatic rotary reel to reel, double head, for printing paper or plastic film (polycarbonate) in one color with corona treatment, drying, UV (ultra violet) and hot air of between approximately 10 and 150 degrees Celsius, driven by servo motor and synchronized by "encoder" positioning, automatic registration by CCD camera (charge-coupled device), a maximum width of 550 x 800mm printing, maximum velocity up to approximately 70impressões / min with controller programmable logic (PLC) and "touch screen".  |
| 8504.40.90 | 51  | AC inverter frequency "on-grid" with power between 40,000 to 60.000W, transformerless topology, passive cooling method (no fans) or mixed with intelligent control (sinks + fans), operating temperature of -25 to 60 ° C, LCD and LED for operation, providing IP65 - protection against dust and water jets - and less operating noise than 60dB, communication ports RS485 and Wi-Fi "stick" models with 4 trackers peak of power (MPPT), maximum input 1000V or higher on direct current, minimum efficiency of 97%, range AC output 384 to 576Vac, rated voltage of 480 / 500Vac, 50 / 60Hz power factor at 1 and providing option to change, meeting the IEC62109-1 / -2 standards, AS3100, EN61000-6-1, EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126-1-1, IEC61727 and offering resources "SmartGrid "- Voltage Ride-Thru ", " Frequency-Ride Thru ", " Soft-Start ", " Volt-Var ", " Frequency-Watt ", " Volt - |

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| 8504.40.90 | 52  | AC inverter frequency "on-grid" with power 125.000W, topology, transformerless, mixed cooling method with intelligent control (sinks + fans), operating temperature of -25 to 60 ° C, LCD and LED for operation, providing degree IP65 protection - protection against dust and water jets - and less operating noise 55db, RS 485 communication ports, one tracker maximum power point (MPPT) and 20 DC inputs, maximum input at 1.500V direct current efficiency between 98 to 99% range AC output 528 to 660VAC, 600VAC of rated voltage, 50 / 60Hz power factor and supplying on one option to change, meeting the IEC / EN 62109-1 standards / -2, IEC / EN 61000-6-2 / -4 IEC / EN 62109-1 / -2, IEC / EN 61000-6-2 / -4 and offering resources "SmartGrid" - "Voltage Ride-Thru"   |
|            |     | Thru ", " Soft-Start ", " Volt-Var ", " Frequency-Watt ", " Volt-Watt ".  |
| 8504.40.90 | 66  | Three-phase inverter frequency "on-grid" with 15.000W power without transformer topology, with passive cooling method (no fans) and hybrid (sinks + fans) with intelligent control, operating temperature of -25 to 60 degrees Celsius LCD for operation, weight 58.2 to 63kg, providing IP65 (protection against dust and water jets) and lower operating noise 30db, RS 485 communication ports and Wi-Fi stick, models with 2 trackers maximum power point (MPPT) and maximum input 1000 1.100V direct current, efficiency between 97 to 98.1%, with a minimum current input voltage of 200Vdc continues with output range at AC 160 at 285Vac, with a nominal voltage of 220 to 240Vac, with operation at 50/60 Hz power factor and supplying on one option to change, meeting the standards IEC62109-1 / -2, AS3100, EN61000-6-1, EN61000- 6-3, EN50438, G59 / 3, AS4777, VDE0126-1-1, IEC61727 and offering   |
|            |     | "SmartGrid" - "Voltage-Ride Thru", "Frequency-Ride Thru", "Soft-Start", Volt-Var, "Frequency-Watt", "Volt-Watt" unit value (CIF) not exceeding R \$ 6691.79.  |
| 8504.40.90 | 69  | Three-phase inverter frequency "on-grid" with 30.000W power without transformer topology, with passive cooling method (no fans) and hybrid (sinks + fans) with intelligent control, operating temperature of -25 to 60 degrees Celsius LCD for operation, weight 58.2 to 63kg, providing IP65 (protection against dust and water jets) and lower operating noise 30db, communication ports RS 485 and "Wi-Fi stick" models 2 trackers maximum power point (MPPT) and maximum input 1000 1.100V direct current, efficiency between 97 to 98.1%, with a minimum current input voltage of 200Vdc continues with output alternating current range 160 to 285Vac, with a nominal voltage of 220 to 240Vac, with operation at 50/60 Hz power factor and supplying on one option to change, meeting the standards IEC62109-1 / -2, AS3100, EN61000-6-1, EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126-1-1, IEC61727 and   |
|            |     | "SmartGrid" - "Voltage Ride-Thru", "Frequency-Ride Thru", "Soft-Start", Volt-Var, "Frequency-Watt", "Volt-Watt".  |
| 8504.40.90 | 164 | Three-phase inverter frequency "on-grid", with a capacity of 20,000 to 30.000W without transformer topology, passive cooling method (no fans) or mixed with Intelligent Control (sinks + fans), operating temperature of -25 to 60 degrees Celsius, LCD and LED for operation, weight 58.2 to 63kg, providing IP65 (protection against dust and water jets) and lower operating noise 30dB, RS 485 communication ports and Wi-Fi "stick "models with two trackers maximum power point (MPPT), maximum input current 1.000V or 1.100V continues minimum efficiency of 97% with minimal current input voltage between 200 and continues to output 350Vdc range of alternating current 180 to 270Vac, 220VAC of rated voltage, for operation at 50 / 60Hz, power factor and supplying one option to change, taking the IEC62109-1 / -2 standards AS3100, EN61000-6-1, EN61000- 6-3, EN50438, G59 / 3, AS4777, VDE0126- |

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|            |     | of "SmartGrid" - "Voltage-Ride Thru", "Frequency-Ride Thru", "Soft-Start", "Volt-Var", "Frequency-Watt", "Volt-Watt," CIF value not exceeding R \$ 10,823.35.  |
| 8504.40.90 | 165 | Three-phase inverter frequency "on-grid" with power from 20,000 to 50.000W without transformer topology, passive cooling method (no fans) or mixed with Intelligent Control (sinks + fans), operating temperature of -25 to 60 degrees Celsius, LCD and LED for operation, weight 58.2 to 63kg, providing IP65 - dust and water jets protection - and less operating noise than 60dB, RS 485 communication ports and Wi-Fi "stick" models with 4 trackers maximum power point (MPPT), maximum input 1000V or higher on direct current, minimum efficiency of 97%, range AC output 304 to 460Vac, rated voltage of 380 / 400Vac, operation in 50 / 60Hz, power factor at 1 and providing option to change, meeting the IEC62109-1 / -2 standards, AS3100, EN61000-6-1, EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126 -1-1, IEC61727 and offering resources "SmartGrid" - "Voltage Ride-Thru", "Frequency-Ride Thru", "Sof T- |
|            |     | "Volt-Var", "Frequency-Watt", "Volt-Watt," CIF value not exceeding R \$ 9749.07.   |
| 8514.10.10 | 99  | ovens with horizontal heating system for recirculation of air and radiation to bending and lamination automotive glazing, glazing for operating with molds of maximum measures 1.250mm by 1.800mm in length and width 250mm depth of curvature, for glass thicknesses V3,2 of up to 8mm / couple capable of producing between 175 and 215 pairs every 8 hours with 19 wagons.  |
| 8608.00.90 | 50  | security doors, for use in boarding platforms and unloading of railway metro stations or monorails, made up of modules, ports compounds Sliding Motorized (PDM), Emergency Doors (PEE), Platform End ports (PFD) and Panel fixed (PFX) consisting of panels of glass, tempered or laminated, mounted on aluminum frames, the modules are installed sequentially supported by structural steel columns and beams, with the coating against corrosion, with a maximum height of 2,600 mm, the basic modules set consists of doors Sliding Motorized (PDM) and an emergency door (EEP), the sets of basic modules are aligned along the platforms and the ends are installed platform close doors (PFD) and Panels fixed (PFX), the latter scaled for each season, giving finish  |
|            |     | end and safety isolation from unauthorized access, the operation provides the mechanical locking system and locking monitoring mechanism, aperture control system and closing of the doors, controlled by "software" specific and even doors of the manual opening mechanism side of the platform and the track.   |
| 9018.19.80 | 125 | non-invasive portable pulse oximeter for blood oxygen saturation and pulse rate, with LED color screen with continued capable of displaying numerical values of SpO2 measurement range of 0 to 100%, with an accuracy of 3% between 70 and 100% pulse, with a measuring range of 30 to 235bpm, pulse bar and plethysmographic curve, adjustable 7 brightness levels, with audible alarm SpO2, pulse disconnected sensor, finger off the sensor and battery indication for patients adult and pediatric, requires finger sensor as an accessory, USB cable for data transmission and "Software" for data analysis, storage and review for 72 hours.   |

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| 9027.50.30 | 6 | sand removal equipment, suitable for aluminum castings, operating by vibration and rotation of the melt process, operating with two eccentric shafts, load of up to 315kg (including fasteners), acceleration levels of 250 to 450m / s <sup>2</sup> amplitude maximum of 45mm (+/- 22.5 mm)> 32mm to 315kg load, maximum area for attachment device 1200 x 600 mm, rpm range of -90 to 180 degrees, installed electric power 15kW, the machine can be operated as autonomous module with a pounding or in combination with various machines and a separate hammering station. |
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Art. 3 The Ex-tariffs below are included in the respective legal acts indicated:

| NCM        | Nº Ex | DESCRIPTION  |
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| 8419.89.99 | 303   | Stainless steel reactors for solid state polymerization (SSP) and decontamination of flakes and / or post-consumer PET resin (polyethylene terephthalate) by the extraction of volatile and increased molecular weight (intrinsic viscosity -IV), operating under vacuum at high temperature (min 160 ° C is max 220 degrees Celsius) and using nitrogen to help in the removal of volatiles and reducing oxygen levels in preventing discoloration of the material that is cooled in batches of about 200 kg (resin post consumer ) and 100 kg (flakes) process "first in - first out" in the lower reaction temperature (less than 180 degrees Celsius); complete with PLC, user interface with touch screen, control units and nitrogen generation process unit, the supply and discharge into storage bin by a vacuum system, changing |
|            |       | heat, dust separator, filter cartridge and pipes; with maximum capacity equal to or greater than approximately 1.800kg / h depending on the reaction time, net internal volume of the reactor equal to or greater than 14,2m <sup>3</sup> (14.200L) and the final moisture less than 50ppm.  |
| 8427.10.19 | 148   | Electric trilateral forklift with a maximum load of 1,500 kg or less capacity and maximum lifting height of the forks or less 18.000mm.  |
| 8414.80.12 | 27    | screw-type air compressors 2-stage, oil-free with a maximum pressure of 8.6 or 10,4bar, water cooling system with integrated cooler stainless steel equipment, mounted "skid" with fairing system with drive with high precision gears AGMA Q13 / DIN class 5, engine power greater than 544HP TEFC IP55, integrated air filter to the engine, integrated frequency inverter equipment, control module; maximum flowrate exceeding 3.593m <sup>3</sup> / h and less than 9.036m <sup>3</sup> / h.  |
| 8422.30.10 | 110   | labeling machines for cylindrical glass bottle with 1, 2 or 3 adhesive stations for applying the label and contrarrótulo on separate reels and apply label and contrarrótulo the same coil and / or collar foaming, top closure with doors at a speed between 1,000 and 3,000 bottles / h, equipped with: distribution mechanism and smoothing or capsule contraction, with or without electronic reading multiple optical fiber sensor of the bottle through the glass or lower taca seam with conveyor and with or without table end build-up, with or without electronic billboard screen with "touch   |
| 8443.39.10 | 361   | printing machines for inkjet printing on plain or photo paper, up to 70s print speed for A1 size, maximum resolution of up to 2400 x 1.200dpi, with 4 colors and one print head, printing capability minimum line width of up to 0.04 mm with feeding sheets or roll up to 610 mm wide sheets and tray to A3 size, capacity utilization media weight up to 280 g / m <sup>2</sup> to 1GB memory and display panel Color touch up to 4.3 inches.  |

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| 8465.91.90 | 56  | Machine tools for sawing wood panels and the like, with numerical control (CNC), with "software" control with real-time visualization of 3D cutting planes, equipped with one or more cutting lines with air jets, containing one or more automatic and independent pushers, with electromagnetic measuring system by ensuring precision servomotor + - 0,1mm, provided with gripper fingers 2 or more, the car door with saws with adjustable speed between 1 to 130m / min or greater, with linear guide system with linkage to the main saw with electronic regulation of riscadora saw with integrated central aligner system directly to the saw carriage operating on the cutting line, with or without automatic feeding via a lift table 4 columns driven electro-hydraulically, with or without from 1 to |
|            |     | 4, hydraulic discharge auxiliary tables.   |
| 8479.82.90 | 203 | Solid waste disposers of any kind, equipped with shaft mono rotor maximum speed of 65rpm and 367 rpm, with knives type individual, reusable pads on the four sides, the size of knives 172 x 57 x 28 mm or 116 x 116 x 47mm, 87 x 87 x 38mm, 28mm x 65 x 65 or 43 x 43 x 19,5mm, 1 55kW 75kW engine 1 or motor or engine or 1 90kW 132kW engine 1 or motor 1 or 2 110kW 200kW motors or engines 2 2 and 132kW 160kW engine or 2 250kW motors, power transmission V-belt pulley with single or double pulley sieve embedded at least milling 4.000kg / h feed by hydraulic drive, a clutch torque control device safety, port inspection and maintenance with hydraulic opening to the interior, with or without frequency converter, controlled by a control   |
|            |     | programmable logic (PLC).  |
| 8483.40.10 | 331 | Gear boxes, exclusive for use in self-propelled trucks, assisted by hydraulic system with torque converter, semi-automatic, with electronic electric drive with mechanical drive clutch, working efficiency 0.8, higher working efficiency with 31Nm of torque, work "stall" with 33,5Nm torque, torque ratio "stall" k greater or equal to 3, forward-reverse gear ratio 18.94, oil flow from the pump 27L / min and oil pressure within the torque converter from 0.5 to 0,7MPa, engagement pressure of 1.1 to 1,4MPa transmission system.   |
| 8474.80.90 | 177 | Hydraulic press for the production of ceramic tiles, with the same maximum force pressing 49.000kN, the free distance between the columns of 1.750mm, and power device endowed with system - base for stamping, full of devices for mounting other components, maintenance and operating, partially disassembled to transport  |
| 8426.41.90 | 132 | self-propelled hydraulic cranes on tires type broadband embankment style, computerized, driven by diesel engine, with 2 axles, 4 steerable wheels with "joystick" or proportional electro-hydraulic, telescopic main boom containing 4 sections, with higher minimum range or equal to 9,1m and maximum less than or equal to 31,1m, or 5 sections, with minimum range greater than or equal to 9.5m and maximum 37,4m or less, the maximum load capacity not exceeding 35t to, but not exceeding 45t within an operating range of 2.5m or 3.0m.   |
| 8426.41.90 | 133 | self-propelled hydraulic cranes on tires type broadband embankment style, computerized, driven by diesel engine, with 2 axles, 4 steerable wheels with "joystick" proportional electro-containing main boom telescopic sections 4, with minimal or greater reach the maximum 10,3m and 34,0m or less, or 5 sections, with minimum range greater than or equal to 11,2m and a maximum less than or equal to 47m, the maximum load capacity less than 65t, but 90t or less within an operating range of 2.3 or 2.5 or 3.0m.  |

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| 8504.40.90 | 239 | Single-phase inverter frequency "on-grid", with 7,000 to 10.000W power without transformer topology, with passive cooling method (no fans) and operating temperature of -25 to 60 degrees Celsius for LCD operation, providing grade IP65 (protection against dust and water jets) and lower operating noise or equal to 40db, RS communication ports 485 and / or Wi-Fi stick, models with 3 trackers maximum power point (MPPT), maximum input 600V direct current, efficiency between 97.6 to 98.1%, with a minimum current input voltage of 120Vdc continues with "range" output alternating current of 160 to 285Vac, with a nominal voltage of 220 to 240Vac, with operations in 50 / 60Hz, power factor at 1 and providing option to change, meeting the IEC62109-1 / -2 standards, NB / T 32004 Grid Standard      |
|            |     | EN50438, G83 / 2, AS4777.2: 2015 VDE0126-1-1, IEC61727, VDE N4105, 16149 NBR / NBR-16150.  |
| 8504.40.90 | 246 | Fotovoltaicos single-phase inverter "on-grid", with 7,000 to 10.000W power without transformer topology, with passive cooling method (no fans) and operating temperature of -25 to 60 degrees Celsius for LCD operation, providing protection degree IP65 (protection against dust and water jets) and lower operating noise or equal to 40db, RS communication ports 485 and / or Wi-Fi stick, models with 3 trackers maximum power point (MPPT), maximum input 600V direct current, efficiency between 97.6 to 98.1%, with a minimum current input voltage of 120Vdc continues with "range" output alternating current of 160 to 285Vac, with a nominal voltage of 220 to 240Vac with operation in 50 / 60Hz, power factor at 1 and providing option to change, meeting the IEC62109-1 / -2 standards, NB / T 32004 Grid |
|            |     | AS4777.2: 2015 VDE0126-1-1, IEC61727, VDE N4105, 16149 NBR / NBR-16150   |
| 8426.41.90 | 134 | hydraulic cranes self-propelled on tires type broadband embankment style, computerized, driven by diesel engine, with 2 axles, 4 steerable wheels with "joystick" eletroproporcional containing main boom telescopic 4 sections, with minimum range greater than or equal to 10, 1m and a maximum less than or equal to 33,7m, the maximum load capacity exceeding 50t, but equal to or less than 72,6t within an operating range of 2.5 to 3.0m.  |
| 8464.90.19 | 203 | Machines for cutting and polishing of the four sides of glass plate with rounded profiles thickness of 3 to 8mm and / or 3 to 12mm and / or 2 to 12mm, provided with: two bilateral lapidadoras, one with maximum workable dimension equal to 1,200 x 2,000 mm and / or 1000 x 2200 mm x 140 mm and less than 80 and / or 140 x140mm and the other of a maximum of 2,000 x 1,200 mm and / or 2.200 x 1.000mm x 80mm and 150 min and / or 175x175mm with maximum flow velocity of 10m / min with framer and alignment of the glass sheets, with a device for trimming the edges of the blades through the mandrel, with diamond grinding wheels with independent adjustments with automatic polishing wheels to advance triggered by command electro controlled by a logic programmable controller                          |
|            |     | closed water circuit with reservoir for recirculation of water with buffing device of the corners of the glass sheet with first angular translation table for transporting the glass sheets between the bilateral lapidadoras.   |
| 8427.10.11 | 5   | Forklift self-propelled by an electric motor AC traction (AC), counterbalanced for side exit tracionaria battery maximum capacity between 6500 and 8.000kg, the lifting height of the forks between 2.750 and 8.670mm, with or without forks, with or without battery, with or without charger.  |
| 8427.10.19 | 149 | Forklift self-propelled by an electric motor AC traction (AC), counterbalanced for side exit tracionaria battery maximum capacity between 1800 and 6.500kg, the lifting height of the forks between 2.750 and 8.670mm, with or without forks, with or without battery, with or without charger.  |

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| 8428.90.90 | 663 | Carriers, binders orders and / or different volume, computerized, tray-type, motor driven, controlled by programmable logic controller (PLC) used to move and sort finished goods and / or various volumes to their classification and automated dispatch or not fitted with mechanical separation system with a length between 48 and 55m; stations input / bypass; impeller trays for sorting the articles; outlet troughs of the tab; Rejection chutes, with or without scanning device for reading bar code through a server OST with mechanical separation capacity equal to or greater than 6.315bandejas / h with dimensions of 400 x 600 x800 mm or 500 mm.   |
| 8430.69.90 | 43  | Hydraulic breakers, equipped with internal valves for piston movement control and automatic control of the piston stroke, manual or automatic starting mode selection and stop, may contain excess pressure protection valve, equipped with a nitrogen chamber on the piston, may have nitrogen accumulator rubber diaphragm and dust protection system, fixed connections or articulated to input hoses and hydraulic oil outlet equipped with automatic lubricator canal for venting the percussion chamber or air connection tablet, equipped with double dowel fixing tool for the coupling of excavator type carrier vehicles on wheels or tracks, demolition robot loaders, excavators generally fixed and articulated arms, operating weight   |
|            |     | 750 to 10,000kg, tool diameter of 100 to 240mm, inlet oil flow 80 to 530L / min; operating pressure of 160 to 180bar, frequency of strikes from 250 to 2.300bpm.  |
| 8504.40.90 | 247 | Fotovotaicos single-phase inverter "on-grid", with a maximum output power of 3.300 to 5.000W without transformer topology, with passive cooling method (no fans) and operating temperature of -25 to 60 degrees Celsius for LCD operation weight between 7.0 and 17,0kg, providing IP65 (with protection against dust and water jets) and lower operating noise or equal to 40 db, communication ports RS 485 and / or Wi-Fi stick models with 1 or 2 trackers maximum power point (MPPT), maximum input of 600V direct current, efficiency between 98 and 99.5%, with a minimum current input voltage of 80Vdc continues with output range in ac 160 to 285Vac, with a nominal voltage of 220 to 240Vac, with operation at 50 / 60Hz, power factor and supplying on one option to change, complying with the |
|            |     | IEC62109-1 / -2, NB / T 32004 Grid Standard EN50438, G83 / 2, AS4777.2: 2015 VDE0126- 1-1, IEC61727, VDE N4105, 16149 NBR / NBR-16150.  |
| 8406.81.00 | 4   | Condensing steam turbines with axial exhaust flow, power up to 144MW, steam inlet pressure of 96bar (absolute) to 513 degrees Celsius, steam outlet pressure in the exhaust 0,10bar (absolute) with a controlled extraction medium pressure steam 14bar (absolute) with one axial exhaust flange diameter of about 4.450mm, with a vapor condensation system, high oil pressure unit, hydraulic lubrication unit, coupling elements, with instrumentation cabling, servo motors, junction boxes, pipes and accessories and mounting devices.  |
| 8421.29.90 | 168 | Sieve screens with mesh with rectangular layer 3, made of stainless steel, yarns, threads and edge measurements following proportions of 1.6: 1 (width x height), compatible with the specifications API RP 13C and spacing fabric with 41-390 micron aperture for passage of fluids and solids resulting from the removal of oil and gas well drilling process.  |

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| 8421.39.90 | 132 | Respirators desiccant used in lubrication systems of the gearbox speed wind turbine with a diameter of 104mm and a length of 257,2mm; with multiple thread 1 inch (NPT BSPT, NPSM); amount of silica gel: 0,84kg; adsorption capacity of 333ml; Maximum flow 453L / min @ 1psid; filter efficiency: 3 micron absolute (beta factor greater than or equal to 200); operating temperature of -29 to 93 degrees Celsius; polycarbonate shell material, nylon,  |
| 8422.40.90 | 963 | Rotating Machines for filling and sealing packages of the type "stand-up-pouch" which receive the pre-formed package from packaging material flexible sealable accordance simultaneously to two individual containers in the magazine, with metering liquid or pasty and seal packages with the maximum production capacity of up 125embalagens / min with a maximum width of 110mm and a maximum height of 300mm, provided with: packaging the input module 2 transport to separator device with a storage capacity of 800embalagens / line ; inclusion of module automatic system dates; module for opening the bag; dosing module solids;  |
|            |     | module for dosing liquid; module for applying steam when available; module for the first device with sealing station to remove residual air from within the package, and heat sealing temperature adjustable from 50 to 250 degrees Celsius with a pressure of 0.2 to 0.25 daN / mm; Module for a second sealing station; Cooling module with circulating water system; automatic lubrication system, controlled by PLC (Programmable Logic Controller), controlled by HMI (Human Machine Interface) of the "touchscreen" and electric control panel detached from the machine body.  |
| 8426.41.90 | 135 | Self-propelled cranes, type "reach stacker", used in the stacking containers, with maximum power of 265kW engine option / 2.100rpm / min. and maximum torque of 1.785Nm / 1.260rpm / min, "stage" IIIA - or - maximum power engine option 250kW / 2.100rpm / min. and maximum torque of 1.674Nm / 1.400rpm / min. "Stage" IIIA, equipped with hydraulic telescopic boom and special spreader, rated lifting capacity 45t, maximum lift height of 15.100mm, maximum increase capacity without load 39%, the maximum traction force 380kN, wheelbase 6,000 mm and the minimum turning radius of 8.000mm, and may carry ISO containers 20, 40 and 45 feet with stackability of 5-5-4, the first line may stacking 5 layers 9 feet containers and 6 inches and the fifth layer has a  |
|            |     | lifting capacity of 43t; the second line may stacking layers 5 of 8 feet 6 inches containers with 30t and the third line can stack lifting capacity four layers of container 8 feet 6 inches with a lifting capacity of the fourth layer 14t.   |
| 8459.49.00 | 4   | Boring conventional cast iron provided with screw material which is refined by "electroslag" high quality steel, X axis, Y, Z with rectangle with hardened steel rib insertion counterweight installed within the column to ensure head stability and finish: 130mm spindle, ISO50 taper (7:24), RPM spindle 18 Level 6.6 755r / min, main motor 15kW, 2.000Nm maximum torque, maximum axial resistance force 25.000N, the central distance zone table 0mm , drilling spindle maximum diameter of 80mm, maximum diameter of 350mm transverse spindle drilling table travel (X) 2.000mm, vertical stroke of the spindle head (Y) 1.600mm longitudinal travel of the table (Z) 2.000mm, stroke spindle (W) 900mm, the course head slider from the front (U) 200mm, table rotation (B) 360 (random), load capacity 10,000kg, |
|            |     | 1.600mm, rotation of the head 14 at level 4.4 165r / min, torque 3.000Nm head, maximum diameter of 700mm broaching face, and lateral axis and vertical feed table (for spindle), 0.04 ~ 6mm Level 12 / r, and transverse axis and vertical feed table (by rotation of the head), 0.06 9mm level 12 / r, slider feed rate of the front head (a head) 12 level from 0.04 to 6, positioning accuracy of the X, Y 0.02 / 30mm, full stroke 0,045mm, 0,005mm reading accuracy XY,  |

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| 8460.22.00 | 9   | Grinding machines "centerless" CNC for the manufacture of fasteners, with servo motors and drives "encoders" absolute CNC-controlled with high precision spindle and automatic movements of balls 7 axes; maximum cutting wheel dimensions 610 x 203mm, carrier wheel head with 15HP and engine torque constant, programmable rpm until 1.450rpm; maximum diameter of 101,5mm for rectification; programmable system of dressing with rotary diamond roll, movement on two axes, programmable with graphic design capacity profile dressing and display on HMI touchscreen 15 "; regulating wheel with maximum dimensions of 355 x 203mm, with automatic dressing, programmable range 1 to rotations 300rpm, programmable speed dive to 38m / min., automatic compensation for or |
|            |     | with increments of displacement with precision 0,0025mm; automatic compensation of taper; servo-controlled automatic adjustment of the approach and the regulating wheel dive; sliding guides with 0,005mm tolerance; moving parts / sliding of the machine automatically lubricated; Integrated automatic gantry carrier with mat, adjustable jaws to take manipulating fasteners 8 to 25.4mm diameter and lengths up to 190,5mm; filtering system for cutting oil; integrated mist collector; interface for remote access fault diagnosis and / or updating of "software"; communication  |
| 8479.89.99 | 895 | sand removal equipment, suitable for aluminum castings, operating by vibration and rotation of the melt process, operating with two eccentric shafts, load of up to 315kg (including fasteners), acceleration levels of 250 to 450m / s <sup>2</sup> range maximum of 45mm (+/- 22.5 mm)> 32mm to 315kg load, maximum area for attachment device 1200 x 600 mm, rpm range of -90 to 180 degrees, installed electric power 15kW, the machine can be operated as autonomous module with a pounding or in combination with various machines and a separate hammering station.  |
| 8481.80.99 | 114 | Gas lift mandrels side pocket type with one or more rooms for lifting pneumatic valves 1 to 1.75 inches in nominal diameter, with or without guidance in oval or round, nominal diameter between 60 and 177 8mm, made in carbon steel alloys, martensitic stainless steel or nickel alloys used for gas injection between the ring and the oil well production string to promote the extraction and production of oil in land and subsea wells.   |
| 8504.40.90 | 240 | AC PV inverter "on-grid" with 125.000W power without transformer topology, mixed with cooling method intelligent control (sinks + fans), operating temperature of -25 to 60 degrees Celsius, LCD and LED operation, providing IP65 - protection against dust and water jets - and less operating noise 55db, RS 485 communication ports, one tracker maximum power point (MPPT) and 20 DC inputs, maximum input of 1.500V direct current, efficiency between 98 to 99% range AC output 528 to 660VAC, 600VAC of rated voltage, 50 / 60Hz power factor and supplying on one option to change, meeting the IEC / EN 62109- standards 1 / -2, IEC / EN 61000-6-2 / -4 IEC / EN 62109-1 / -2, IEC / EN 61000-6-2 / -4 and offering resources "SmartGrid" -                            |
|            |     | "Voltage Ride-Thru", "Frequency-Ride Thru", "Soft-Start", "Volt-Var", "Frequency-Watt", "Volt-Watt"   |

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| 8504.40.90 | 241 | three-phase photovoltaic inverters "on-grid" with power between 40,000 to 60.000W, topology, transformerless, passive cooling method (no fans) or mixed with intelligent control (sinks + fans), operating temperature of -25 to 60 ° C, LCD and LED for operation, providing IP65 - protection against dust and water jets - and less operating noise than 60dB, communication ports RS 485 and / or Wi-Fi "stick" models with 4 trackers peak power (MPPT), maximum input 1000V or higher on direct current, minimum efficiency of 97%, range AC output 384 to 576Vac, rated voltage of 480 / 500Vac, 50 / 60Hz power factor of 1 and providing option to change, meeting the IEC62109-1 standards / -2, AS3100, EN61000-6-1, EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126-1-1,              |
|            |     | IEC61727 and offering resources "SmartGrid" - "Voltage Ride-Thru", "Frequency-Ride Thru", "Soft-Start", "Volt-Var", "Frequency-Watt", "Volt-Watt".   |
| 8504.40.90 | 242 | AC PV inverter "on-grid" with power from 20,000 to 50.000W, topology without transformer cooling method passive (no fans) or mixed with Intelligent Control (sinks + fans) Operating Temperature -25 to 60 degrees Celsius , LCD and LED for operation, weight 58.2 to 63kg, providing IP65 - protection against dust and water jets - and less operating noise than 60dB, communication ports RS 485 and / or Wi-Fi " stick "models with 4 trackers maximum power point (MPPT), maximum input 1000V or higher on direct current, minimum efficiency of 97%, range AC output 304 to 460Vac, rated voltage of 380 / 400Vac , operation at 50 / 60Hz, power factor at 1 and providing option to change, meeting the IEC62109-1 / -2 standards, AS3100, EN61000-6-1,                                |
|            |     | EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126-1-1, IEC61727 and offering resources "SmartGrid" - "Voltage Ride-Thru", "Frequency-Ride Thru", "Soft-Start", " Volt-Var ", " Frequency-Watt ", " Volt-Watt, "CIF value not exceeding R \$ 9749.07.  |
| 8504.40.90 | 243 | AC PV inverter "on-grid", with a capacity of 20,000 to 30.000W without transformer topology, passive cooling method (no fans) or mixed with Intelligent Control (sinks + fans) Operating Temperature -25 to 60 degrees Celsius , LCD and LED for operation, weight 58.2 to 63kg, providing IP65 (protection against dust and water jets) and lower operating noise 30dB, RS 485 communication ports and / or Wi-Fi " stick "models with two trackers maximum power point (MPPT), maximum input current 1.000V or 1.100V continues minimum efficiency of 97% with minimal current input voltage remains between 200 and having an output range 350Vdc alternating current of 180 to 270Vac, with a rated voltage of 220Vac, with operations in 50 / 60Hz, power factor 1 and providing choice for |
|            |     | change, meeting the IEC62109-1 / -2 standards, AS3100, EN61000-6-1, EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126-1- 1, IEC61727 and offering resources "SmartGrid" - " Voltage Ride-Thru ", " Frequency-Ride Thru ", " Soft Start ", " Volt-Var ", " Frequency-Watt ", " Volt-Watt, "CIF value not exceeding R \$ 10,823.35.   |

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| 8504.40.90 | 244 | AC PV inverter "on-grid" with 30.000W power without transformer topology, with passive cooling method (no fans) and / or hybrid (sinks + fans) with intelligent control, operating temperature of -25 to 60 degrees Celsius, LCD for operation, weight 58.2 to 63kg, providing IP65 (protection against dust and water jets) and lower operating noise 30db, communication ports RS 485 and / or "Wi-Fi stick "models with two trackers maximum power point (MPPT), maximum input 1000 and / or 1.100V for direct current efficiency between 97 to 98.1%, with a minimum current input voltage of 200Vdc continues with range alternating current output of 160 to 285Vac, with a nominal voltage of 220 to 240Vac, with operation at 50/60 Hz power factor and supplying on one option |
|            |     | for change, meeting the IEC62109-1 / -2 standards, AS3100, EN61000-6-1, EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126-1- 1, IEC61727 and offering resources "SmartGrid" - "Voltage Ride-Thru", "Frequency-Ride Thru", "Soft Start", Volt-Var, "Frequency-Watt", "Volt-Watt"  |
| 8504.40.90 | 245 | AC PV inverter "on-grid" with 15.000W power without transformer topology, with passive cooling method (no fans) and / or hybrid (sinks + fans) with intelligent control, operating temperature of -25 to 60 degrees Celsius, LCD for operation, weight 58.2 to 63kg, providing IP65 (protection against dust and water jets) and lower operating noise 30db, communication ports RS 485 and / or Wi-Fi stick, 2 trackers models with maximum power point (MPPT), maximum input 1000 and / or 1.100V for direct current efficiency between 97 to 98.1%, with a minimum current input voltage of 200Vdc continues with output range alternating current 160 to 285Vac, with a nominal voltage of 220 to 240Vac, with operation at 50/60 Hz power factor and supplying on one option       |
|            |     | for change, meeting the IEC62109-1 / -2 standards, AS3100, EN61000-6-1, EN61000-6-3, EN50438, G59 / 3, AS4777, VDE0126-1- 1, IEC61727 and offering resources "SmartGrid" - "Voltage Ride-Thru", "Frequency-Ride Thru", "Soft Start", Volt-Var, "Frequency-Watt", "Volt-Watt" unit value (CIF) not exceeding R \$ 6691.79  |
| 8514.10.10 | 101 | ovens with horizontal heating system for recirculation of air and radiation to bending and lamination automotive glazing, glazing for operating with molds of maximum measures 1.250mm by 1.800mm in length and width 250mm depth of curvature, for glass thicknesses 3.2 to 8mm / couple capable of producing between 175 and 215 pairs every 8 hours with 19 wagons.  |
| 8608.00.90 | 51  | security doors, for use in boarding platforms and unloading of railway metro stations or monorails, made up of modules, ports compounds Sliding Motorized (PDM), Emergency Doors (PEE), Platform End ports (PFD) and Panel fixed (PFX) consisting of panels of glass, tempered or laminated, mounted on aluminum frames, the modules are installed sequentially supported by structural steel columns and beams, with the coating against corrosion, with a maximum height of 2,600 mm, the basic modules set consists of doors Sliding Motorized (PDM) and an emergency door (EEP), the sets of basic modules are aligned along the platforms and the ends are installed platform close doors (PFD) and Panels fixed (PFX), the latter scaled for each season, giving finish           |
|            |     | end and safety isolation from unauthorized access, the operation provides the mechanical locking system and locking monitoring mechanism, aperture control system and closing of the doors, controlled by "software" specific and even doors of the manual opening mechanism side of the platform and the track.  |

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| 9027.30.20 | 77 | non-invasive portable pulse oximeter for blood oxygen saturation and pulse rate based on the principle of spectrophotometry, with LED color screen with continued capable of displaying numerical values of SpO2 measurement range of 0 to 100%, with accuracy 3% between 70 and 100% pulse with measurement range 30 to 235bpm, pulse bar and plethysmographic curve, adjustable 7 brightness levels, with audible alarm SpO2, pulse disconnected sensor, finger off the sensor and battery indication for adult and pediatric patients, requires finger sensor as an accessory, USB cable for data transmission and "software" for data analysis, storage and review for 72 |
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Art. 1 The Ex-tariffs for the Capital Goods listed in the Sole Annex of this Resolution are included in Annex I of Resolution nº 14, of February 2020, of the Executive Management Committee of the Foreign Trade Chamber.

| NCM        | Nº | DESCRIPTION  |
|------------|----|--|
| 7309.00.10 | 4  | Silos caching system for discharging in automatic packaging machines, with capacity of 1,5m³.  |
| 8207.30.00 | 56 | Tools for stamping lead blades, which are used in presses (punching system) for the manufacture of grids of lead-acid batteries with minimum and maximum height of 100mm 120mm.  |
| 8407.90.00 | 26 | combustion gasoline engines, 4-stroke, gardening equipment, agricultural or small livestock, single cylinder block-cast aluminum, cast iron jacket, diameter x piston stroke of 68 x 54mm with displacement of 196cc, with stationary rotation 3.600rpm of no-load power 6,5cv with manual and / or electric starting with 12V alternator incorporating and can have a reduction of 2: 1 stream transmitted by the output shaft PTO. |
| 8407.90.00 | 27 | combustion gasoline engines, 4-stroke, gardening equipment, agricultural or small livestock, single cylinder block-cast aluminum, cast iron jacket, diameter x piston stroke of 77 x 58mm with displacement of 270cc, with stationary rotation 3.600rpm of no-load power 8,5cv with manual and / or electric start with 12V with built-in generator.   |
| 8407.90.00 | 28 | combustion gasoline engines, 4-stroke, gardening equipment, agricultural or small livestock, single cylinder block-cast aluminum, cast iron jacket, diameter x piston stroke 88 x 64 mm or 90 x 66mm with cylinder 389 420cc or with stationary rotation 3.600rpm without load, power 13 or 15cv, with manual and / or electric starting with 12V,   |
| 8407.90.00 | 29 | combustion gasoline engines, 4-stroke, gardening equipment, agricultural or small livestock, single cylinder block-cast aluminum, cast iron jacket, diameter x piston stroke of 68 x 45mm with displacement of 163cc, with stationary rotation 3.600rpm of no-load power 5,5cv with manual start and PTO (axis) counterclockwise.  |
| 8407.90.00 | 30 | combustion gasoline engines, 4-stroke, gardening equipment, agricultural or small livestock, single cylinder block-cast aluminum, cast iron jacket, diameter x piston stroke of 72 x 55mm com displacement of 224cc, with stationary rotation 3.600rpm no load, power 7,5cv with manual start and PTO (axis) in a counterclockwise direction.  |
| 8407.90.00 | 31 | combustion gasoline engines, 4-stroke, gardening equipment, agricultural or small livestock, single cylinder block-cast aluminum, cast iron jacket, diameter x piston stroke of 56 x 40mm with displacement of 98cc with stationary rotation 3.600rpm of no-load power 3CV with manual start.  |
| 8407.90.00 | 32 | combustion gasoline engines, 4-stroke, gardening equipment, agricultural or small livestock, single cylinder block-cast aluminum, cast iron jacket, diameter x piston stroke of 70 x 55mm with displacement of 208cc, with stationary rotation 3.600rpm of no-load power 7CV with manual and / or electric start with 12V with built-in generator.   |

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| 8407.90.00 | 33 | Internal combustion piston engines, Otto cycle, the natural gas to stationary applications, with six cylinders in line and volume (capacity) of 19.6 liters water cooled rotating, and 1.800rpm gross mechanical power in 408kWM continuous duty operation (COP).  |
| 8412.29.00 | 29 | Hydraulic Power Unit, composed of two barrier fluid storage tanks and electrical and pneumatic pumps providing two high pressure ports, 345bar and 517bar, respectively, together with slings for hoisting and one high pressure hose, working temperature range 7-45 degrees celsius.   |
| 8412.90.80 | 18 | Steel rods chrome, obtained from steel round SAE 1045 processing with hard chrome finish resistant to 200h salt spray with "rating" 9 according to ISO9227, a nominal diameter of 8 to 150mm with f7 tolerance to manufacturing hydraulic cylinders that will be applied in agricultural machinery, cranes and forklifts.  |
| 8412.90.90 | 10 | Rings steering angle setting hydraulic motor for drilling with diameters ranging from 4,750 and 11,750 inches, made of carbon steel, the inner surface having keying slots, which allow changing the angle drilling oil wells.   |
| 8412.90.90 | 11 | Power drive stator adapters used in hydraulic motors, made of alloy carbon steel, comprising male threads and female and have diameters ranging from 4,750 and 11,750 inches, used to connect the section bearing the power unit of the stator well drilling hydraulic motors.   |
| 8412.90.90 | 12 | internal rotary axes of the hydraulic motor responsible for transferring the rotational force of the drill from the production well drilling operations or exploitation of hydrocarbons, made of carbon steel, with diameters ranging from 2 to 9.750 inches, with threaded box on one side and threaded pin other end.  |
| 8412.90.90 | 13 | Kits power section for a type of hydraulic motor for drilling a group of compounds of stators with a diameter between 14.5 and 20 cm and rotors with diameters between 13.5 and 19 cm, both made of stainless steel and torque generation responsible pear to the drill bit.   |
| 8412.90.90 | 14 | Stators for the hydraulic motor drilling, responsible for generating torque to the drill bit, made of carbon steel and provided with helical lobes elastomeric molded within the metal tube, with diameters ranging from 4.750 to 11.750 inches and a length between 183 to 250 inches threaded box at both ends of the tube.  |
| 8412.90.90 | 15 | Rotors for hydraulic motor drilling, responsible for generating torque to the drill bit, made of carbon steel base material and coated with a layer of chromium or tungsten carbide, to form helical lobes having diameters ranging from 2.750 to 7.350 inches and length between 80 to 304 inches, with the second threaded box ends.                                     |
| 8413.50.90 | 79 | Asymmetric thrust pumps 3/4 inch - 1 inch vacuum ALU / PTFE to work in potentially explosive atmospheres, high capacity membrane, stainless steel valve seat, reducing lung pulsations included quick connectors and "by-pass" valve plate consists reassembly of: solenoid valve and two drive coils, cable connection, adapter plate pump / valve and cap threaded bore. |

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| 8413.50.90 | 80  | positive displacement piston pump units of the type, nominal capacity operation of 130m <sup>3</sup> / h and a maximum operating capacity of 150m <sup>3</sup> / h; composed of: displacement pump of the piston type; double flanged nozzles in the suction and discharge, actuated by independent hydraulic unit 2 for each cylinder, comprising: tank, cooling system (air / water), water pumps 2 and 2 cylinders; dry run protection system (warns against cavitation and absence of power); pumped material flow measurement system (information of the filling efficiency); Pump assembly configuration in vertical or horizontal planes; electric control panel; "Poppet" valves; auxiliary lubrication system; base plate for pump; complete sets of drive, including: bases, orthogonal gearboxes, planetary gearboxes, motors, pulleys |
|            |     | noise enclosure.  |
| 8413.50.90 | 81  | Radial piston pump volumetric alternatives for lubrication of the cutting chain, chain saws with applied ignition engine spark incorporated with minimal flow rate to between 4.5 +/- 10.000rpm 2cm <sup>3</sup> / min +/- 9.3 4cm <sup>3</sup> / min and the maximum flow rate of 11.5 +/- 10.000rpm 3cm <sup>3</sup> / min at 20.4 +/- 3,5cm <sup>3</sup> / min.  |
| 8413.70.80 | 121 | Centrifugal pumps with hydraulic wet bearing housing cast iron GG20 and anticorrosion protective coat paint with a ceramic glaze, 1 closed type impeller polyamide maximum flow 1.500litros / h and a maximum pressure of 6 MCA elevation electric power consumed by the motor 100W, degree of insulation of H-type engine, motor protection index 44, speed dial options with 3 different speeds of operation.   |
| 8413.70.80 | 122 | Centrifugal pumps with hydraulic wet bearing housing brass coating and corrosion protection paint with a ceramic glaze, 1 closed type impeller polyamide maximum flow 1.500litros / h maximum pressure 6mca electrical lifting power consumption up to 100W motor, degree desalination engine type H, motor protection index 44, gear selector with 3 choices of different speeds of operation.   |
| 8413.70.80 | 123 | Centrifugal pumps with hydraulic wet bearing housing cast iron GG20 and anticorrosion protective coat paint with a ceramic glaze, 1 closed type impeller polyamide maximum flow 1.800litros / h maximum pressure 9mca electrical lifting power consumed by the motor 120W , degree of insulation type motor M, the motor protection index 44, internal flow switch enabling the operation of the pump automatically with water flow passage, working voltage 127 /  |
| 8413.70.80 | 124 | Centrifugal pumps with hydraulic wet bearing housing brass coating and corrosion protection paint with a ceramic glaze, 1 closed type impeller polyamide maximum flow 1.800litros / h maximum pressure 9mca electrical lifting power consumed by the motor 120W, degree desalination type motor M, the motor protection index 44, internal flow switch enabling the operation of the pump automatically with water flow passage, working voltage 127 / 220V.  |
| 8413.70.80 | 125 | Centrifugal pumps with hydraulic wet bearing housing cast iron GG20 and anticorrosion protective coat paint with a ceramic glaze, 1 closed type impeller polyamide maximum flow 3.600litros / h maximum pressure 15mca electrical lifting power consumed by the motor 260W , degree of insulation of H-type engine, motor protection index 44, speed dial options with 3 different speeds of operation.   |
| 8413.70.80 | 126 | Centrifugal pumps with hydraulic wet bearing housing brass coating and corrosion protection paint with a ceramic glaze, 1 closed type impeller polyamide maximum flow 3.600litros / h maximum pressure 15mca electrical lifting power consumed by the motor 260W, degree desalination engine type H, motor protection index 44, gear selector with 3 choices of different speeds of operation.  |

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| 8413.70.80 | 127 | wet centrifugal pumps with hydraulic bearing housing Cast iron GG20 and corrosion protection paint coating with ceramic glaze closed type impeller 1 with a maximum flow polyamide 4.500litros / h maximum pressure 18mca electrical lifting power consumed motor to 350W , degree of insulation of the engine type H, motor protection index 44, gear selector with 3 choices of different speeds of operation.   |
| 8413.70.80 | 128 | Centrifugal pumps with hydraulic wet bearing housing brass coating and corrosion protection paint with a ceramic glaze, 1 closed type impeller polyamide maximum flow 4.500litros / h maximum pressure 18mca electrical lifting power consumed by the motor 350W, degree desalination engine type H, motor protection index 44, gear selector with 3 choices of different speeds of operation.   |
| 8413.70.80 | 129 | Motobombas centrifugal electric motor with permanent magnet brushless suction nozzle and discharge with 2 inch BSP type for 500W of power, current phase continues, with maximum flow of 16m <sup>3</sup> / h, head up to 12,65mca, used pool water circulation, accompanied by her drive (controller to aid in the operation of the pump).  |
| 8413.70.90 | 180 | Multiple pumps with impellers with high strength techno polymers, flow rate 400L / min 8bar, 4.200rpm fork T7 hydraulic motor 14,5cm <sup>3</sup> / see., 567L / min flow, 150gpm (USA), oil flow 64,3L / min 17gpm (uSA) used in agricultural sprays, impeller system polypropylene reinforced fiberglass.  |
| 8413.70.90 | 181 | Self-priming centrifugal water pumps with aluminum housing, rotor and rotor 120mm door, both in cast iron, with suction and discharge of 2 inches, with a maximum flow 30,5m <sup>3</sup> / h maximum gauge height 29mca being coupled to the combustion engine diesel internal 4,5cv, 212cc, diameter 70mm and 55mm stroke, with 12l fuel tank, possibly with manual or electric starting.  |
| 8413.70.90 | 182 | Self-priming centrifugal water pumps with aluminum housing, rotor 120mm rotor and port, both cast iron, with suction and discharge of 3 inches, with a maximum flow of 55m <sup>3</sup> / h and maximum head of 30mca being coupled to internal combustion engines with diesel 6,9cv, 296cc, diameter 78mm and stroke of 62mm, with fuel tank 12l and electric   |
| 8413.91.90 | 70  | internal structural units for protection bag of submerged centrifugal pumps, used in gas production activities and oil, carbon steel or special alloy of chrome-molybdenum, with an internal diameter of between 15.7 and 51 mm, outside diameter between 90 and 220mm , between 48 and 64cm long, weighing between 600 g and 5 kg for accommodation and support of the shield case.   |
| 8413.91.90 | 71  | compensating transportation lids oil motors and protectors submerged centrifugal pump used for the accommodation of fluid pressure at different temperatures in the producing gas and oil, with external material HSN, HDPE or PVC, the structure material of carbon steel or special alloy chromium-molybdenum, with an outer diameter between 400 and 1.210mm, internal diameter between 90 and 160mm, length of 400 to 700mm, weighing between 0.5 and 30 kg. |
| 8413.91.90 | 72  | cylindrical housing made of aluminum alloy, corrosion resistant, with lateral flaps distributed over the area to increase the contact surface with the air; increase heat dissipation for protection; and single-phase induction motor support motor pumps used in residential pressure washers.   |
| 8413.91.90 | 73  | Guides pistons made of aluminum alloy, copper and zinc; with a minimum hardness 90HB in generating working pressure; and coupling the possibility scraper ring and the gasket guiding high pressure washers.   |

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| 8414.10.00 | 55  | Generating vacuum centrifugal pumps with maximum speed of 5,000 rpm, driven by electric motors, turbine casing and provided with cast aluminum, applied in distribution of non-self-propelled seed planters systems.   |
| 8414.10.00 | 56  | Vacuum pumps, rotary, vane oil lubricated, with integrated exhaust filters with low oil level, integrated oil recovery and anti-suckback valve, different available AC motors nominal flow (rated pumping speed) of 280 and 340m <sup>3</sup> / h, the lower final pressure equal to or 0,08mbar without ballast gas (GB), lower noise levels than or equal to 72 or 76dB (a) to nominal flow rates (pumping rated speed) from 240 to 290m <sup>3</sup> / h, connections G or NPT 2 inches frequency of 50 or 60Hz, tolerance of 10 mbar water vapor to frequency 50Hz or 60Hz for frequency 12mbar. |
| 8414.10.00 | 57  | Vacuum pumps lubricated vane driven by inverter frequency control and means "smartphone" (application) with electric motor, pressure sensors, with greater than or equal power 2.2kW and less than or equal to 11 kW, with a nominal capacity of speed 38 to 381m <sup>3</sup> / h.  |
| 8414.59.90 | 46  | Vacuum manual use of grinders, fit for small cleaning and medium properties with blowing function, extraction and trituration, straw, grass, paper, sheets and the like, with blowing air volume of 730m <sup>3</sup> / h suction 710m <sup>3</sup> / h, the maximum air velocity 71m / s engine technology 2 MIX internal combustion gasoline which enables a reduction of up to 20% in fuel consumption, and power of 0,7kW 27,2cm <sup>3</sup> of a cylinder, having a pump fuel for easier starting, adjustable parison, single button operation and volume 45L bag collector.                   |
| 8414.59.90 | 47  | Manual use of air blowers, suitable for small cleaning and medium properties with surfaces covered with straw, grass, leaves, paper and the like, with a volume flow of blowing air 730m <sup>3</sup> / h, maximum air velocity of 71m / s , motor technology with 2 MIX internal combustion gasoline enabling a reduction of up to 20% in fuel consumption, power 0,7kW, 27,2cm <sup>3</sup> of a cylinder with fuel pump for easy starting, a single button operation, tube adjustable   |
| 8414.59.90 | 48  | Manual use of air blowers, suitable for cleaning medium and large areas covered with straw, grass, leaves, paper and the like, with a volume puff of air of 810m <sup>3</sup> / h, maximum air velocity of 89m / s engine technology 2 MIX gasoline internal combustion enabling a reduction of 20% in fuel consumption, power of 0,8kW, 27,2cm <sup>3</sup> of a cylinder with fuel pump for easier starting, single button operation, adjustable parison, strength blowing 15N and   |
| 8414.59.90 | 49  | Blowers manual use of air, suitable for small areas covered with grass cleaning, grass, leaves, paper and similar materials, flow rate of air 38m / s air flow rate of 420m <sup>3</sup> / h, an integrated battery ions lithium electric motor 18V, rubberized cord drive with the accelerator lock and key activation for inhibiting unwanted discharges.  |
| 8414.59.90 | 50  | Manual use of air blowers, suitable for small cleaning and medium surfaces covered with grass, grass, leaves, paper and similar materials, flow rate of air 46m / s, maximum air flow of 620m <sup>3</sup> / h Power blowing 9N, with electric motor with lithium ion 36V and 127V charger or 220V, adjustable parison, rubberized grip, safety latch to prevent drives involuntary battery with two engagement positions (transmission and job).  |
| 8414.80.19 | 145 | Air blowers, compounds double lobes routers, labyrinth seal, pressurized lubrication system, maximum pressure to 22psi, flow 9362 pés <sup>3</sup> / min (68 degrees fahrenheit; 14,7psia) pés <sup>3</sup> to 37.264 / min (68 degrees fahrenheit ; 14,7psia) and power 244 to 1.740HP.   |

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| 8414.80.19 | 146 | Air blowers, consisting of double lobes routers, labyrinth seal, pressurized lubrication system, maximum pressure to 22psi, flow 9362 pés <sup>3</sup> / min (68 degrees Fahrenheit 14.7psia) at 37,264 pés <sup>3</sup> / min (68 degrees Fahrenheit, 14.7psia) and power of 244HP to 1.740HP.  |
| 8414.80.19 | 147 | Air compressors, oil-free power 1.5 HP, maximum flow 170L / min and a maximum working pressure of 8bar integrated with reel 10m retractable hose system lock / unlock and auto pickup and tools for quick coupler .  |
| 8414.80.90 | 26  | Simple centrifugal blower stage with operating completely free of oil, equipped with magnetic bearings without lubrication, power of the electric motor of 30 to 55 kW, the engine speed control by programmable logic controller (PLC) with an air flow rate between 67.457m <sup>3</sup> and 31 237 / h; Pressure lifting range between 1.505 and 1.902Pa.   |
| 8415.10.90 | 3   | Cooling equipment for forming a single body floor for application to "data center", with a total cooling capacity of up to 35kW, airflow flow 6.000m <sup>3</sup> / h, supply voltage 208 to 220Vac or 380/400 / 415VAC , frequency input wiring 3F + N + E, R410A refrigerant, heating capacity of 4kW, humidification capacity of 1 to 1.5 kg / hr, condensing unit with liquid 5/8 inch pipe, gas pipe between 3/4 and 7/8 inch, with DC inverter compressor, wet film humidification isentá lpico, algorithm "iCooling" and touch 7-inch color screen. |
| 8416.20.90 | 4   | gas burners type duct 200 to 300kW of power, with or without control cabinet, to fuel natural gas and LPG.   |
| 8418.50.90 | 4   | Greenhouses for temperature control for storing food product level between 25 to 40 degrees Celsius and humidity controlled in the range of 60 to 75%, with 1 to 4 gateways and dimensions of 2.220mm to 1.320mm in height 4.020mm width, with storage internal capacity of between 4.86 and 3.300 and 17,01m <sup>2</sup> to 5780 liters, with external control panel "touchscreen."  |
| 8418.69.99 | 68  | Refrigerators provided with moisture on the control panel with operating temperature capability between -2 to 20 degrees Celsius for biomaterials storage with integrated alarm system, a temperature sensor, adjustable and removable shelves and drawers, coupled to air manifold on top.  |
| 8418.69.99 | 69  | coolers apparatus compression-water, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) of heat with maximum cooling 200t capacity (TR) , with unit CIF value not exceeding US \$ 581,040.33.  |
| 8418.69.99 | 70  | coolers compression-water apparatus, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) heat, with a maximum of up cooling 300t capacity (TR) , with a unit CIF value not exceeding US \$ 597,135.63.  |
| 8418.69.99 | 71  | coolers compression-water apparatus, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) heat, with a maximum of up cooling 400t capacity (TR) , with a unit CIF value not exceeding US \$ 688,342.33.  |
| 8418.69.99 | 72  | coolers compression-water apparatus, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) heat, with a maximum of up cooling 500t capacity (TR) , with a unit CIF value not exceeding US \$ 704,437.63.  |

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| 8418.69.99 | 73 | coolers compression-water apparatus, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) heat, with a maximum of up cooling 600t capacity (TR ), with a unit CIF value not exceeding US \$ 840,174.66.   |
| 8418.69.99 | 74 | coolers compression-water apparatus, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) heat, with a maximum of up cooling 700t capacity (TR ), with a unit CIF value not exceeding US \$ 856,269.96.   |
| 8418.69.99 | 75 | coolers compression-water apparatus, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) heat, with a maximum of up cooling 800t capacity (TR ), with a unit CIF value not exceeding US \$ 936,746.46.   |
| 8418.69.99 | 76 | coolers compression-water apparatus, for use in HVAC and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressor oil free refrigerant gas and heat exchanger (heat exchanger) heat, with a maximum of up cooling 900t capacity (TR ), with a unit CIF value not exceeding US \$ 974,302.16.   |
| 8418.69.99 | 77 | Apparatus for compression chillers water for use in air conditioning and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressors without oil and refrigerant gas heat exchanger (heat exchanger) heat, with a capacity of up cooling 1.000t ( TR), with unit CIF value not exceeding US \$ 995,762.56.   |
| 8418.69.99 | 78 | Apparatus for compression chillers water for use in air conditioning and industrial cooling systems, which may contain one or two semi-hermetic centrifugal compressors without oil and refrigerant gas heat exchanger (heat exchanger) heat, with a capacity of up cooling 2.200t ( TR), with unit CIF value not exceeding R \$ 1,593,220.10.  |
| 8418.69.99 | 79 | Freezers for semiautomatic type enclosure with cryogenic freezing using liquid nitrogen at -196, -80 and 0 degrees Celsius, with the LN2 to 552 liters capacity, fitted with high speed fans that allow a vapor flow with the internal working temperature range from -200 to +50 degrees celsius, with low pressure supply tank of 22psi.  |
| 8418.99.00 | 27 | Aluminum finned evaporators, suitable for use in refrigeration systems to 1.030Btu / h, application temperature of -40 to +50 degrees Celsius without its coolant and pressurized with nitrogen gas for protection during transportation, complete with a stainless steel tube incorporating melt strength by thermal radiation with a maximum power of 260W, with 2 or more variable power zones and electrical insulation MgO (magnesium oxide), up to 2 fuses thermal type containing electrical and connectors network, with or without melting trough. |
| 8419.31.00 | 16 | rotating drums for cooling from organic fertilizers, with an output capacity of 7 to 15t / h of cold product, with rotating tube to 5,2rpm provided with: a rotary drum 20G boiler tube driving wheel, gear, pinion support rollers, thrust roller, electric motor 22 to 37kW covering layer, temperature control panel and display in the system programmable logic controller (PLC).  |
| 8419.31.00 | 17 | rotating drums for coating from organic fertilizers, with automatic coating system liquid spray or powder, provided with: a rotary drum Q235B steel boiler driving wheel, gear, pinion, support rollers, thrust roller motor power from 11 to 15kW and control panel for programmable logic control system (PLC).   |

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| 8419.39.00 | 155 | conical type dryers used for thermal separation of solids and liquids by heating via hot and vacuum fluid, made of steel of type AISI 316L, Filter vapors through installed filter element in a heated vertical dome with vase with the same useful capacity or greater than 100 liters, with a helical type stirrer driven by a central shaft with sealing by double mechanical seal cartridge type and heating the shaft and the paddles with system "clean in place" (CIP) circumferentially by rotating boom with charge and discharge valves of the type segmented ball with inflatable seal.   |
| 8419.39.00 | 156 | industrial dryers, semi fast with indirect feed containing fans, exhausters, and part of the electrical panel, measuring and control accessories, independently drying area, maximum production capacity of 1.200ton / day blocks and ceramic tiles and drying cycle ranging from 4 to 12 hours.   |
| 8419.39.00 | 157 | Industrial driers with semirrápido tunnel for drying bricks and ceramic tiles with a drying cycle time of 4 to 12 hours, with a maximum production capacity of up 1.200t / day, drying cameras, each with its corresponding fan with internal ventilation recirculating air every 2 trailers equipped with the PLC to control, through a set of probes, pressure switches, thermostats and the air volume transducers, of emission and extraction, with continuous control of  |
| 8419.40.10 | 7   | Stationary units for generation with distilled water for injection quality (WFI) free of contamination by pyrogens, from water PW type, pre-treated and sanitized used in the pharmaceutical industry for the production of injectable medicines, with 2.000L / h capacity, through multiple-effect distiller, provided with five vertical columns 316L stainless steel roughness less than 0.4 micron RA multiple distillation for the separation of particles by cyclone system using centrifugal force for separating water particles, deslocando- as for the outer wall for drainage and double 180 degree rotation with a pure steam flow directed and forced to 180 degree rotations, thereby inducing the gravitational separation of large droplets of water, with condensing section, pumps pressurization exchanger simple heat STS (single tube sheet), double heat exchanger (DTS double tube sheet), wet steam separator and steam device pure central unit management and control, accessories and instrumentation based on central control panel with |
| 8419.40.90 | 19  | Equipment for recovering aromas, and coffee extract from ground roasted solution with water, assembled in a single structure with the ability to extract flow 7.000L / h, with a production between 75 and 450 L / h, extraction efficiency between 45 and 100% , equipped with: extraction column with rotating cones and alternate stationary steam in counter; exhaust system; bomb; Cooler plate type; Feed tank and pump system; Plate heat exchanger; steam system supply pressure from 0.8 to 1Mpa; condensers and condensate sub-cooler; cyclone and condensate pumps; Water recirculation system; return system for condensed vapor; Automatic cleaning system (CIP); panel and   |
| 8419.50.10 | 50  | Heat exchangers scraped surfaces for ultra efficient freezing liquid by generation of micro ice crystals in pumpable solution composed of multiple plates and scrapers made of stainless steel with a maximum cooling capacity less than 3t / h.   |

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| 8419.81.90 | 125 | functional units for training and food preparation, carrying out operations: training, coating, frying, cooking, composed of: forming machine for forming plates by blows for formatting various products, conveyor curved to transport 600 mm, collector "mass "manually adjustable to suit the application requirements of the" mass "rotary mixing system and a pump for discharging dough (batter) to get a homogeneous and adjustable mixing with intermittent remix cycle to prevent separation of mass and water, equipped with a cooling jacket for temperature control, empanadeira coarse flour with conveyor system and independent adjustment of the upper and lower empanamento layer, operating with different grain flour and excessive breakage reuse system restraint system dust air blower, |
|            |     | cleaning unit and collecting dust in suspension with automatic packaging apparatus dust removed for reuse, flour application unit (empanamento) operating with coarse or fine flour and embedded blower to prevent leakage of dust and performing top and bottom empanamento with adjustments independent breading machines meat products by means of coarse or fine flour with straight infeed conveyor, 2 or 3 and rotary drum speed set for the mats, vibratory conveyor; applicator "tempura" or "mass" operating with submersion mat system with manual speed adjustment and removal of excesses by fan system, conveyor belt with 2,000 / 60AR0mm, conveyor belt in 600mm curve conveyor belt 3.050 / 600mm , conveyor belt in 600mm curve conveyor belt with 3,400 / 600 mm, industrial fryer with belt |
|            |     | carrier for immersion of products in oil heated with height adjustment and belt scraper for removal of waste sludge and floating waste filtering system and recirculation oil with oil temperature control valve, the conveyor belt curved for transporting 2,000 / 600 mm, double spiral kiln 3 with unique cooking stages with independent climate control system for each section of the furnace and horizontal airflow with a "Booster" vertical, technology operating at temperatures up to 200 degrees celsius; Oil filter unit for filtering particles down to one micron product removing sunken sediments and suspended buoyant controlled by electrical control panels and PLC.  |
| 8419.81.90 | 126 | Machines for continuous cooking of pasta noodles for instant capable of 2.016kg / h, equipped with conveyor chain and mass carrier 3 stages within the cooking chamber, two exhaust hood (input and output) and controlled by the  |
| 8419.81.90 | 127 | automatic machines for preparing hot drinks machine (coffee, powdered drinks), with programming for regulating portions of the beverage through "display" and buttons, equipped with RFID reading sensor (optional), the capacity of the hot water tank coffee 0 , 6L, lees 60peças roller (7 g / each), coffee bean container capacity 0.6kg, 2 x 0.6 or 2 x 1.2, a larger capacity container for coffee beans (optional) 1, 2 kg network max pressure water. ~ 6 (0.6) bar (MPa) / (release with water connection) max. 1 ~ (0,1), the ability of instant product container 1.1L, higher capacity instant product container (optional) 1.8kg, 0.6kg capacity of the collecting tray, height min. / Max. supply 80 to 170mm, 2L   |
| 8419.81.90 | 128 | automatic machines for preparing hot drinks machine (coffee, powdered drinks), with programming for regulating portions of the beverage through display "touchscreen", provided with card reader distribution adjustment at 95 to 155mm, up to 60 coffee doses , coffee bean container capacity 2 x 2 x 0.6kg or 1.2kg, instant product container with coffee container capacity at high grain (optional) 1.1kg, container capacity for instant beverages high (optional ) 3kg of the hot water tank 1L capacity coffee, hot water tank vapor 1L capacity, capacity 2.0 L collecting tray, with water pressure at 1 bar min (0,1Mpa), and connection release with water min at 6bar (0,6Mpa).  |

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| 8419.89.20 | 11  | food maintainers equipment previously prepared in environment with automatic and precise control of temperature and atmosphere suitable for the preservation of the organoleptic characteristics of food for long periods of time with maintenance management of the temperature always above the range of proliferation of bacteria, higher capacity or equal to 80 parts (variable depending on the characteristics of the portions), maximum packaging capacity of 10 culinary tanks GN1 / 1 or 10 gastronomic tanks 460 x 330 mm, spacing of anchors 28 or 67mm pots with or without WiFi connection, with or without mounting base (stand device), with or without vacuum system for culinary tanks.  |
| 8419.89.99 | 300 | electrical heaters, with 60Hz frequency, power 755kW, power supply voltage to 480V, three phase, connected in double heating stage to control 144 with resistance heating elements 12.5mm diameter, design temperature 550 degrees Celsius, design pressure 3,50kgf gauge / cm2 with a control panel enclosure type, welded steel, front access by hinged doors with locks, power supply (V / Ph / a / Hz) and the 480/3/908/60 rating 755kW, for the purpose of adjusting the regenerating system to ensure adequate temperature in carrying out the firing step and adequate dispersion of the palladium on the catalyst surface within the process vessel.  |
| 8419.89.99 | 301 | washing stations and post cure for 3D printing processing with cleaning cycles, drying and post curing with UV light, curing systems comprising LED strip 4 with a wavelength of 405nm with a maximum power 52,8W, maximum drying temperature 34.8 degrees celsius and cleaning through the vortex created from electromagnetic current driven   |
| 8419.89.99 | 302 | Combinations machines lyophilized soluble coffee processing, with 98% efficiency for production of 700kg / h lyophilized product with 2.5% moisture from the liquid extract, composed of: Continuous foaming system and pre-freeze ; freezing system for continuous flow of air at -50 degrees Celsius, resulting in the product at -38 degrees Celsius; 2-stage granulating system conveyors, elevators, feeder sieve and granulated coffee extract in aluminum trays, each vibratory; lyophilization chamber with internal and external systems transport elevator tray and vacuum sealing the inlet and outlet of the chamber; refrigerant distribution system at low pressure; complete system NH3 / CO2 cooling with 400kW cooling capacity to -54 degrees celsius, 1.150kW to -49 degrees Celsius, 60kW at -15 degrees Celsius and 36 degrees Celsius 2.600kW; hydraulic system; |
|            |     | defrost system, vacuum system; hot water system; pneumatic system; cold chamber containing air cooling system and granulation; and programmable logic controllers (PLC).   |
| 8419.90.90 | 14  | Finned tubes, suitable for tubular heat exchangers, operating at temperatures 80-420 degrees Celsius, 2,11mm thickness comprised between 25.4 and a nominal 38mm diameter comprised between 57 and fin diameter of 70mm, length comprised between 1,000 and 18,000 mm.   |
| 8421.19.90 | 84  | Horizontal centrifuges used for separation of solids and combustible liquids in industrial operations, maximum power factor equal to 2,000 g, maximum rotation speed equal to 1.700rpm with inerting unit with regenerative braking by the kinetic energy recovery system ( " KERS ") system with" clean in place "(CIP), with a rotor device for back washing (back flushing) with programmable logic controller (PLC).   |

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| 8421.21.00 | 190 | compact water purification capable of ultra purifying and dispensing up to 2 liter / min Water Systems Type I at the point of use, automatic and volumetric form through the flexible dispenser is built into a single unit with the ion exchange cartridge technology , UV lamp, water recirculation purified from the "inner loop" and dispenser for UV ionic and lamp exchange technology, monitor online and in real time the total organic carbon values (OCD), resistivity, conductivity and temperature and is capable of producing purified water with the following characteristics: Resistivity at 25 ° C of 18.2 megaohm.cm, TOC levels <5ppb, bacteriological levels 0,001UFC / ml endotoxin <0,001UE / ml DNase <5PG / ml and RNase <1 pg / ml.  |
| 8421.21.00 | 191 | compact water purification systems capable of ultra purifying and dispensing up to 2 liter / min Water Type I at the point of use, automatic and volumetric form through the flexible dispenser is built into a single unit with the reverse osmosis technology 10 liters / hr, ion exchange, UV lamp seven liters of reservoir water recirculation purified reservoir, "inner loop" and dispenser for ionic and UV lamp exchange technology, monitor online and in real time the organic carbon values total (TOC), resistivity, conductivity and temperature and is capable of producing purified water with the following characteristics: resistivity at 25 ° C of 18.2 megaohm.cm, TOC levels <5ppb, bacteriological levels <0,001UFC / ml endotoxin <0,001UE / ml DNase <5PG / ml and RNase <1 pg / ml. |
| 8421.21.00 | 192 | compact water purification systems constructed in a single cabinet with filter dual-stage technology (10-inch and 10 microns, and the activated carbon filter 10 inch polypropylene filter), reverse osmosis technology, ion exchange cartridge and reservoir 25 liters with integrated air filter, has automatic control filler, temperature monitoring and water quality through a display panel and predefined visual alarm purified water quality, the device can produce up to 8 liters / hour purified water with the following characteristics: resistivity of > 2 and > 10 megaohm.cm and TOC levels  |
| 8421.21.00 | 193 | compact water purification and distribution systems capable of producing between 15 and 30 L / h to distribute 1.5L / min from a source of drinking water, to control the flow and external reservoir with a capacity between 25 and 75L storage, capable of recirculating the purified water from the "loop" and reservoir through the electrodeionization technologies, UV lamp and 0.2 micron filter, to produce purified water with the following characteristics: resistivity at 25 ° C > 10 megohm-cm, levels of TOC <30ppb, bacteriological levels <1CFU / ml, particles 0.2 micron and silica   |
| 8421.21.00 | 194 | aeration modules consist of 57 units (grid), 43 grid with 18m long, 2 grids with 16m long, 8 grid of 13 meters long and 4 grids 6 meters long, metallic structural part for mounting the tubular diffusers 2,066 units composed of total width 2200 mm end (membrane tubular structure +); contains silicone membranes manufactured with high temperature resistance (up to 120 Degrees Celsius) and abrasion perforated throughout their ease with smaller holes 1.4 mm in diameter, allowing occur the process of formation of fine air bubbles through the insufflating air into the aeration modules; tubular structure made of polypropylene nozzles for fixing and wrapping the structural part of the membranes; 1 contains cross bar for lifting (removing) (Transverse-T) of the aeration modules.   |
| 8421.21.00 | 195 | antimicrobial filter cartridge type water in polypropylene material containing anticorrosive biocide chemical compounds and antimicrobial agent (benzothiazol bethaborato and sodium dihydrate) of 5microns, 6,2cm diameter, 2.54 cm internal diameter, maximum flow 3GPM, height 25cm, weight approx 0,23kg, for use in the internal cooling system of linear particle accelerators.   |

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| 8421.29.90 | 166 | driers used for separation of solids and liquids by filtration, type "nutsche" through by pressurization with nitrogen and vacuum compression processes stirring with upward movements descent and rotation in clockwise and anti-clockwise, and drying by heating and vacuum, with the filter medium comprises sintered screen "multilayer" (5 layers) with an opening of 20 micrometers, with chamber capacity 12,500 liters with filtration area of 8m2 with side discharge valve for extraction solid type "seal clean" with programmable logic controller (PLC).   |
| 8421.29.90 | 167 | Filters for continuous processing of thermoplastic polymers consisting of two cylinders 4 and door screens wells (2 wells for each cylinder), automatic backwash fabrics, production capacity of between 600 and 1.400kg / hr, depending on the degree of contaminants, provided hydraulic unit with electric drive for the exchange of screens without machine stop, always remaining 3 wells in operation at the time of exchange (minimum of 75% filtering area guaranteed during operation) system "delta p" to change assessment pressure sensor and to indicate the time of screen switching, temperature PID control, electrical panel, the total filter area of 976cm <sup>2</sup> , cylinders with groove for pre-flooding and gas outlet when changing the filters, maximum temperature of 450 degrees working celsius, maximum working pressure of 500bar, voltage 380V three-phase. |
| 8421.39.90 | 131 | Equipment for the removal of particulate materials present in the exhaust gases of the steam generator in pulp production plant, by capturing particles by electrostatic filter process called electrostatic precipitators for treating recovery boiler gases with steam flow exceeding 450.000kg / h and higher fuel consumption 110.000kg / h under the conditions of 70% load and 85% black liquor; and power boiler with a steam vent 130.000kg / h, and higher consumption of biomass 50.000kg / h; where: recovery boiler with three modules in parallel to each four courses, gases design temperature 250 degrees Celsius and concentration of particulate material or less after treatment 20mg / Nm <sup>3</sup> to 8% of oxygen volume, dry basis; power boiler with a module with three fields, design temperature 250 degrees Celsius and concentration of particulate matter      |
|            |     | or less after treatment at 50 mg / Nm <sup>3</sup> to 8% of oxygen volume, dry basis.   |
| 8421.99.99 | 88  | nylon filter mesh rolls 15 microns with approximately 145mm outside diameter and thickness of 37,5mm, applied on a mandatory fluid filter in infusion equipment of drip chambers.   |
| 8421.99.99 | 89  | Filter cartridge type elements in the form of a "cartridge" suitable for use in filters water purifiers for domestic use pressure with activated carbon granules, silver ions and a barrier micro and extruded nano-fiber blown polypropylene made with technology "Meltblown" retention of clay particles, rust, sand, particles sediment, algae and other particles with sizes from 5 to 15 microns with efficiency greater than 85%, and free chlorine reduction with efficiency greater than 75% capacity inhibiting the growth of bacteria (microbiological control level) lifetime 6 months or 3,000 liters   |
| 8421.99.99 | 90  | Filter cartridge type elements in the form of a "cartridge" suitable for use in water purifiers for domestic use pressure with activated carbon block and membrane fiber ultrafiltration, retaining of clay particles, rust, sand, silt particulates, algae and other particles having sizes of 0.5 to 1 micrometer with equal to or greater than 97% efficiency, ability to inhibit bacterial growth (microbiological level of control) and reduction in the number of bacteria (bacterial efficiency), life Review 12 months or 3,000 liters without prewash.   |

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| 8422.20.00 | 38  | Machines tunnel-type washing and drying pans with a maximum capacity washing and drying to 27 assadeiras / min with programmable logic controller (PLC), stainless steel structure in double walls with insulation without use of chemicals for washing and drying the roasters, provided with cycles: pre-wash, wash, pre-soak, rinse and drying, rotary self-cleaning filter and self CIP washing program.   |
| 8422.20.00 | 39  | Modular washing machines, automatic and multi-task to wash and dry forms (mold) made of polycarbonate chocolate "Makrolon", and plastic boxes with capacity for washing between 128 and 507 formas / h, or between 234 and 585 caixas / h, with two adjustable cleaning tracks and endless belt transport of stainless steel, provided with: input box with splash zone; pre-wash zone with pressurized water and working temperature controlled between 50 and 55 degrees Celsius; washing zone equipped with stainless steel regenerator for reuse water, working temperature between 55 and 65 degrees Celsius and heat recovery system; rinse zone with fresh hot water (75-92 degrees Celsius) with water collector tank for reuse; 2 drying zone by blowing preheated air and splash box; outlet zone of the mold; detergent dosing device with inductive conductivity probe; controlled by the PLC and HMI display. |
| 8422.30.21 | 99  | Machines for bagging products in powder premixes for animal feed; with capacity of up to 750 sacos / h and palletizing 1.500 sacos / h; with automatic bagging system; with automatic palletizing system; Sewing with integrated automatic system for closing filled bags and programmable logic controller (PLC).   |
| 8422.30.21 | 100 | Automatic packaging machines for filling packages of the type "big bag" with granular fertilizers, unitary filling capacity with minimum and maximum of 500kg to 2000kg, and a production capacity of 120 t / h, controlled by programmable logic controller (PLC) and man machine interface (HMI), with dust reduction system, compressed air system provided with two holders for packaging rolls, automatic balance for product weighing two semicircular clamps for clamping the package, air blower for forming the package and filling material, closing device for the entrance and automatic packaging conveyors for displacement of "big bags".   |
| 8422.30.29 | 850 | Machine combinations to fill and encartuchar flat bags (sachets) with cosmetic creams, composed of: automatic horizontal machine for dosing and seal flat pouches (sachets), formed from films coils accordance sealable with a maximum diameter of 500mm x maximum width 450mm x core diameter of 70 / 75mm, maximum mechanical capacity equal to 180 sachês / min x volume of 90cm <sup>3</sup> each sachet with simultaneous dosing dual system for the production of sachets with dimensions of 50 x 70 mm 90 x 225mm, synchronized with 1 automatic horizontal encartuchadora machine for grouping sachets in cardboard cartridges weight of 254 to 508g / m <sup>2</sup> and dimensions of 40 x 15 x 67 mm 140 x 75 x 180mm, maximum speed cartoning of 50 cartuchos / min, including respective input conveyors and output, and 2 programmable logic controllers (PLC) with human-machine interfaces (HMI).         |
| 8422.30.29 | 851 | Combinations of automatic machines, connected physically and electrically utilized to lock and application tape width equal to or greater than 50 mm but equal to or less than 70mm in cardboard boxes of minimum dimensions 300 x 250 x 140 mm (L x W x a) and maximum 700 x 700 x 660mm (L x W x H) with conveyor, with sensors for automatic identification of the height and width of box, composed of: machine for applying adhesive tape to the central and upper and lower parts central box; machine for applying tape 4 ends in the box.  |

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| 8422.30.29 | 852 | Machines for applying adhesive labels on pots (bottles) plastics 25, 50 and 100 ml with diameters between 50 and 100mm, with operating speeds up to 180potes / min (maximum speed up to 200 jars / min), provided with: table 7 accumulation of 3.000mm x 750mm lanes 4 and product detector photocells and sensors; 2 label application heads on the linear part, superior for application to the pot lid and a bottom for application to the underside of the pot preparation for without further label stop in the cylindrical plastic bottle, antistatic devices, automatic control of dispensation labels, two cameras for quality control of the touch panel with vision system 18 inches, with a camera to bottom and the other for top, motorized upper belt to the lower label 2 powered side belts with manual positioning and manual adjustment in applying the lower label carrier, |
|            |     | with interlocked doors, feed screw; 2 label application heads on the rotating part for applying front and back of the pots with redundant system, with transfer star labels preparation for the front and rear non-stop, automatic control dispensing of labels; 1 camera for quality control vision system for labels front and back panels dedicated to each head, "servodrivers" in each head, main electric motor controlled by an inverter, general panel of the machine, rejection systems, with pneumatic system equipped with air handling unit and a "by-pass" carrier for the rotatable   |
| 8422.30.29 | 853 | potting machines glycerin suppositories, and with the following stages; forming wells in aluminum film, heating device, filling glycerin suppositories, cooling device for solidification of the product, the sealing device of the package and cutting, equipped with programmable logic controller - PLC, pre-disposition to thermoplastic moldable with a maximum capacity of 5.000unidades / h.   |
| 8422.40.90 | 952 | automated double Encaixotadeiras to box end product in flexible packaging for display of boxes and box the display of cartons in transport boxes with 240embalagens capacity / min, provided with: double mat entrance flexible packaging for two types of finished product 1 robot spider for handling the flexible packaging magazine for forming showcase boxes 6-axis robot for manipulating the display of boxes conveyor for entry already formed transport boxes 6-axis robot for handling the shipping boxes, systems cars for positioning the boxes with electromagnetic drive, individually controlled car by position, mounted on rails, controlled by programmable logic controller (PLC) and monitor "touchscreen" for operation and programming.  |
| 8422.40.90 | 953 | Automatic or semi-automatic packaging machines, cans and / or bottles with NMP packaging technology (Nature Multipack), with the formation of the package by application of hot glue without using plastic film envelope, provided with: input modules in two ways; orientation of the container system; application system of hot glue and the glue drying station; with or without the application packet division module and handles; a speed exceeding  |
| 8422.40.90 | 954 | Combinations of automatic machines for aligning, group, slicing and packaging hamburger buns containing maximum up 30pães / package equipped with programmable logic controller (PLC), Human Machine Interface (HMI), metal detectors, slicing rolls, wrapping for plastic film for packaging, aligner conveyor rolls, packages wrapper, plastic trays and feeder line integration carriers.  |
| 8422.40.90 | 955 | Automatic to compress and wrap molejos for mattress machines in rollers molejos with a maximum thickness of 18 or 20 cm, a maximum width of 200 cm, maximum length 220cm, speed of 8 minutes / roll maximum diameter of the roll over 70cm, with coil holder paper "craft" or non-woven fabric for packaging molejo.  |

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| 8422.40.90 | 956 | Combinations of automatic machines for packaging medicines, with programmable logic controllers (PLCs), human-machine interface panels (HMI) with display type "touchscreen" and automated control systems, composed of: emblistadeira machine to form, fill and seal cartouches type blister pack, capable of working with aluminum, Aclar, PVC and PVDC, maximum production capacity of 500blisters / min, simultaneous feeding system and coordinate tablets and capsules for multiple colors in the same blister data printer variables in blister cartouches, mat transferring blister continuous vacuum, and inspection of the blisters through cameras and a cartoner machine reciprocates with a maximum output capacity of 80cartuchos / min for cartridges with maximum dimensions of 150 x 80 x 250 (length x height x width ), automatic feeding station of cartridges, |
|            |     | Automatic feeding station of the blisters with the possibility of placing two different blisters in a same cartridge, bending and insertion system inserts the cartridges, cartridges closing station with hot glue.  |
| 8422.40.90 | 957 | automatic packaging machines; with carrier entry table, with rotation of the belt drive ring; Roller door coils rubbed with a speed of 130rpm, coil height 250mm; together with pneumatic clamp and cut cold-set drag with treadmill at the entrance and exit of adjustable height conveyor 800 to 1.100mm; side guide at the entrance and exit, presses together with the inlet and outlet; Product speed 29m / min with variable speed during the wrapping; with control panel with screen "touchscreen".   |
| 8422.40.90 | 958 | Automatic vertical and continuous packaging of high-speed machines with volumetric dosage, to form, fill and seal packaging sachet type 4 welds, for semi-dense bundles with 16 production runs, with doser 8ml, with 1280 production capacity sachets / min of variable dimensions 37mm width and height from 90 to 100mm.   |
| 8422.40.90 | 959 | Machine embrulhadeiras spherical lollipops hard candy mass (with or without filling) with 32mm diameter and weighing 24, 26 or 28g each unit of tubular shaped plastic rods provided with retaining notches measuring 3,40mm in diameter and 85mm length each, using coiled plastic films with 35 to 45g / m <sup>2</sup> weight, to be cut to be applied to the maximum width of 140mm and a length between 63mm and 140mm, under continuous action, for wrapping the speed 700peças / min, using double twist on printed plastic films used for packaging and end sealing of these around the rods via induction heating, carrying automatic splicing coils without machine downtime unit, cooling unit of the electric cabinet and the servo converters, unit control by photoelectric registration for proper placement   |
|            |     | printed film on the lollipop, virtual network connection unit through standard communication methods for machine operation for a laptop or a personal computer, and UPS (uninterruptible power supply) integrated to 24VDC power supply, emergency in unscheduled downtime situations.  |
| 8422.40.90 | 960 | Machine embrulhadeiras spherical lollipops hard candy mass (with or without filling) with 26mm diameter and weighing 12 to 17g each unit of tubular shaped plastic rods provided with retaining notches measuring 3,40mm in diameter and 85mm long each using coiled plastic films with 35 to 45 g / m of basis weight to be cut to be applied to the maximum width of 140mm and a length between 63 and 140 under continuous action, for wrapping the speed 800peças / min, using double twist in printed plastic films used for packaging and end sealing of these around the rods via induction heating, carrying automatic splicing coils without machine downtime unit, cooling unit of the electrical cabinet and slave converters control unit for photoelectric registration for positioning appropriate movie  |

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|            |     | printed on the lollipop, equipment with modem (modulator / demodulator) for direct connection Client / manufacturer, and UPS (uninterruptible power supply) integrated emergency DC 24V power supply in situations unscheduled stop.  |
| 8422.40.90 | 961 | automatic wrapping machines with rotating ring of 4 columns for wrapping pallets of different sizes, with film thickness between 17 and 23microns; film roll dispenser with a motorized pre-stretching system via magnetic sliding without friction; maximum dimensions of the coil head 750mm wide, 250mm diameter and weigh up to 26kg; maximum capacity exceeding 100paletes / h; automatic exchange coil; with or without a top support device and with or without device for reducing the height of the film.  |
| 8423.30.19 | 13  | automatic weighing machines animal protein measurement (cattle, pigs, sheep, poultry, fish and / or seafood) "in natura", provided with dish dispersion with 14 or 20 dosing screws driven by motors step, with 2 or 3 levels of buckets metering driven by stepper motors 14 and 20 weighing units using a load technology "Double-Beam Strain Gauge" cells with a capacity to head for weighing 400, 800 , at least 2,000 or 4.000ge degree of 0.1, 0.2, 0.5 and 1g, manufactured with protection IP67 or IP69K index with or without timer hopper; with or without a camera to visualize the distribution of products in the course of dispersion with the HMI display with man machine interface (HMI) panel type "touchscreen" colorful 12.1-inch and "software" dedicated with capacity of up to 200 recipes.   |
| 8424.30.10 | 63  | washing and greasing equipment with dual system for washing and greasing cubes truck brakes, automatic equipment w / waste tank fitted, the input voltage up to 220V 60W and strength.  |
| 8424.30.90 | 98  | Nozzles hand, for fire fighting, made of brass, aluminum or plastic, connection 1/8 to 4 inches, or spigot type "Storz".  |
| 8424.30.90 | 99  | Combinations of machines for machining the pressure chamber of the nozzle and stem diameter nozzles used in compression ignition engines, consisting of: own automated station for cleaning and preparing pieces; automatic feeding system by sequential trays; Electro erosion station via electrolytes in the temperature range of 41 +/- 2 degrees celsius, with pressure 1bar +/- 8, +/- 0.5 pH 6; salt concentration of 20% +/- 2%; flow rate between 1.5 to 3m3 / h; neutralizing station after metal parts electro erosion process, by anti-oxidation and removal of chemical stripping process; with automated feeding system; Three-phase supply voltage of 230 to 400V AC, 60Hz frequency   |
| 8424.30.90 | 100 | Functional washing units, clearance, grinding and drying automotive parts, consisting of: two CNC washers with high-pressure jet, with or without brush and reamers with maximum pressure 35Mpa water (approximately 350bar) and maximum flow 29L / min, 6-position turret for the installation of cleaning nozzles and / or tools with movement of the X axis 650mm, Y axis 500mm and Z axis 400mm, with rapid advancement of the axes X, Y and Z 40m / min with main spindle with a maximum rotational 1.000rpm and power of 0,75W engines with numerical control (CNC), water pumping system high pressure and filtration unit; Vacuum dryer 1 with CNC control, power of 5,5kW and lower torque pressure 10 Torr; One industrial robot with 6 degrees of freedom, with articulated arm with a load capacity of 210kg with handling grips with pneumatic controls; treadmill |
|            |     | parts transport PZR and about safety lock.  |

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| 8424.30.90 | 101 | robotic devices with telescopic equipment for water jetting high-pressure / ultra high-pressure jet area capacity of 2,000 x 2,000 mm with a maximum capacity of 3.000bar 80 liters / min, 600N force Rewind nozzle beam 150mm 240mm and cross nozzle, regulation of rotation speed, minimum speed and maximum speed 132rpm 1.200rpm; cable for power supply 400V / 50Hz / 16A / 2.5 m, internal thread M26 / latch quick, controladaos per panel with emergency button, "and drive on / off", set of wheels to drive, equipped with rotation kit electrical, demolition and kit dihydro assessórios for soil water jetting.  |
| 8424.89.90 | 400 | Washing machines engine blocks diesel capable of washing parts up to 350 kg, provided with: Detergent store 6,500 gallons of tank heated up to 55 degrees celsius and filtering systems for recirculating detergent having immersion washing stages with parts of the rotation system for removal of particulates and or contaminant impregnated internal galleries, external rinsing system for pressurized nozzles, directed cleaning system for removal of particulates and or contaminants within the holes, oil galleries, fixing holes and settlement of covers the bearings located on the crankcase side pressures up to 300bar meeting standards of cleanliness according to ISO 16232: 2018 ensuring the extraction of particles equal to or smaller than 600 micrometers and maximum 3mg of metallic particles, pre-drying system with laminate blowing mechanism part rotation system to remove |
|            |     | Excess liquid on the external walls, drying system vacuum chamber for evaporating liquid contained in internal bores and galleries may reach up to 960mbar and negative cooling chamber for equalizing the temperature of washing can 12peças parts / hr.   |
| 8424.89.90 | 401 | engine head washers diesel engines able to wash parts of up to 350 kg, provided with: tanks 6500 liters detergent storage heated up to 55 degrees celsius and filtering systems for recirculating the detergent having immersion washing stages with parts of the rotation system for removal of particulates and or contaminant impregnated internal galleries, external rinsing system for pressurized nozzles, directed cleaning system for removal of particulates and or contaminants within the holes, oil galleries, guide and seat the seat valves located in the combustion face with pressures up to 300bar meeting standards of cleanliness according to ISO 16232: 2018, ensuring the extraction of particles equal to or smaller than 600 micrometers and maximum 18mg solid particulate, pre-drying system with laminate blowing mechanism system part of rotation to remove excess liquid    |
|            |     | the outer walls, drying system vacuum chamber for evaporating liquid contained in internal bores and galleries may reach up to 960mbar and negative cooling chamber for equalizing the temperature of the parts washer capable of   |
| 8424.89.90 | 402 | Machine axis washers commands diesel engine, capable of washing parts up to 35kg and a maximum length of 1,200 mm, provided with: reverse osmosis unit for water treatment baths stored in heated tanks up to 45 degrees Celsius and systems filtering for recirculation detergent having immersion washing stages with pieces of rotation system for removal of particulates and or contaminant impregnated internal galleries, external rinsing system for pressurized nozzles, pre-drying system with laminate blowing mechanism part rotation system for removing excess fluid on the outside walls, drying system vacuum chamber for liquid evaporation contained in internal galleries and holes reaching up to negative 960mbar and cooling chamber for equalizing the temperature of the pieces can 60peç   |

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|            |     | cleaning according to ISO 16232: 2018 ensures cleaning piece with particulate limit equal to or greater than 400 microns and a maximum 3mg of metallic particles.   |
| 8424.89.90 | 403 | Fog guns to reduce the emission of particulates (dust) in industrial yards, with projection range exceeding 110m, air flow exceeding 240.000m <sup>3</sup> / h containing water sprinkler outlet pressure equal to or higher to 15bar (approx. 15 kgf / cm <sup>2</sup> ) capable of spraying water droplets (mist) of size between 90 and 150 micrometers.   |
| 8424.90.90 | 73  | Rigid bodies in tube form, made in plastic material with the addition of polyamide fiberglass for strength, ability to withstand pressurized water to 41MPa, with a wall thickness of 3,05mm with its ends shaped to coupling fittings various pressure washer without the use of tools for use in high pressure cleaners, or made of alloy copper-zinc material (brass) used in professional triggers for water sprinkler, the body responsible for water entering the gun and an output directing the jet with shape which permits simultaneous connection of accessories such as high-pressure hose and spray nozzle through threaded M22 x 1.5 for exclusive use in high pressure cleaners. |
| 8424.90.90 | 74  | Flanges integrated engine, made of aluminum alloy, with integrated format for coupling the motor shaft bearing ring scraper and lubricant for continuous lubrication of this bearing without risk of leakage with distance from the motor coil of at least 5mm.   |
| 8424.90.90 | 75  | Pistons, or together unit made of stainless martensitic steel resistant to corrosion and wear of medium to high hardness, diameter 14 to 20mm, length 72,3mm, hardness of approximately 56 Rockwell "C" ring made of steel is attached latch with high carbon and chromium, and shoe made of brass to determine the course of piston work, for exclusive use in high-pressure washers.  |
| 8424.90.90 | 76  | Doors nozzle 1 inch. (D = 33,3mm) composed of retaining diaphragm valve type 0,55bar (8psi), with a flow rate of 9.84 gpm (2,6gpm), pressure drop 0,345bar (5psi) bayonet-style connection with 3 types of tower, one-way, 3-way and 5-way, dry or wet bar and positive closure.  |
| 8424.90.90 | 77  | Tips spraying, polyacetal, flexible spray pattern of 110 degrees air induction unique tilt angle size of the variable edge (03-05; 015; 025; 035), pressure range 1C8 bar (20c115 psi) .  |
| 8425.11.00 | 2   | Automatic guide rope systems, comprising two winches electric motor and control module used during installation of wind blades for high load stabilization by the crane; 40kN capacity of the winches dimension 1284 x 849 x 1.920mm, 220m chord length, braking force 17,8t, Working temperature -20 to +40 degrees Celsius, noise level 25 dB (A); may or may not contain aluminum base to accommodate the hooks.   |
| 8426.12.00 | 8   | Self-propelled gantry on tires driven by diesel engine, controlled by wireless remote control by radio frequency to dry in place, transport and back to the water craft maximum load 200t, maximum width (mouth) of 11m and internal headroom of 10.4m (with reference to the underside of the beam structure), lowering of hoists which are tied to the lifting straps 1.5m negative, and the ground level as a reference, the ability to move fishing boats and tugs up to 23m in length and yachts and boats up to 40m long.   |

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| 8426.41.90 | 131 | hydraulic manipulators for handling, handling, transport and towing loads, equipped with own deck access the service area to perform maintenance, self-propelled, on wheels with inflated rubber tires, driven by diesel engine with power equal to 186kW, endowed 2-axle and 4-wheel drive, with directional front axle and rear oscillating assembly equipped with hydraulic locking device automatically actionable with front blade path to the cleaning area, maximum turning radius of 6.5 m, hydrostatic transmission with traction maximum trailer to 120kN function controlled by "joystick", adjustable or fixed booth with sliding door opening, the front articulated arm working in two parts with a maximum vertical range of 12m and maximum range of horizontal 12,12m with the lower arm hydraulic cylinder |
|            |     | arm, with an operating weight (without accessories) greater than or equal to 45t, but less or equal to 51t, equipped or not with work accessories, such as hydraulic grab for wood and / or hydraulic grab for grain and / or between other .  |
| 8427.20.90 | 242 | self-propelled wheeled vehicles, for lifting, transportation and storage of cargo, type all terrain, with telescopic boom attached to the rear of the vehicle, equipped with fork stacking driven by diesel engine, boom lift with between 10 and 16,70m, horizontal range between 7.2 and 12,85m with a load capacity of 3,200 and 4.000kg.   |
| 8428.32.00 | 2   | Bucket elevators intended for transportation of bulk material with a maximum temperature of up to 130 degrees celsius, with steel cord belt with open areas between the cables for attachment of the containers with a capacity of 130 to 2.350m <sup>3</sup> / h; with a drive shaft, provided with a drive drum; 1 or 2 with drive units (electric motor, couplings, gearbox main and / or auxiliary); with a drum shaft and stretching rods; with head structure composed of chimneys (in modules to 3m) frames guide plates and spacer leg lift; with or without distribution chute; for vertical transport with elevation (wheelbase) of up to 200m.  |
| 8428.33.00 | 78  | volumes classifiers carriers of up to 50kg and up to 1,500 mm of compliance with drive through "OptiDrive" (engine with traction and braking system friction wheels) or LSM (linear synchronous motor), action continues computerized with one or more control panels, with cross mats triggered belt technology and can have 1-3 transverse mats based segment (stand) with speeds up to 3m / s and power transmission and communication without contact, receives volumes through induction lines, and technology to weigh cube volumes and read the labels infrared camera and / or RFID (radio frequency tag) with several output positions may be supported by metal brackets such as "feet" or "portal" or in metal mezzanine structure.   |
| 8428.39.90 | 255 | Machines for unloading blocks, continuous action, to movement by robotic grippers capable of operating with maximum weight not exceeding 500 kg, provided with current table, device tire selector alignment and chain conveyor, integrated with or without respective electric motor rotor squirrel cage induction, power equal to or less than 3CV / HP unit value (CIF) not exceeding US \$ 773,687.90.   |
| 8428.39.90 | 256 | Machines for stacking blocks, continuous action, with movement through robotic grippers capable of operating with maximum weight not exceeding 800 kg, provided with the conveyor rollers; Table currents and pneumatic selector alignment device integrated with or without respective induction motors for squirrel cage rotor power equal to or less than 3CV / HP unit value (CIF) not exceeding US \$ 773,687.90.   |

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| 8428.39.90 | 257 | for automatic continuous feeding and distribution equipment up to 15 t / h of French fries with frequency offset from self adjustable flaps devices and nonstick direccionadoras flow; with 1 degree of slope and frequency vibratory devices 890rpm, higher separation screen # 4 mesh and device for removing crumbs with sliding door and shot   |
| 8428.39.90 | 258 | collection equipment and transportation of waste through mechanical chains, electrically driven, with electrical drive power of 2.2kW, carrying capacity up to 0.4t / h and maximum working temperature of 1,100 degrees Celsius.   |
| 8428.39.90 | 259 | machine combinations for transportation, transfer, collection and distribution of potatoes, with a capacity of 52T / h, consisting of: transfer agitator with direct feed and dimensions of 4.150mm bed (C) x 1.864mm (L), stainless steel rung to help spread the product received angular discharge LD 1.045mm, unibody frame, 7/16 inch stroke and 890rpm, collecting stirrer direct feeding and dimensions of 2.453mm bed (L) x 1.467mm (L) , stainless steel, direct discharge monobloc framework course of 7/16 inch and 890rpm, distribution shaker with dimensions of 8.705mm bed (L) x 1.843mm (L) stainless steel stair to provide a uniform distribution the product discharge angle LE 3772mm, 7/16 inch stroke and 890rpm. |
| 8428.39.90 | 260 | Agitators transmission and distribution of potato strips with 52T / h capacity, with bed dimensions of 3,867 (C) x 1.717mm (L) stainless steel pneumatic sliding gate total width of 1.371mm, rigid rails angular discharge to deliver the product through different paths via retractable door opening and closing flap, direct discharge stroke 7/16 inch and   |
| 8428.39.90 | 261 | continuous action binder conveyor, type tray with pusher for ejecting the articles "pusher tray" for volume to maximum load of 5 kg, with an area for manual input volumes rails for internal and external outputs of the volumes system "pinball" rejection chutes, sensors, programmable logic controller (PLC), GUI computer system and control  |
| 8428.39.90 | 262 | continuous action conveyors with belt rotating rollers with ARB technology "Activated Roller Belt", for transport and organization of packages weighing up to 25kg / volume, with structures.   |
| 8428.39.90 | 263 | Carriers continuous mat action classifiers with rotating rollers and compensation rollers with DARB technology "Dual Stacked Angled Roller Belt", for positioning and targeting volumes with maximum weight of 25kg / volume, "scanners", sensors, deviations rails , structures, pneumatic devices, electrical panel and programmable logic  |
| 8428.90.90 | 656 | autonomous guided vehicles laser (LGV), for handling and transportation of pallets and other loading unit may load, transport and unload from 1 to 4 pallets simultaneously and other loads with roller conveyors or chains for automatic loading and unloading of pallets and other loads, with a capacity of 3.000 to 5.400kg, with a maximum speed of 1.5 m / s, with four steerable wheels 2 being free to drive and 2 can move in four directions, the laser navigation system, powered by batteries lithium with automatic loading system in-line induction, equipped with electromechanical safety devices and optical proximity sensors, controlled by a computerized system technology "wireless" (WI-FI).                     |
| 8428.90.90 | 657 | automatic action carrier discontinuous for motor vehicle body, horizontal displacement, having displacement system on fixed rails on the ground, consisting of multiple profiles of steel rails S and H in straight versions, bent and forked, pulled by electric motors but presented devoid thereof; devices called "stoppers" to brake the movement of the system by electric motors of 0,04kW, pneumatic locking system of the body, complete with system automation devices (PLCs, control panels, 0,37kW inverter).   |

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| 8428.90.90 | 658 | Equipment for storage and automatic parcel delivery, based on robotics, with a storage capacity of up to 400 orders in 5,4m <sup>2</sup> , with an average speed of search and delivery of orders 12s, with touch screen user interface, containing two scanners 2D, motion detector, security blinds, security cameras, order entry door with automatic measurement of height, package lift eight storage columns, digital signage screens and single size storage trays for all orders with maximum dimensions of the order of 600 x 400 x 400mm.   |
| 8428.90.90 | 659 | Machines for storing cigarettes with filters (buffer) with absorption system of speed variation of the previous machine and later, PLC, while maintaining uninterrupted production, capable of storing 160,000 tobacco rods with filters output speed of 20,000 cigarette filter rods with p / min, main frequency 60Hz, rated voltage of 380V, the total installed power of 5 kW and connected to compressed air load 3,5bar.  |
| 8428.90.90 | 660 | Mounting beam type devices, and automated custom designed for exclusive use as a lifting device, positioning and fixing of the coupling system of the wind blade sections (joint pin); It has load capacity of approximately 1 ton, three stages of assembly (complete beam root section, the tip section), the length of the full set of 14,81m; powered by integrated PLC for control of actuators 12 and 12 integrated in the SWAC receivers (Web Shear Alignment Clamping) for alignment, positioning and clamping to control by remote control; 4 provided with radial pins guides the gripper type which allow the orientation of the device coordinates of four axles and two axial guide pin claw type. |
| 8428.90.90 | 661 | Carriers classifiers several volumes, type tray with impeller for ejecting volumes "pusher tray", with capacity to sort 8.426bandejas / h, with an area for manual input volumes, gutters for output volumes classified system "pinball", gutters rejection, sensors, programmable logic controller (PLC), GUI computer system and control cabinet.   |
| 8428.90.90 | 662 | rotating tables with handling capacity of 7.000kg (70KN) with degree of protection IP64 (only servo motor) static torque with up to 17kNm, rotation 0 to +/- 180 degrees, positioning accuracy of +/- 15arcseg , provided with a rotary plate to attach the equipment to be positioned with systems that allows working in conjunction with an industrial robot, a work temperature of 10 to 40 degrees celsius maximum rotation angle of 48.6 (deg / s) , rotation time at 180   |
| 8429.40.00 | 57  | Soil compaction rolls, self-propelled, with smooth vibratory roller in front of two amplitudes and frequencies and two in the rear tires, endowed diesel engine with a power of 100kW and 134HP, with a maximum operating width and weight 17.060kg compression 2.140mm with pivot 3 points, adjustable scraper, automatic traction control, anti-slip control with ascending power of 53%, operator's platform with access from both sides, has dashboard with indicators, control lights and switches, pre- selecting the speed, direction of hydrostatic drive infinitely variable and the operator station to adjust the steering column.   |
| 8429.40.00 | 58  | Soil compaction rolls, self propelled with type vibratory roller sheep's foot in front of two amplitudes and frequencies and two in the rear tires, endowed diesel engine with 100kW of power and 134HP, with a maximum operating width and weight 15.870kg 2.140mm of compression, with pivot 3 points, adjustable scraper, automatic traction control, anti-slip control with ascending power of 58%, operator's platform with access from both sides, has dashboard with indicators, control lights and switches, pre-selecting the speed, direction of hydrostatic drive infinitely variable and the operator station to adjust the steering column.  |

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| 8429.40.00 | 59 | Roller compactors, self-propelled, single cylinder (singledrum) vibration, equipped with a diesel engine with an output of 276kW, with drum width of 2.400mm and operating weight less than 33.500kg.   |
| 8429.51.19 | 24 | Loaders revolvedoras-carriers, front-loading, power 37kW wheel, operating weight 6.800kg, bucket capacity of 0.7 to 1m <sup>3</sup> , payload 1,300 to 1.800kg, discharge height 2.510mm maximum, minimum floor height 290mm, length 5.790mm, 2.140mm width, height 2.920mm, transmission type "power shift", hydraulic torque converter with a single stage of three elements, automatic gearbox, axle with planetary reduction, power steering with articulated chassis, brakes disc with hydraulic drive on all 4 wheels.  |
| 8429.52.19 | 71 | Mini - self-propelled hydraulic crawler excavators, with superstructure capable of performing 360-degree rotation, a rotation speed of 11rpm above, net power 73 to 79HP, maximum digging depth of 4.140mm, crowned capacity of the standard bucket 0, 36m <sup>3</sup> , operating weight of 8.300 to 8.600kg, 75,2kN maximum force of traction, maximum travel speed of 4.5 km / h.   |
| 8429.59.00 | 54 | Multipurpose loader machines, compact, articulated and self-propelled, on tires, 4-wheel drive, each wheel with its own hydraulic motor, the hydrostatic transmission controlled by pedals, auxiliary hydraulic system 34 to 80L / min and a pressure of 185 to 225bar with motor diesel 16 (22cv) to 42KW (57cv), with external turning radius of the tires of 1.970 to 2.990mm, equipped with telescopic arm driven "joystick" lift height of 2,750 to 3500mm, quick mechanical coupling between the arm and the accessory attachment hydraulic system via the Multi which simultaneously connects all hoses and electrical power to the accessory tipping load of 1.900kg to 550 (55-77% of the operating weight), with access to the left side of the operator's cab machine. |
| 8431.10.90 | 2  | Sets for locking the wind turbine rotor consisting of primary and intermediate girders, fixing screws and bolts, rings and mounting plates, which may or may not contain two hydraulic cylinders capable of urging to 25t, the first electric hydraulic pump with 2L reservoir and 700bar pressure limit, as textile auxiliary components slings, loops rotating, lifting bags, pins and latches.   |
| 8431.20.11 | 80 | PCB electronic control units for electric forklifts, with variants of CPP modules, CIO or RPP, with signal connectors and / or power with up to 20 poles and CAN-BUS communication.   |
| 8431.20.11 | 81 | Drive controllers for transpaletiras and / or forklifts and / or tugs with PCB (printed circuit board) with rotary handle direction, climb buttons and descent with variable voltage control, horn activation button coupled to housing polymer, with or without HMI display operating voltage of 12 to 36VDC; Max consumption. 4,5 <sup>W</sup> ; CAN interface with a transmission rate 500Kbit / s operation temperatures between -32 and +70 degrees Celsius; minimum protection  |
| 8431.20.11 | 82 | power steering units for forklifts and / or transpaletiras, and / or tugs with gearbox without carbon brush motor and electronic controller embedded, integrated position sensor, 24V rated voltage, rated speed 100 rpm, 185W power, minimum degree of protection IP54 , insulation class F.   |
| 8431.43.90 | 86 | Example 086 - Coating protective shirts with the function of protecting the section bearing the production well drilling motor or exploitation of hydrocarbons containing stabilizer blades, connections with the threaded pin and box, with diameter between 4.750 inches and 11.750 inches manufactured alloy carbon steel.   |

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| 8431.43.90 | 87 | pressure compensators responsible for equalizing the internal pressures and annular used in drilling exploratory oil wells, cylindrical tool 316 made of austenitic steel and has a diameter ranging from 43 to 83,6mm and a length of   |
| 8431.43.90 | 88 | Adapters shaped connector responsible for connecting two measuring oil wells tools to make the measurement of weight and torque on the column in drilling operations, made of alloy nickel Inconel 713 has a diameter varying from 44 to 51mm and a length of 295 438mm and with or without compression spring.  |
| 8431.43.90 | 89 | Accommodation for weight transfer rings with diameters between 156 to 202,2mm and 337,8mm length between 265 and equalize and cushion responsible for the weight and shock during the drilling of oil wells being made of stainless steel SAE Type 630, which is a stainless steel type hardened by martensitic precipitation.                                       |
| 8431.43.90 | 90 | Clamping plates, responsible for guiding the hydraulic fluid that drives the pistons direction of the oil well drilling equipment as well as support it, made of stainless steel SAE 630, with a length of 20 to 30,1cm, width between 10 and 20,4cm and height between 1.5 and 8 cm.  |
| 8431.43.90 | 91 | Pistons direction, responsible for promoting contact with the training that gives direction to the well, made of stainless steel SAE 630-coated tungsten carbide inserts, with a length of 14 to 20.5cm, width between 9 and 20,1cm and the height between 2 and 10 cm.  |
| 8431.43.90 | 92 | contact plates and support for orientation of the oil well and is responsible for maintaining the same diameter, stainless steel SAE 630 manufactured and coated alloy Inconel 625, with a length of 4 to 16.5cm, width between 9 and 22cm and time between 3 and 9 cm.  |
| 8431.43.90 | 93 | protection and stabilization for modulators shirts and turbines, turbines and responsible for stabilizing modulator thus protecting the shaft seals, made of 21 chromium-cobalt alloy or nickel-copper alloy with 28 to length and diameter of 63,5cm 12.9 and 17,1cm.   |
| 8431.43.90 | 94 | hydraulic flow diversion units, responsible for guiding the hydraulic flow and also house electrical contacts for real-time communication used in drilling and measuring exploratory oil wells manufactured from 17-4PH steel and carbon coated titanium alloy part, with a length of 21.5 to 13.1 between diameter and 28,5cm and 15,2cm.                           |
| 8431.43.90 | 95 | flexible centralizers, with a diameter between 5 and 26 inches, made of carbon steel, single sheet and without welds, used to maintain centralized coatings in oil wells, assisting effective cement placement around the coating and waterproofing of pit.  |
| 8431.43.90 | 96 | Shirts stabilizing 4145H steel type, upper, modified, 6.75 inches, with final diameter four or more fins, ranging from 61/8 inches by 25 <sup>3</sup> / <sub>4</sub> inches for directional drilling tools (positive desplazamento engines) series 4 <sup>3</sup> / <sub>4</sub> inches to 11 <sup>1</sup> / <sub>4</sub> used in the drilling of oil and gas wells. |
| 8431.43.90 | 97 | Pendant upper barrel for mounting on rotary steerable drilling system intelligent geodirecional 4 <sup>3</sup> / <sub>4</sub> the 57/8 inch outer diameter, used in drilling oil and gas wells.  |
| 8431.43.90 | 98 | instrument collars for mounting on rotary steerable system intelligent geodirecional drilling 6 <sup>3</sup> / <sub>4</sub> to 9 <sup>1</sup> / <sub>2</sub> inch outside diameter used in drilling oil and gas wells.   |
| 8431.43.90 | 99 | Pendant conversion of electronic connectors for mounting on intelligent steerable rotary drilling system geodirecional 9 <sup>1</sup> / <sub>2</sub> inch outer diameter, used in drilling oil and gas wells.  |

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| 8431.43.90 | 100 | Shirts upper and lower stabilizers, threaded box made of carbon steel and coated tungsten carbide with an outer diameter between 4 <sup>3</sup> / <sub>4</sub> and 25 <sup>3</sup> / <sub>4</sub> inches, used in oil and gas well drilling tools.   |
| 8432.31.90 | 7   | Planters at least garlic pneumatic lines 3 and up to 8 queues with queue enter at least 22cm and 37cm maximum, plant capacity with minimum and maximum 2,5ha 6,5ha every 8 hours with seed distribution disc with spoons of various sizes with an element (seed distributor) for each row.   |
| 8433.60.90 | 31  | machine combinations for classification, distribution and selection of potatoes, with capacity of up 54,42t / h, consisting of: 3 selectors with 2.100mm wide inspection; treadmill downhill for precise control of the presentation of the product; 4 digital cameras at an angle up to 4.096pixels / line scan up to 4000 lines / s and 2 orthogonal digital cameras with up to 4.096pixels / line scan up to 4000 lines / s all in high resolution (4K), inspection from top to bottom, red-green-blue-infrared channel configuration being equipped with 4 sensors to convert the red, green, blue and infrared signals into digital, intelligent LED lighting and LED active fund; set of electronic precision valve for precise separation of two classification flows; digital sorting mechanism with touch screen panel; Cooling Unit loop;                      |
|            |     | direct power and dimensions of 5.410mm (C) x 1.829mm (L) stainless steel stirrer distribution with dimensions of 6.972mm (C) x 2.199mm (L) stainless steel stirrer distribution dimensions 6.661mm (W) x 1,700mm (L) stainless steel stirrer distribution with dimensions of 4.953mm (C) x 1.090mm (L) stainless steel agitator 3 with two sieve floors with dimensions of 4.953mm (C) x 2.040mm (L) stainless steel transfer agitators for 3 sorters with dimensions of 2.727mm (C) x 2.252mm (L) stainless steel, direct discharge, 12.7 mm stroke and 980rpm.   |
| 8433.60.90 | 32  | Combinations machines for selection and removing defects in French fries, produced by 7t / h to 7mm sticks of 9,39t / h to 8mm sticks of 13,42t / h to 10mm sticks and 14,83t / h to 13mm sticks; sensor tri-chromatic channels with red, green and infrared; with cutting knives driven wheel and air; electro-optics based controller interface "touchscreen" and Ethernet connectivity; single base unit; Excess product withdrawal module distribution stirrer bed dimensions 3474mm (L) x 936mm (L), stainless steel, straight flush with monoblock frame course of 7/16 inch and 890rpm, with two agitators power dimensions 2.830mm (C) x 898mm (L) stainless steel bed on slopes to seven degrees, course of 12mm and 890rpm, classifier shaker size by sieve / screen with 4.527mm bed (C) x 2.041mm (L) , construction in stainless steel raceway with feature |
|            |     | change of bed, four screens Vector Lock on the upper deck, third deck solid transport, travel 9.5mm and 890rpm.  |
| 8434.90.00 | 1   | Molds bar type for the manufacture of cheeses with tapered microperforations, equal or greater internal dimension of 348 x 268mm, equal or greater internal height of 195mm, with lid and stainless reinforcement year material constituting p-phenylenevinylene (PPV).  |
| 8435.10.00 | 23  | Machine for squeezing and extracting juice from citrus fruits with a processing capacity of up to 12 citrus fruits per minute and feeder storage capacity <sup>3</sup> / <sub>4</sub> citrus, possess conical geometry of the pressing unit (drums), integrated filter system to the squeezer group , grille which inhibits the passage of marc and lumps, button code and warning color, wide flow drip tap.  |

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| 8436.10.00 | 64  | Combinations of machines for the production of pellets (animal feeds), controlled by PLC (Programmable Logic Controller) with a maximum nominal capacity of 50t / h depending on the type of formulation used, composed of: extracting threads and product dosage stainless steel; dosing frequency inverter; reducing steam system and steam control system with automated valves; steam mixer with hot start, 500mm diameter made of stainless steel 6mm thick walls, with temperature control and integration with the automation system; long-lasting seal, with a maximum time of 3 minutes at retention or capacity 96m <sup>3</sup> / h, equipped with connecting and anti-floating current with temperature control system; pelletizing die of internal diameter equal to 900mm, with effective pellet surface 10.174cm <sup>2</sup> model with two rollers with a diameter of 435mm, |
|            |     | driven high efficiency motor (minimum standard IE3), prepared for inverter frequency, with a power of 500 kW, the primary transmission V-belt and the secondary transmission by a toothed belt with load control of the pelletizer, active detection friction bearing and automated adjustment distance of the rollers by pneumatically operated motor, patented "quick-fit" quick and easy fitting of the die through tapered ring with a tolerance of 0.2 mm, hydraulic cylinders and powered hoist system for the exchange matrix; connection spout model C900; rotary valve and 400mm 1.5kW motor; counterflow cooler 4,200 to 3.800mm x 4 stainless steel blades inlet walls, stainless steel cover with two vents and temperature safety sensor, pellets dispenser, reinforced glass door safety switches, rotary sensors   |
|            |     | Hydraulic hopper outlet; product level sensors; Fire protection valve; dual system powder recovery cyclone stainless steel 3mm; powder sluice valve; hoods with vibration absorption and driven by motor suitable for use with 132kW inverter frequency; 132kW frequency inverter for fan; noise damper 900mm in inner diameter and 1,200 mm in length manufactured in double-wall electrolytic galvanized steel with sound-absorbing filler; crusher for pellets capacity 45t / h rotary feeder with twin roll adjustment distance corrugated rolls; control panel with line automation software system of production control and operation with PLC, HMI panel and provided with control panel.   |
| 8436.29.00 | 39  | light identification equipment pulsed and automatic removal of clear eggs (unfertilized) and / or non-viable for the production process, with the ability to select and remove up 70.000ovos / h.   |
| 8436.29.00 | 40  | Equipment identification embryonated eggs and / or not fertilized and / or early embryonic mortality for selective vaccination eggs, with capacity from 20,000 to 60,000 eggs / h.  |
| 8436.29.00 | 41  | Biodevices for selective vaccination eggs and / or non-embryonic and / or early embryo mortality for identifying pulsed light with accuracy greater than 99% and the ability to vaccinate 70.000ovos / h.   |
| 8436.80.00 | 108 | Food pusher robotic and programmable functioning as automatic vehicle running to push function the food available in tract slopes (feeding troughs) closer to the cows or other animals, operating cycles programmable paths during the 24 hours of the day, made 2 electric motors, plastic housing protection, battery charging station, glass transponders for delimitation and orientation of the journey, which completely programmed by panel built-in remote control equipment, reaching maximum speed up to 6m / min and operating capacity up to 15h / day of work.  |
| 8437.80.90 | 23  | Equipment for cutting peeled oats, cuttability with 2,000 kg of oats / h, feeder chutes, rotating metal cylinder with holes for the passage of grains, fixed cutting knives, continuous cleaning system of the holes of the drive cylinders and the cylinders compound of central and gearbox shaft.  |

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| 8438.10.00 | 271 | Machine splitter / boleadoras process for dividing and rounding soft pasta, with a processing capacity between 9,000 and 12.000peças / h at different thicknesses of 18 to 30 g, with 8 lines, equipped with: roller with adjustable pressure on the mats farinha about to leave; double roller station for aligning the rounded parts; unit for the deposition of dumplings on trays (unit retratora automatic deposition of batter balls on baking trays with programmable control for continuous adjustment); Operation by PLC via touch panel.  |
| 8438.10.00 | 272 | Machines for loading and unloading roasters size of less than 43 x 30 inch in-line production of hamburger buns, mat provided for loading and unloading, roasters stack lifter, magnetic head with rotary movement magnetic conveyor, controller Programmable logic (PLC) and Human Machine Interface (HMI).  |
| 8438.10.00 | 273 | Combinations of machines for applying liquid coverings and / or surface chiseling and dried pasta pans on hamburger buns with a nominal capacity of up to 5.600dúzias application rolls / h, programmable logic controllers (PLC), Human Machine Interfaces (HMI), water spray, liquid roofing nozzle (glaze), jacketed tank and integrated cleaning machine for scarifying dough by pressurized water jet machine for scarifying dough "splitter" by jet pressurized water duster flour, grains and seeds applicators varied with the reservoir and the vacuum hopper,   |
| 8438.10.00 | 274 | Combinations of machines for recovery of the excess flour on line mass production of hamburger buns, consisting of: static air filters, flour burner plate with "zig-zag" vacuum pickup heads pressurized, vacuum hoppers piping system for capturing, flour accumulation tank, anti-explosion safety devices, valves and programmable logic controller (PLC).  |
| 8438.10.00 | 275 | automatic and continuous machines for instant noodles fried with a capacity of 100 to 400 pieces / min, provided mat mass carrier cover main body conveyor for discharging the mass after the main body 2 hoods exhaust oil mist.   |
| 8438.10.00 | 276 | Combinations of automatic machines for stretching, spicy water passage and continuous cutting with cooked pasta capacity 2.016kg / h, consisting of: conveyor belt mass produced in 304 stainless steel with a width of 1000 mm, the mass body for passage in the broth heating tank and store broth easel to reduce vapor and cutting unit mass.   |
| 8438.20.19 | 98  | Machines for mass production of sugar, glucose, starch or gelatin, gum used in the manufacture of candy, with a production capacity equal to or less than 4.800kg / h, equipped with: Sugar solvers by heat exchange chamber vacuum pump discharge, through automation programmable logic controller (PLC), flow controllers, valves, temperature sensors, pressure sensors and operator interface HMI via the touch type.  |
| 8438.50.00 | 372 | Machines for deboning drumsticks and right or left of birds simultaneously with boning capacity 12.000sobrecostas / h, manufactured in stainless steel 304 and synthetic FDA approved, designed for optimum cleaning meeting hygiene standards, getting the whole legs of birds, endowed with : electrical control panel; manual hanging area of legs; may or may not contain: skin removal station; automatic station tendon cutting; automatic station deboning meat drumstick; automatic unloader station bones of the thighs; automatic unloader station thighs; with output mats bones; with output wake of boneless meat; with thigh outfeed conveyor; with or without quality control mat. |
| 8438.50.00 | 373 | desossadoras of drumsticks of poultry rights and lefts or machines simultaneously with a boning capacity 6.000sobrecostas / h, manufactured in stainless steel 304 and synthetic FDA approved, designed for optimum cleaning meeting hygiene standards, equipped with: electrical control panel; Manual area hanging from drumsticks; automatic station tendon cutting; automatic station deboning meat drumstick; automatic unloader station bones of  |

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| 8438.50.00 | 374 | Machines boning thighs of birds, only right, only left or right and left simultaneously with boning capacity 6.000coxas / h, built in 304 stainless steel and synthetic FDA approved, designed for optimum cleaning meeting hygiene standards, have: electrical control panel; manual station hangs; Automatic cutting station "j-cut" or risk; automatic station tendon cutting; boning automatic station of the flesh of the thighs; automatic unloader station of the thigh bone; with or without quality control mat.  |
| 8438.60.00 | 27  | Combinations of automatic processing machines to 60t / h of potatoes "in natura", with flow control, movement and interlocks the control panel with PLC and human machine interface (HMI) made up of: receiving station with interlocking control for auto adjustment and maintenance stream; debris eliminator and removal of unwanted material without surface damage of raw materials; Storage station comprising flow control gates and selection discharge in storage silos and 4 triple automatic dispensing device to return surplus; Silo unloading station conveyor and discharge and restraint system "by-pass"; Rate station Parameterizable comprised by primary classifier diametrically small diameters potatoes (<45 mm), medium (45 - 60 mm) and large (> 60mm) and the longitudinal                               |
|            |     | diameters and lengths (<100mm or> 100mm), supersacs loader device and potatoes "Wedge"; Steer "supersac" with automatic movement up to 4 "supersacs" (full and empty) / h; Potato charging station "wedge" to the storage silo, consist of independent and automatic gates; automatic cleaning station with clods remover and foreign bodies; Waste transport station and targeting discharges; transfer station with automatic control of the production line food.   |
| 8438.60.00 | 28  | Combinations texturing machines and control enzymatic action to 24.000kg / h of French fries "in natura", composed of: two texture developers for intracellular gelation, and integrated by vibrating trough with a steam system, power equipment, efficiency 2 4 kg of product per 1 kg steam and water recirculation system; dip tube for oxidation dyeing and final control of the product with the runner flow direction; Concentration input station for preparing primary aqueous solution with stirrer, pumps, temperature sensors, and level transmitter; sugar concentration for preparing secondary station aqueous solution with stirrer, pumps, temperature sensors, and level transmitters; collecting and recirculating aqueous station; aqueous recirculation device; desaguador inert product in aqueous solution. |
| 8438.60.00 | 29  | Machine versatile cutters for potatoes and other fruits and vegetables, with standard cutting heads 8 optionally stations with 14 stations, adjustable for precise and uniform cutting, and can be equipped with printheads for: flat slices, slices "V", wavy rings, various types of complete or reduced grated, cut into strips and granulated; accepts product sizes up to 101,6mm (4 inches) in any dimension; with continuous operation and uninterrupted production; designed to ensure easy cleaning and maintenance; equipped with motors with power from 1.5 to 7.5kW depending on the application; with capacity of up to 900kg / h for potato slice until 2.200kg / h to grated potatoes and by 5.500kg  |
| 8439.10.90 | 60  | Refiners to cellulosic fibers used for laboratory pulp refining either in routine or research testing, ability to 50g of dry pulp; disc refiner equipped with 1,1kW; refining power meter; speed difference between rotor and stator 6 about 0.2m / s; stator in stainless steel; programmable logic controller - PLC - responsible for the disk control arm, programming of the parameters to achieve the predefined number of resolutions, refining pressure control and stability during the refining; refining adjustable pressure between 1 and 5.5mm discs of the bars.  |

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| 8439.30.20 | 17  | Impregnadoras applicator machines and adhesive "hot melt" on paper substrates, aluminum, TNT, and BOPP, to produce adhesive tapes with maximum application speed of 150m / min, maximum production capacity 14.400m <sup>2</sup> / h, working width Application of 1.600mm, equipped with fuser tank and adhesive applicators "hotmelt" melting and pumping capacity of up to 335kg / h, a system with two unwinding and winding, PLC, HMI, load cells, integrated servo drives for servomotors and tensioning control substrate 4 to 70kgfm, cooled cylinder analyzer and automatic weight controller Infra red band aligner, phase 380Vca - 60 Hz and installed power of 125kW.  |
| 8439.30.20 | 18  | Impregnadoras applicator machines and adhesive "hot melt" on paper substrates, aluminum, TNT, and BOPP for the production of adhesive tapes on a pilot scale (laboratory) with a maximum speed of 50m application / min, maximum production capacity 1.050m <sup>2</sup> / h, working width of 300mm application, endowed tank fuser 65L and adhesive applicators "hotmelt" melting capacity and pumping up to 48kg / h system with two unwinding and winding, PLC, HMI, load cells, integrated servo drives and servomotors to control tensioning of the substrate, a chilled cylinder, UV curing system compound useful width of 410mm and lamp power 175W / cm 380Vca phase - 60Hz and installed  |
| 8441.10.90 | 124 | Electronic Machines for trimming hard materials, semi-rigid or flexible, roll or sheet, such as paper, "kraft" magnetic webs, cardboard, self-adhesive vinyl with drawing sketch option and written by pen with area 12 inch cutting useful (30,5cm) capable of inserting materials up to 13 inches (32cm) in width, two rollers for clamping the material, shear strength 5 to 350 g, speed of 300mm per second, self-adjusting blades, with input for uSB, LCM panel with buttons for selecting options, maximum consumption of 40W, 32mb memory "buffer" with SD card slot.   |
| 8441.10.90 | 125 | Cutting machines and finishing of self-adhesive labels in reel to reel, operating by troquelagem "die cutting" 2 rotating stages or semi-rotary, longitudinal section through spinning discs, maximum speed of 70m / min in the semi-rotary cutting maximum width coil 320mm, maximum diameter of 600 mm coil.   |
| 8441.10.90 | 126 | Automatic rotary machines for cutting and vicode labels and tags in various formats, containing troquelagem stacking unit and transport, maximum working width of up to 530mm and maximum speeds up to 100m / min.   |
| 8441.30.90 | 82  | CNC automatic machine for cutting cardboard mat with a width of up to 1,800 mm and the cutting force up to 100t with drive electronics (do not use water resources), gripper feeder for sheets, provided with display terminal type "touchscreen" and computer in a Windows environment; with or without device "pit-stop" for automatic exchange of knives; prepared for connection to network with exchange of information with internal system and / or external system maintenance and remote diagnostics, meeting the industry requirements 4.0.  |
| 8441.40.00 | 46  | Machines for correction of the transverse profile and the overall moisture level of material in strip form (laminated paper and film) by means of saturated steam, equipped with a steam humidifier control unit, with a number of adjustable steam zones according the width of the material, with air exclusion system to prevent the entry of ambient air from the steam chamber, a condensation chamber in stainless steel and a width of 2.000mm, with pneumatic system of opening and closure with the surface the upper chamber protected with a "Teflon" coating with motor operated control valves for controlling the amount of steam, with display for adjustment of process steam valves; with integrated exhaust fan in charge of the overall system; a cooling station with two rolls, double-walled 560mm and chrome surface, intermediate rolls 2 Aluminum |

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|            |     | hard anodized, fixed axis diameter of 120 / 160mm, one roller voltage measurement band, one opener roll and steel roll 1 sectioned; vapor pressure 4 - 8bar, feed 3 x 380V ± 5% VAC control voltage 230V, 24V VDC, frequency 60 ± 1% Hz, cooling water 16 degrees Celsius, cooling water pressure 3 bar air pressure, oil-free, clean, dry 6bar, production speed 350m / min design speed 350m / min, maximum working width 1.650mm, width of 920mm minimum work, roller width 1.750mm, protection class IP 54 and side drift toward the left main band.   |
| 8441.80.00 | 136 | coiling machines labels and related products in rolls, operating from four rotating shafts, feeding tubes by vibratory bowl, start and roll closure applying glue "hot melt" automatic cutting unit, the maximum speed of 100m / min, maximum web width 320mm, maximum diameter of 150mm.  |
| 8441.80.00 | 137 | high precision automatic machines for applying plastic display paper containers at work with a maximum paper size of 1,080 x 650 mm, with minimum paper size of 100 x 100mm weight on card paper 200 - 1,000 g / m <sup>2</sup> and thinner or equal to 4mm corrugated paper (corrugated) used in printed or not paper for applying plastic window (pvc film "boppet", "bp" or similar) with a maximum film width of 780 x 450mm, a width of 40 x 40mm film, film thickness 0.05 to 0.25 mm, maximum working speed 10.000folhas / h, equipped with servo motors, with unwinding and film cutter, glue roller made of stainless steel 304 operating with PLC control system (programmable logic control) and drive by |
| 8443.19.90 | 161 | printing industrial machinery, type "offset" by digital process, with print speeds up to 6.000folhas / h, maximum sheet size of 750 x 530mm (B2 format) with programmable logic controller (PLC) and computer station for printing with 4 or more colors, with feed of the material to be printed in multiple drawers.   |
| 8443.19.90 | 162 | Industrial machines for printing by digital process, with printing speed up to 42m / min image size 746 x 1.120mm maximum coil fed with a maximum width of 762mm, thickness of the substrate 10 to 400microns, printing on substrates of the kind : film (PET, BOPP, PE, BOPA), shrinkable film (PETG, PVC, OPS), label frame (PE label), pre-laminate (PET / Alu / PE), and paper with programmable logic controller (PLC) and computer station for printing  |
| 8443.19.90 | 163 | Industrial machinery printing for digital process, with print speeds of up to 240 A4 pages / min in two colors or monochrome, sheet size 330 x 482mm maximum print on substrates with thickness from 70 to 400microns and paper weights from 60 g / m <sup>2</sup> to cover 350g / m <sup>2</sup> , with computerized station for printing with 4 or more colors, with the power to print materials in multiple drawers.   |
| 8443.19.90 | 164 | Industrial machinery printing by digital process, with speeds up to 60m / min printing, fed coil with printing width of up to 980mm, print substrates with a thickness of 12-450 microns, printing on substrates of the kind: structure pressure sensitive labels, paper, cardboard and unsupported films with computer station for printing with four or more colors, with a maximum diameter unwind roll input 1.000mm and rewinder with a maximum roll diameter of 700mm.   |
| 8443.19.90 | 165 | Industrial machinery printing for digital process, with print speeds up to 80m / min, fed coil with image format of 313mm, print on substrates with thickness 12-450 microns, print on substrates of the types: tag structures and pressure sensitive shrink labels term with computed station for printing with 4 colors or more, with a maximum diameter roll unwinder and rewinder input 1.000mm roll with maximum diameter of 700mm.   |

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| 8443.91.99 | 88 | printers assemblies for mounting on flexographic presses central drum, having mounted the central drum 16 electric motors rated power greater than or equal to 4 kW and the rated speed equal to or higher than 800rpm with electrical panel, control desk CPU unit and monitor viewing.  |
| 8445.19.29 | 4  | Machines for preparing textile fibers and manufacturing of the raw material molten / melted by rotating balls 3, and lubricator, provided with collection chamber, exhaust fan and dust collector; transmission power: 2.2kW; power induced draft fan: 75kW; fiber collector dimensions 4.310 x 1.650 x 8.500mm, dust collector dimensions 4.000 x  |
| 8445.40.29 | 8  | Machine reeling not automatic, synthetic textile filament yarns with precision winding for forming cylindrical bobbins or conical with a maximum diameter of 300mm, 80 individual drive positions (40 positions per machine side) winding tension control online and programmable length of wire, software for controlling the deposition of turns, counter pressure system high precision, lubrication system ensimagem oil application, maximum winding speed up to 2,500   |
| 8445.40.39 | 1  | Meadeiras with intelligent electronic control (sec), an interface for "touchscreen" for automatic skeins training, with regulation and variation of cross angle, plot switch and trapezoidal, 44 (4 x 11) positions, complete, accompanied by accessories .   |
| 8445.90.10 | 1  | elastane warping machine for forming rolls from warp spools with diameter of 30 inches (762mm) and 42 inches effective width (1.066mm), provided with cage coils to 1.404 / 180 x 57mm tubes of each coil / cartridge, the maximum working speed not exceeding 600 m / min; break detector wire system; uniform adjustment voltage and programmable logic controller (PLC).   |
| 8456.11.19 | 26 | Machines for cutting metal plates by disc laser (TruDisk), with numerical control (CNC) with cuttability of steel plate thickness up to 50mm, with maximum dimensions of the plates up to 6000 x 2500 mm, maximum capacity table loading up to 4.900kg, with or without a device handler automatic loading and unloading (liftmaster) for bales of raw material up to 5t with a maximum speed position of the X and Y axes up to 283m / min, with automatic changer at least 21 nozzles magnetic system against collision, dust exhaust unit and refrigeration unit.                    |
| 8456.11.19 | 27 | Machines for cutting metal sheets with superior cutting capabilities to 8mm, with numerical control (CNC), and preparation for integration of the metal tube cutting system, with or without automation systems for loading and unloading sheet metals, with source generator or CO2 laser disc (TruDisk) system against collision magnetic powder exhaust unit and refrigeration unit.   |
| 8456.11.19 | 28 | Machines for cutting metal plates by laser disc (TruDisk), with numerical control (CNC) cutting ability with metal plates of thickness up to 50mm, with maximum dimensions of up to 6,000 sheets x 2.500mm, the maximum capacity table loading up to 3.000kg, with or without cargo handler device and automatic discharge (LoadMaster Liftmaster or linear) press for bales of up to 5t material, with maximum speed of positioning axes X and Y of up to 170m / min with automatic exchanger at least 21bicos, magnetic system against collision, exhaust unit dust and cooling unit. |
| 8456.11.19 | 29 | laser cutting centers with laser source disk (TruDisk) and complete preparation or system of metal tubes cut with numerical control (CNC) for metal sheets up to 50mm thick, with automatic loading system, unloading and drive, work area for plate up to 4,000 x 2,000 mm, with or without storage towers and supply plate with one or two towers each with a height of up to 8.250mm and drawers 69 each with a capacity of up to 5t / drawer.   |

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| 8456.11.90 | 29 | Machines with sequential operation for the laser drilling of cigarette filters with a capacity of up drilling 12.000cigarros / min compressed air consumption 5m3 / h installed power of 7,7kW and main frequency of 60Hz.  |
| 8456.30.19 | 55 | Machine tools for metal machining by electroerosion by penetration axis "C" with integral rotation to the head, with automatic changer electrodes, with capacity equal generator or exceeding current 80A, with linear scaling on all axes, can erode parts with surface finish RA of 0.1 microns, inclusive system for remote connection to the machine and numerical control (CNC) unit value (CIF) not exceeding US \$ 706,244.99.   |
| 8456.30.19 | 56 | Machine tools with automatic central numerical control (CNC), for cutting by electroerosion (EDM), steel or aluminum parts, with working table with a diameter of 1.250mm and 2,500 kg loading capacity, provided with five axes, and : x-axis with travel up to 510mm, with z axis travel to 520mm, with shaft SP course to 60mm, b axis (rotary) with travel up to 130 degrees for machining external and internal machining to -30 degrees and the axis (tilted) with course of 360 degrees, power 13,5kW oil tank with 500 liter capacity, power unit: 3 stages, AC voltage 380V, 200A, 60Hz frequency, with a control panel with LCD color screen. |
| 8456.40.00 | 5  | Machines for nitrogen plasma generation with use of electric discharge 20.000V and frequency of 25kHz used in the surface free energy change in sheet metal, provided with 5.000VA generator operation with HMI "touchscreen" AC power from generator 360 to 510V at 64A protection, maximum performance processors 1 to 25KVA oil-free static jets maximum width processing 70mm, generating nitrogen plasma LCM protection system (plasma lighting control) and PCM (control head of the internal pressure).  |
|            |    | #VALUE!   |
| 8456.40.00 | 6  | Machines for cutting of conductive materials by plasma up to 170A for cutting machining, guided installed engine in one or more axes controlled via the computerized device using serial communication, discrete and / or "EtherCAT" high-definition flat steel plates carbon, stainless steel and aluminum up to 50mm thick phase power supply 200 to 600V, 50 / 60Hz, output voltage 50 at 210VDC, 35,7kW maximum power output, class H insulation, forced air cooling (class F ) with lower slots forklift called current source for plasma cutting.   |
| 8456.40.00 | 7  | Machines for cutting of conductive materials by plasma up to 300A for cutting machining, guided installed engine in one or more axes controlled via the computerized device using serial communication, discrete and / or "EtherCAT" high-definition flat sheets of metal such as carbon steel, stainless steel and aluminum up to 80mm thick, by plasma technology with up to 300 amps output three phase power 200 to 600V alternating 50/60 Hertz output voltage 50 at 210VDC, maximum output power 63kW, class H insulation, forced air cooling (class F), below the forklift slots, called current source for plasma cutting.                      |
| 8456.40.00 | 8  | Machines for cutting of conductive materials by plasma up to 400A for cutting machining, guided installed engine in one or more axes controlled via the computerized device using serial communication, discrete and optional "EtherCAT" high-definition flat sheets of metals such as carbon steel, stainless steel and aluminum up to 80mm thick, by plasma technology with up to 400 amps output three phase power 200 to 600V 50/60 Hz alternating, maximum power output of 80kW, class H insulation, cooling air forced (class F), called current source for plasma  |

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| 8456.40.00 | 9   | Machines for cutting of conductive materials by plasma up to 200A for cutting machining or manually guided installed engine in two axes, controlled via the computerized device using serial communication, discrete and optional "EtherCAT" to flat plates of carbon steel, stainless steel and aluminum thickness of up to 50mm in thickness mechanized and 75mm cut in the manual cutting, using plasma technology with up to 200 amps output three phase power 200 to 600V alternados50 / 60 Hertz maximum output power of 33kw, insulation class H , forced air cooling (class F), called current source for plasma cutting.  |
| 8457.10.00 | 470 | vertical machining centers of double column for machining metal parts with numerical control - CNC, with 3 or 4 axes controlled simultaneously in automatic mode of operation for drilling, boring, expand, interpolate, milling and threading, with capacity for machining the courses of the axes X, Y, Z equal to 2,050, 1,100 + 160 (tool change), respectively 600mm, equipped with programmable servomotors minimum increment positioning and 0,0001mm 0.0001, and maximum rotation of the main head 7000rpm or less; automated trading system for tools, the magazine with 24 tools capacity, equipped with rotary tools for automatic adjustment parameters of the X axis motor, Y and Z, which may or may not contain a 4 turntable axis unit value (CIF) not exceeding R \$ 447,753.78   |
| 8457.30.10 | 7   | Machines multiple stations with programmable logic controller (PLC), for positioning, drilling, deburring, with load control for pressing and recravar pin with industrial computer with special software for characteristic test (Torque x Pressure), the center of the regulation hydraulic assembly, oil flow measurement passing through the distribution channels and control corners, symmetrically (flow on the left = the flow on the right side) in the set endless power steering, comprising electrical panel, panels command, oil cooling system, hydraulic system, oil filtration system, pneumatic feeder pin system for storage magazine pins and chip carrier.   |
| 8458.91.00 | 93  | CNC vertical turning centers for metal production parts based serial guides and box-shaped, with travel 650mm X-axis and Z 1.140mm, diameter of plate 32 "speed" spindle "850rpm, torneável maximum diameter 1.200mm, torneá vel maximum height 1.000mm, power of "spindle" 45kW door parts tool 12, fast forward X / Z 20/15, unit value (CIF) not exceeding US \$ 1,236,597.71.  |
| 8459.21.99 | 99  | Machines for horizontally deep drilling, controlled by a computerized numerical control (CNC), for drilling cooling channels into molds and dies, carbon steel and non-ferrous materials, with 6 axes (XYZWAB) controlled by CNC, minimum hole diameter of 3mm and maximum of 50mm, maximum length of less than or equal to 1.500 + drilling 550mm X axis travel equal to 2.500mm, Y axis travel equal to 1.500mm, Z axis travel equal to 800mm, hydrostatic rotary table with maximum load capacity, 20t, torpedo inclination (axis a) or 15 - 25 degrees, allowing complex holes and angles compounds axis tree with power equal to 18.5 / 22kW at maximum speed 4.000rpm, cone seat of the spindle BT50, a work desk with dimensions of 2,200 x 1,600mm, with auxiliary functions of milling and threading, complete cooling system with coolant pump with 6 flow |
|            |     | 140L / min, pressure of 2 to 11Mpa.  |

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| 8459.69.00 | 8   | recording equipment 4 axis, with automatic central numerical control (CNC), for recording of aluminum or steel objects, for milling and / or scratching, marking area with: up to 1.000mm x axis, z axis to 370mm axis 360 degrees C, 90 degrees +/- b axis, work table diameter of 1,200 mm and 2,000 kg capacity, ability to mark objects with maximum diameter of 1,400 mm, with the tool head with up to 30 tools pane control with LCD color screen, electrical unit: 380V voltage, current 25A, 50Hz frequency.  |
| 8460.12.00 | 13  | the grinding typeface machine tools, automatic, 4-work lines and two machining stations for micro finishing flat or slightly convex or concave with 5 heads 3 being machined, the first charge and first discharge, diameter nominal 40mm workpiece, the working speed of 0 to 1.800rpm axes, the axes of motor 1,1kW AC work maximum speed of 5,000 rpm machining axis / belt motor axis machining 0, 75kW, with compressed air power requirement of 4,5bar with numerical control (CNC).   |
| 8460.19.00 | 6   | lapidadoras machines with double sided (upper and lower) for grinding flat metal parts, provided with programmable logic controller (PLC); with 530mm diameter plates; 150mm width of the ring; 800dan maximum load pressure; Speed of plates: upper plate: 150rpm, 350rpm lower plate; central drive power 1,3kW; speed of 83rpm of the central unit; equipped with cooling of the work plate.  |
| 8460.24.00 | 13  | numerical control machine tools (CNC) to manufacture and or prepare profile of carbide tool and / or HSS (High Speed Steel) within the diameter range from 3 to 32 mm for further manufacturing rotary tools of the type drills, cutters , reamers, tools and as males machine with 4 or more axles with controlled displacements of the CNC axes, with all axes direct drive without straps and without pulleys, X-axis displacement with up to 535mm; Y-axis and the V axis displacement up to 125mm; The slewing axis of 360 degrees at maximum speed of 3,000 rpm and ISO cone 50, with cylindrical direct drive linear motor; concrete base and polymerized load and discharge system of the tool profile, integrated tool capable of receiving profile with a diameter of 3 to 200 mm and loading capacity and self- |
|            |     | range from 3 to 20mm.  |
| 8460.31.00 | 188 | Grinding and rectifying 5 axis CNC, with numerical control for manufacture and reconditioning cutting courses as follows tools: travel X (vertical) axis 500mm, Y-axis travel (horizontally) 290mm, stroke z-axis (perpendicular) and 300mm forward speeds: X (vertical) axis 30m / min, spindle speed Y (horizontal) 15m / min speed Z axis   |
| 8460.90.90 | 112 | horizontal inner and outer polishing stations, weld beads previously compressed mechanically with machinery designed to make up for the welding of metal ferrules automatically adjusted to the vertical cylindrical tank production using electrically motorized abrasive wheels, with power of 5,5kW installed and built-in control board, fed with three-phase voltage of 400V, 60Hz frequency, polishing ferrules with minimum height of 1,000 mm and a maximum of 2,000 mm, minimum diameter of 1.300mm and 5.000mm maximum and minimum thicknesses 2mm and 8mm   |
| 8462.10.90 | 160 | Automatic to manufacture screws machines, nuts, bolts, rings and the like by embossing artifacts from metal ordinary wires with a maximum cutting diameter between 5 and 10mm, with two shaping stages, printing strength between 22 and 70t, length maximum cut between 54 and 230mm, maximum extraction between 38 and 102mm, with capacity from 120 to 350pcs / min.  |

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| 8462.10.90 | 161 | Radial forming cold CNC machine, open die with 1.250kN forging force and maximum 1.200batidas / min, suitable for forging firearm barrel from "blank" maximum diameter 55mm and length most 630mm, driven by the main engine 75kW, provided with: main body with open die, forging hammers 4 and its eccentric shafts arranged symmetrically; Orbital computerized robot manipulator axes 6; Central to: hydraulic unit for forging (22kW 110bar and 300 liter tank) and lubricating drive mandrel head (30bar, reservoir 6 liters) and forging lubrication unit (11kW, 8bar and 650 Liters ); pressurized water cooling unit 5m <sup>3</sup> / h; Forging tooling; electronics safety and security; control cabinet assembly (380V - 60Hz, three-phase) with logic controller   |
|            |     | programmable (PLC); with control panel human machine interface (HMI), with PC and monitor for CNC.   |
| 8462.21.00 | 302 | Machine for bending metal sheets or hydraulically driven servo actuated, with capacity of 40 to 5,000 t of strength and bending lengths of 1 to 15m, with numerical control CNC 3D graphic program that allows "offline" with indicator laser-tools position, provided with plate bending angle control device every 20 milliseconds connected to the existing database to the CNC through the optical system to laser class II that spans the two sides of the fold lower tool and 2 faces the workpiece to be bent, adjusted in real time, without mechanical contact and self calibration accuracy in bending angle of +/- 0.3 degrees.   |
| 8462.21.00 | 303 | electric bending machines with hybrid hydraulic servo system driven by four cylinders, with numerical control, CNC arrow compensation fastening system and alignment of the machine tool punch and die, security system with adjustment of the bending position, the operation panel "touch", arranged with graphical programming system in charge of machine designs with definition 3D and "software" specific installed in charge of "TecZone Bend" machine, which allows you to open files in 3D and generate the program automatically, matrix position variable, with front and rear lighting to aid in positioning work and instructional LED for positioning the bending station, via RFID card drive for machine access control panel, bending maximum length of up to 4.420mm, operating force to 320T disposed with up to 10 lines of action with or without heat exchanger |
|            |     | Automatic tools (toolmaster).  |
| 8462.21.00 | 304 | Machine brakes hydraulic Electro driven to 4 cylinders, with numerical control, automatic arrow compensation fastening and alignment of the machine tool system for punch and die, security system with adjustment of the bending position, the operation panel "touch" arranged with graphical programming system in charge of the machine with setting drawings in 3D, with front and rear lighting aid for work and laser automatic ACB angle measuring system, maximum length of bending to 4.080mm, operating force up to 170t arranged with up to 7 lines of action with   |

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| 8462.29.00 | 268 | circular stations alignment ferrules overlapped metal, automatically adjusted circumferentially for vertical production of cylindrical tanks containing mechanical compressor weld beads by hydraulically operated pulley, and a table carrier ferrules, hydraulically powered, for support and synchronized movement of the ferrules overlapping provided with retaining ring with central positioning hydraulic adjustment five lateral arms retention and three drivers carts, electrically powered and operating at variable speeds, supporting up to 15t of the retainer ring, with electrical equipment and embedded command frame, fed three-phase voltage of 400V, frequency of 60Hz, for aligning ferrules with minimum height of 1.000mm and 2.000mm maximum, minimum diameter of 1.300mm and 5.000mm maximum and minimum thickness of 2mm and a maximum of 8mm. |
| 8462.29.00 | 269 | hydraulic, vending machines, single-spindle, controlled by PLC, for cold fasteners settlement ray profiles, applying forces from 100 to 1.700psi in fixing and capacity for parts of 0.150 to 0.500 inches in diameter and 2¾ inches long, sensitive to the touch control panel, 18-inch pot to supply parts, electronic control of spindle speed, 2HP engine protections with safety switches and ethernet connection.  |
| 8462.39.90 | 110 | Combinations of machines for continuous cross-section of metal coils with a minimum width of 900mm input and a maximum width of 2,000mm input, maximum weight 35t of the coil external diameter up to 2.100mm, the plate thickness between 4 and 13 mm, voltage material, less than or equal to 800MPa for plate thickness between 4 and 6 mm, less than or equal to 700MPa for plate thickness between 6 and 8 mm, equal to or less than 600MPa for plate thickness between 8 and 10mm and equal to or less than 500MPa for plate thickness between 10 and 12mm, with the ability to 20cortes / min with plates of thickness between 4 and 8 mm and capacity 15cortes / min with plates of thickness between 8.1 and 13mm at maximum speed 30m forward / min for plates with a thickness between 4 and 8mm and 20m / min for plates with a thickness                      |
|            |     | between 8.1 and 13 mm, consisting of: four beds for storing spool; Feeder drive coils with a capacity of 35t; double unwinder type hydraulic expansion to fit the inner diameter of the coil; power system; pre-straightening rolls; Table "looping"; input guide; 4-HI straightening roller type; hydraulic cutting machine measuring device (encoder); output table with complete system of stacking the sheets with lifting table and a table side beaters and motorized rollers with the packaging sheet; with electrical supply and control panels, hydraulic units with different capacities, with cabling ducts and fastening of items machines controlled by the PLC.  |
| 8462.41.00 | 84  | Machines with numerical control (CNC) 3-axis for punching metal bars with automatic tool change, 10 stations up to 28 tools, programming software and use of raw materials, travel speed of 80m / min, production capacity 500t year 2 threading stations, processing 15 to 200mm wide bars thickness of 3 to 16mm processing, integrated system for marking, positioning and dimensional accuracy of about 0.01mm, output table with pieces of classification.  |

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| 8462.41.00 | 85  | Machines for processing angles metallic numerical control (CNC) for cutting, punching and scoring angles with a minimum size of 30 x 30 x 3mm and maximum size of 120 x 120 x 13mm with a length of up to 12m, with punching capacity of holes two different diameters on each tab, the maximum diameter of holes to be punched 32mm, punching force 650kN, with marking unit marking 4 groups 1.000kN marking force with cutting unit with cutting power 1800 kN with input conveyor rotary charging system to 12m long bars, with a device for automatic clamp fastening with car with Piranha and device tweezers to control the length of the bar, with output conveyor with mad rollers, with electric control system, hydraulic system and pneumatic system.   |
| 8462.91.19 | 98  | Hydraulic presses for furniture scrap system carried by the "roll-on" "roll-off" compaction on 3 sides, completely independent with cabin for the operator and 4.8m long box, with or without crane with 100HP diesel engine with a roller cylinder chamber cover on the tightly 157t with cylinders in each of the two doors, with compression force 243t / each port.  |
| 8462.91.19 | 99  | Compacting machines metals, suitable for processing scrap, capacity 10t / hour, maximum pressure of 32kg / cm <sup>2</sup> , incorporating a diesel engine provided with: cabin with a maximum range of 6.2m crane; cube; 2 filter sets; 1 set of hydraulic pumps; 1 set of flexible cables; 3 levers; 1 fast discharge valve.   |
| 8463.30.00 | 152 | Combinations of drawing machines for the dry low carbon steel wire rod with wire entry with diameter 5,50mm and 1,20mm with final output speed of up to 50m / s, consisting of: wire unwinding machine ( payoff) high-speed double, mechanical stripper for mill scale break, double grinding head, cleaning, pre-coating, drying system, drawing line 12 capstans 630mm being the first vertical and the remaining 11 inclined, the capstans n 2 to 9 degrees with sensors and arms the last 3 capstans (n ° 10 to 12) in arm "dancer" (dancer arm) and for winding reels with control console and electronic cabinet.  |
| 8463.30.00 | 153 | automatic machines to manufacture and bag steel springs barrel shape or cylindrical in nonwovens rows used in the manufacture of molejo mattress pocket springs, with central diameter of 48 spring to 75mm (including limits) Height bagged spring 80 to 250mm (including limits), wire diameter 1.5 to 2.3mm (including limits), maximum production speed of up 120molas / min with the unwinder and unwinding steel wire woven material, with ultrasonic welding system, and heat treatment to temper wire.   |
| 8463.30.00 | 154 | Computerized numerical control (CNC) machines for the production of helical compression springs right and / or left with multislice ends and control system for working wires with diameters between 0.7 and 2.5 mm with winding ratio (Wm) larger than or equal to 4, and tensile strength (Rm) max. of 2.100N / mm <sup>2</sup> or diameters between 0.7 and 3 mm with winding ratio (Wm) larger than or equal to 6 and tensile strength (Rm) max. 2,000 N / mm <sup>2</sup> , with or without retractor finger "PTP" for voltage regulation in the production of compression springs; with integrated monitor screen type "touchscreen"; measurement system via camera for process monitoring; tab from two to five outputs pneumatically actuated; electronically controlled with servo motors for 4 or more axes; two pairs of wire feed rollers; Cooling device with maximum speed |
|            |     | Power to 135m / min.   |

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| 8465.92.90 | 31  | Milling automatic copiers, wood milling cables with straight shapes, conical and profiled with a diameter between 10 and 100 mm maximum length of 550mm.  |
| 8465.99.00 | 170 | Combinations of machines for cutting vinyl floor tiles ledges and / or smaller plates, controlled by PLC composed of: unloader / feeder vinyl floor tiles for cutting press; Feed device inclined rolls; cutting press mold with knives fixed to the upper table with movable table top with dimensions of 1,680 x 1,100 mm and a table (base) fixed to the lower dimension of 1.680 x 1.120mm hydraulic system with quick clamping force of 200t, provided mat for automatic loading and unloading of the cutting press; belt supply device; unloading station and automatic stacking of the final product; dual-direction device; removal system of refilos (leftovers) cutting the vinyl floor plate   |
| 8466.94.20 | 5   | Rollers counter support (back-up rolls) to metal planing machines with outer rings of steel UNI 100Cr6 / 100CrMo7 tempered core achieves hardness to 60-2 HRC, with dimensions of diameter 112 (D) x 150 (B) x 230 (W) mm.  |
| 8467.89.00 | 43  | Hydraulic bolt tightening tools wind industry, commercially called torque wrench with a maximum torque between 6,980 and 22.807Nm by torsion or torsion and angle with pressure and return patented anti-corrosive special coating, optionally an electronic device disponde tightening angle measurement compatible with the grips control system "BoltPilot" (Multi-park platform that can control the wind farm, from turbine and bolted joints of each turbine).  |
| 8467.89.00 | 44  | Tools own manuals for woodwork as building sheds, fences, houses in general maintenance of grid poles and railway sleepers of railroad tracks, with two forward speeds and one reverse function speed that enables easy removal of the drill in case lock, keyless chuck for drills diameter up to 13mm internal combustion engine of spark ignition and 0,8kW 27,2cm <sup>3</sup> , the fuel tank capacity of 0.25 liters maximum speed drill coupler 1 degrees of motion: 910L / min gear 2.710L 2 degrees / min and reverse gear 810L / min.   |
| 8467.99.00 | 4   | management cable sets, with drive trigger alloy functions off, the motor accelerates and decelerates, resistant to vibrations of the slow 2.800rpm, and the maximum vibration 9.500rpm with durability cycle 400 to 500h, used in lawn mowers driven by spark ignition engine.  |
| 8472.90.99 | 6   | Electronic Marker with up to 30mm / s printing speed in thermal transfer printing ribbons with a width of 3.5 to 24mm, printing resolution from 230dpi to 180, maximum print height of 7 to 18,1mm and LCD display.   |
| 8474.10.00 | 112 | Screens classifiers rectangular pattern type classification system with reverse (from smallest to largest grain) with sifting area 22,46m <sup>2</sup> , 24 "decks" of aluminum, screens 48 and inserts 1,200 x 390mm, with 6 collection points rated product, ranging from 0.4 to 2.8mm aperture, generating six types of different fractions, input power between 2.5 and 3,0t / hour used to classify expandable polystyrene (EPS) with density between 0.55 and 0,65kg / l for fractionating the dried solids and fluid bulk, sieving process with final classification of fine to coarse product with lifting device; adjusting stacking flexible decks; Low power consumption due to the drive wheel; tilt adjustable screen; bus bars for optimization and static system; an electric motor provided with power of 3,5kW and noise: </ = 80 dB (A) sec. to DIN |
| 8474.20.90 | 161 | Functional units for grinding ultrafine minerals (between 325 and 2500 mesh), composed of: main body cave classifier to select the micronised material and 28 rolls divided into four grinding lines, bag filter composite 250 sleeves centrifugal exhauster with flow induced silencing, cyclones, mounting and connection devices capable of micronized 1.000 to 8.500kg / h.   |

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| 8474.20.90 | 162 | Mills for preparation of samples for subsequent use in X-ray diffraction, the crystal structure preserved during the grinding operation, initial maximum particle size of 0.5 mm and the lower end than 1 micron, grinding adjustable speed between 1,000 and 1.500rpm in 4 steps, with dry and wet milling, grinding cylindrical works with 125ml flask filled with 48 agate grinding rollers or zirconium oxide or corundum, 1 second programming time 99:99:50, engine power 50W, protection IP 30, 100W power consumption.  |
| 8474.31.00 | 5   | concrete mixers, movable on wheels 4, self-propelled and self-loading, suitable for mixing mortar and concrete in construction works with propeller mixing drum with double spiral, convex, 7.000L geometric volume and production capacity of up to 5m <sup>3</sup> concrete per batch, travel speed of up to 25km / h, full hydrostatic transmission 4 x 4, 4 wheel steering, turbo diesel engine having a maximum power of up to 82,5kW, front loading shovel jaw 680L, two reservoirs water opposed and interconnected with total capacity of 1.200L, control of water supply due-liter electromagnetic, left enclosed cab with ROPS / FOPS protection. |
| 8474.39.00 | 12  | Horizontal continuous mixers, suitable for mixing and homogenizing the flotation tailings, cement and water to form the slurry to be used for the filling of enhancements in underground mines, with a capacity of 100t / h; equipped with: tac mixer with special anti-wear coating; dual-axis paddle; continuous flow mixer iron with replaceable blades; Automatic lubrication system; dumper lower and / or side of the material; electronic verification system "mixer mind"; Automatic washing system high pressure and planetary gear units.   |
| 8474.80.90 | 171 | Automatic feeders of raw materials, equipped with mixers with 2.2kW electric motor; conveyor belts with electric motor 4kW; Vibration antilock device with 0,37kW motor; gravimetric control system programmable logic controller   |
| 8474.80.90 | 172 | horizontal solid wastes of organic origin mixers, provided with: automatic water dispersion, double horizontal axis for mixing of materials, electric motor 11 to 22kW power, control by programmable logic controller (PLC).   |
| 8474.80.90 | 173 | rotating drums for granulating fertilizer from organic capacity of 5 to 8t / h up to 12rpm rotation of the drum equipped with a 15kW electric motor and driven by programmable logic controller (PLC).  |
| 8474.80.90 | 174 | granulating pans of organic fertilizers with a processing capacity of 0.5 to 4t / h and tilt adjustment coefficient greater than 93% granulation, provided with electric motor 3 to 18,5kW and driven by programmable logic controller (PLC).   |
| 8474.80.90 | 175 | Double roll granulators for organic fertilizer, provided with, electric motor until 18,5kW, diameters of rollers 150 x 300mm steel Q235B type boiler, exit diameter of the granules 3 to 10mm, variable intake screen 50 to 200 mesh with frequency converter and programmable logic control unit (PLC).  |
| 8474.80.90 | 176 | vibro press machines for manufacturing concrete blocks for sealing, structural, cobbles and guides, with cycle 9 to 14s, the inverter control with vibration motors, with 0 4.000rpm speed, the ability to change the frequency vibration according to different raw materials and different block types (50-90Hz range), multi-shaker with rotation shaft 360, 4 long rods and guide bushing guide system 220V 60Hz AC.  |
| 8475.29.90 | 12  | Combinations of machines for continuous sheet-forming flat glass (process "float" on the tin bath), with capacity of up to 700t / day, comprised of: refractory blocks the tin bath, mortars and special cements, insulating plates, metal frame, the water cooled equipment, bathroom ceiling system with coated heating elements, measurement system wide, thickness measurement system, control panels and transformers of the heating box and interconnection   |

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| 8475.90.00 | 1   | conversion kits for glass bottles hot molding machine, with bottle production capacity in amber, green and white, consisting feed mechanism for the machine (feeder) cutting scissors mechanism of the molten glass distributor drops, pusher "pusher" to lead the hot bottles to the conveyor; modules for molding bottles of glass together for control and automation panel cabin, power cables, control and sensors.   |
| 8477.10.11 | 118 | Electric horizontal injection molding machines, monocolour for molding plastic parts with thin wall with clamping force equal to 3.850kN distance between columns 830 x 830mm, with lock unit driven by the servomotor directly coupled via the ball screw double brace system 5 points, the movable plate supported on linear guides, servomotors cooled air, electric injection unit driven by high-speed servo reaching the 310mm injection speed / s, screw diameter plasticizer 71mm, injection pressure of 188MPa, and volume injection 1.266cm <sup>3</sup> , dosage servomotor with coupling to the screw plasticizing, air-cooled, switchboard "touchscreen" TFT color LCD 15-inch, programming against process failures "Zero Defects" and the ISC system (intelligent servo control ), all the servo motors with energy regeneration  |
| 8477.10.11 | 119 | molding machines for thermoplastic injection, 100% power with computerized numerical CNC, provided with plasticising screw driven by an electric servomotor injection system with 350mm / s, with a diameter of 65mm, L / D ratio 25: 1 , driven by an electric servomotor with drive system, via the belt transmission side, the opening and closing system for knee points 5 with clamping force at or above 360T or 3.600kN and driven by an electric servo motor drive system with via lateral transmission belt extraction system, driven by electric servomotor with drive system via the drive belt side, back nozzle with electric drive and exclusive transmission spindle system, electric   |
| 8477.10.11 | 120 | Machines for molding preforms of polyethylene terephthalate (PET), with horizontal electric lock and injection lock 4.000kN strength, dry cycle time of ~ 1,9s; Laminating unit with two stages, allowing parallel injection and the dosage to reduce total cycle time, plasticizing capacity of 1.220kg / h, maximum injection volume of 4.867cm <sup>3</sup> ; Lateral automation for removing the preforms and 4-stage cooling with or without special mold PET 48-128 cavities with or without dehumidifier system for PET resin, with or without desiccant device's internal air to avoid condensation, with or without cold mold parts and automation modification kits for the production of alternative formats preform.   |
| 8477.10.11 | 121 | Horizontal injection molding machines, electric, for molding plastic parts monocolour or multicolour, fully equipped electric lock unit with drive by servo motor, double brace the clamping unit, the clamping force 900kN, opening stroke of 320mm; distance between columns (H x V) 420 x 420mm, by targeting high precision linear guides, lubrication closed circuit, with or without kinetic energy accumulation; One or more all-electric injection units, with injection movement driven servo motor; material dispensing system driven by servo motor with injection rate between 76 and 440cm <sup>3</sup> / s capacity to 207cm <sup>3</sup> injection with 0.03 mm precision injection repeatability, with back pressure control with less than 1 repeatability Pub; Temperature control repeatability of +/- 0.5 degrees; parallelism deviation between columns equal or less than 0.03 mm; |
|            |     | operation command with multifunctional button and 12-inch monitor touch.   |

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| 8477.20.10 | 289 | Combinations of machines for the production of flat ribbons of polypropylene (PP) or high density polyethylene (HDPE) with a maximum rate of production at the output 500m / min, consisting of: extruder with a screw of length 31D and a maximum laminating in PP 850kg / h, filter and automatic flow pump, planar array for PP with a flexible lip 0.2 to 1mm, gravimetric feeding system with resins. cooling unit of the film with two driven drags, par blowers, two air knives, heat exchanger system and pump flow control, cutting unit of the film tapes with oscillation, chip feedback system with suction, mill and return to the extruder, ribbons restraint systems with two groups of rubber and steel rolls, hot air oven of 6,000 mm with adjustable air flow, with normal drawing unit Godes diam. 440mm and NIP Rol |
|            |     | diam. 440mm and oil heaters, cooling unit with colds and Godes diam. 440mm with NIP list and static sets, chip suction set with container vacuum and suction nozzles, tape return set already stretched with suction nozzles, mill and return pipe, set of electrical panels for power, control and command equipped with PLC and touch screen.  |
| 8477.30.90 | 83  | blow molding machine (blow) of thermoplastic high density (HDPE), for the production of plastics drums 200 to 250L with clamping force 1.060kN, plasticizing capacity of up to 700kg / h, thread diameter of 150mm, with L / D ratio equal to 30 with mixer feeder HDPE materials to 4; drums production capacity of up to 45pcs / h; have: 400HP electric motor to drive the extruder; Hydraulic unit with high and low pressure servo 25 + 10HP; hydraulic unit 40HP injection; printhead for continuous accumulation and interchangeable extrusion head (FIFO) 30L volume; Radial wire drawing controller "parison" SFDR + PWDs; Wire-drawing of 300mm diameter or greater but less than or equal to 600 mm; thickness controller "parison" 100 points; Table mold gate maximum dimensions of 1.600 x 1.810mm;                        |
|            |     | table less than 600 mm, but not exceeding 2,000 mm; with closing unit 6 LK type system locking devices driven proportional valve block velocity control; horizontal transfer system "parison" head to the mold; horizontal transfer drum system, the mold for automatic grinding unit; horizontal transfer drum system, automatic deburring area to the operator; 12 after cooling units; system "booster" cold compressed air pressure to blow the drums printer "inkjet" for identification and traceability of the drums; electric panel and programmable logic controller (PLC).   |
| 8477.59.90 | 147 | grain sorting machines with six screens in the rotating chamber, and 3 for dewatering and 3 for classification, with a nominal capacity rating of 32.000kg / h of thermoplastic resin (polyethylene) and desague nominal rate of 410m <sup>3</sup> / h, driven by motor 2HP with electric maximum rotation 14rpm for separating the water and the polymer pellets (pellets) and removal of the agglomerates to classify the granules.  |
| 8477.80.90 | 588 | Machine combinations for mixing and homogenization of raw material in the polymeric forms, bulk, liquid resins and oils, for the manufacture of rubber compounds for tire manufacturing, composed of: loading door rubber compounds and pigments discharging port rubber, the upper mixing chamber 320L, mixing chamber lower 550L, hopper, compression device "hammer" steel operating through hydraulic cylinders, nozzles feedstock and lubricating oil, temperature control sensors and cooling water flow channels / heating type PT-100 temperature control sensors installed in the chamber and the discharge port, the unit value (CIF) not exceeding US \$ 14,493,195.20.   |

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| 8477.80.90 | 589 | Combinations of machines for cutting rubber tubes in the production of toothed belts for the automotive industry, with a production capacity of up to 45correias / min with a width of up to 1 mm and a maximum width up to 100 mm, composed of: tensioning unit to tension the rubber tube, with two movable axes for pipe fixation; System tube voltage control on leading edges of the tensioning shafts, comprising two load cells connected to the abutment flanges; cutting unit comprising a blade, mechanical devices, electronics; automatic drag system with parts cut belts and two arms for moving the cut pieces to the transportation cart; servo main drive to rotate the tube with power 9,5kw; servomotor for tensioning the tube with power of 7.5kW; servo motor for driving the cutting unit in the Z axis: with |
|            |     | power 2.2kW; servomotor for driving the cutting unit on the X axis: with a power of 0,5kW; servomotor to drive the knife rotation with power 0,5kW; servomotor to drag device with power of 1.1 kW; PC supervision of the machine; control unit consists of a main panel for electrical protection, contactors, "drivers" of servomotors; unit operations responsible for rotating the rubber tube with variable speed by a preselected set of pulleys and belts, controlled by a frequency inverter; programmable logic programmer (PLC) and human machine interface (HMI).   |
| 8477.80.90 | 590 | Machine combinations for the heat treatment of the vinyl floor for stress relief and ensuring dimensional stability and flatness of the end product, with adjustable speed of up to 15m / min, consisting of: four thermal chamber with circulating hot air to working temperature between 110 and 130 degrees celsius; conveyor belts temperature resistant up to 140 degrees Celsius; cooling station for applying sprays of cold water between 12 and 16 degrees celsius, with reuse of water; drying station, for removing water from the product surfaces with stressors rollers and air jets; electrical panels with programmable logic controller (PLC) for equipment management.   |
| 8477.80.90 | 591 | Combinations of machines for the production of PVC tubes with degrees of hardness 67-90 "shore" hospital for medical use, consisting of: extruder diameter tolerance OD / ID of about 0.05 mm, extruder screw 65mm, vacuum tank, laser diameter gauge, cooling tank, water cooling system in a closed circuit and purification by ultraviolet light high-speed tube puller, pipe cutter, pipe winding machine, programmable logic controllers ( PLC), Human Machine Interfaces (HMI), computer and electrical enclosures.  |
| 8477.80.90 | 592 | Machines with cutter and rewinder function with fast switching time, fully automatic production of self-adhesive tape BOPP (biaxially oriented polypropylene) in rolls with a width of 45 or 48mm and a maximum of 305mm diameter from coils with a width of 1,000 and 1.650mm maximum, a nominal processing capacity of at least 4.700m linear tape unwound per hour have: unwinding unit with pneumatic brake system cross-section; slitting system; tangential rewinding trimming group; main group of rewinding with two towers (upper and lower) of 4 slots each; paper tip applicator; automatic transverse cutting and finishing rollers; piping system and feeding tubes; car "all-in-one one" for quick-change tooling; automatic loading and unloading roller conveyor system  |
|            |     | output and electric command and control panels, with a total weight of 9.800kg, 50m 28s cycle time and 1.000m BOPP rolls in 3min, 220V, 60Hz three-phase.  |

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| 8477.80.90 | 593 | 3D laser printers to produce physical three-dimensional models (rapid prototyping) from virtual models, using the technology of an advanced form of stereolithography using photopolymerizable liquid resin, using two lasers diode violet, wavelength 405nm , power 250 mW, resolution of up to 25 microns layer height precision, and focal point 85 microns, endowed with two liquid resin cartridges, print size of 335 x 200 x 300mm, printing chamber with heating air, processing via Wi-Fi and Ethernet connectivity.   |
| 8477.80.90 | 594 | 3D printers that materializes objects by stereolithography technology type (stereolithography apparatus - sla) by 13.3-inch LCD (liquid crystal display) and LED lamps with a wavelength of 405nm with the construction of three-dimensional objects from the photosensitive resin, printing area of 293.76 x 165.24 x 400 mm and 77 micron pixel size of screen "touchscreen", black, orange cover, connectivity "pen drive".  |
| 8477.80.90 | 595 | Combinations of machines for manufacturing foamed rigid polyurethane using isocyanate and polyol mixture with cyclopentane gas as blowing agent for foaming, by injection, refrigerator freezer doors for domestic use, consisting of: dosing unit with suction line with edge filter flow measuring unit by means of volumetric flow meters, axial piston pump, metering pump 40L / min with magnetic coupling drive, pressure measuring device to "display" digital and gas concentration sensors cyclopentane and programmable logic controller; Injection head for polyurethane with cyclopentane provided with gas lubrication system, with a flow rate of 20 to 300 g / s; and 2 of carbon steel tanks for storage of isocyanate and polyol mixture with cyclopentane gas volumetric capacity 250L. |
| 8477.80.90 | 596 | 3D printers that materializes objects by stereolithography technology type (stereolithography apparatus - sla) through "display" 13.3-inch LCD (liquid crystal display) and LED lamps with a wavelength of 405nm with the construction of three-dimensional objects from photosensitive resin, print area of 292 x 165 x 385mm and 76 micron pixel size of screen "touchscreen", black, orange cap, pen drive connectivity and Wi-Fi.   |
| 8477.80.90 | 597 | Combinations of extruders and calendering rubber compounds for the continuous batt production for the manufacture of tires, composed of: two extrusion helicoides driven by AC electric motor with power equal to 150kW coupled to gearbox speed, calender with two rolls driven by AC electric motor with power greater than or equal to 150kW coupled to gearbox speed, calender lubrication system, thickness control of the web, width between 635 and 864mm, funnel cylinder with hydraulic drive, lubrication system, load cells and "encoders".  |
| 8478.10.90 | 8   | Machines for the manufacture of cigarette filters, capable of 10.000cigarros / min compressed air consumption of 34m <sup>3</sup> / h, installed capacity of 54kVA and frequency of 60Hz.   |
| 8479.30.00 | 46  | Flat die presses pelletizers for the production of "pellets" of wood with a diameter 6mm, with a diameter of 1.250mm matrix, the perforated air 5.900cm <sup>2</sup> matrix, with rollers 5 Speed 2.7 m / s, hydraulic nut for automatic adjustment distance between die and rollers production capacity exceeding 3,4t / h, after pelletisation temperature of 80 to 100 degrees celsius, installed capacity of approximately 315kW, hydraulic system, control panel and control equipped with programmable logic controller (PLC) .   |
| 8479.79.00 | 1   | Walkways for passenger shipments used in yachts, telescopic type of double section with swivel up to 90 degrees and move lock, the final length of the board between 4234 and 7.531mm and hydraulic self centering.   |

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| 8479.82.10 | 259 | functional for impregnation units, encapsulation and injection of electrical equipment, electronic components, and infusion composites with fixed end resins epoxy or polyurethane or silicone, in liquid or paste form through treatment system under continuous vacuum to manufacturing circuit breakers, meters, transformers, coils, electric insulators, stators, engines, composites, consisting of: two tanks, cylindrical anchor stirrers for continuous vacuum treatment without interruption equipped with servo controlled electronically to move ceramic pistons and accurately synchronicity to correct dosage of Part a and Part B, operating with high pressure equipped with DCU ratio control system (dosing control Unit - combination of hardware and software) is made of ceramic resistant metalbombas abrasion valve piping system connected to supply static mixers |
|            |     | vacuum sealed abrasion proof and return, discharge valve system "valve flushing" mounted directly to the static mixer, encapsulation devices, infusion and injection fixed end resins, with or without the system "by-pass" to avoid deposit and sedimentation mineral fillers resins and / or autoclaving (vacuum chambers - encapsulation and impregnation), with or without feeder mineral fillers and with or without unit "big bag" storage of loads with dosage control pressure and injection, fully controlled by PLC.   |
| 8479.82.90 | 197 | machines combinations used in aluminum recycling process, especially designed to process bare aluminum waste may be reduced to a particle size of 10 to 100 mm, as aluminum profiles, cables and other nonferrous metals, by grinding and removing ferrous contamination, consisting of: crusher equipped with a rotor with 2.400mm in length and 550mm in diameter, fixed blades 12 and rotating blades 36 of 28 x 56 x 195mm, speed of 110 to 145rpm, power 300HP / 220kW and a trough vibrating interconnected to a magnetic separator provided with a belt width of 1.000mm, with vibratory system 2 and suspended magnets, power of 10HP / 7kW, with a single control system by means of a switchboard with frequency inverter and the touch panel .  |
| 8479.82.90 | 198 | Solid waste disposers of organic nature, provided with monoeixo rotor with conveyor feeding and extraction with knives type individual lozenges, electric motor 37kW, inspection door and hydraulic maintenance opening onto the interior controlled by programmable logic control ( CLP), with device "stop and go", with or without frequency  |
| 8479.82.90 | 199 | rotating screens used for sizing and homogenizing solid organic waste source, the operation capacity of 8 to 12t / h, equipped with input and output unit of the input, 7.5kW electric motor rotor, insertion screen and rotor speed controlled drive means of programmable logic controller (PLC).  |
| 8479.82.90 | 200 | Solid organic waste crushers equipped with monoeixo rotor equipped with individual and reusable current system, equipped with: 1 electric motor 22kW incorporated sieve and grinding 5 to 8 t / h, the feeder by the drive of synchronous conveyor belts to prevent overhead equipment, hydraulic door for maintenance, frequency converter and programmable logic control unit (PLC).   |

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| 8479.82.90 | 201 | Mills of interchangeable heads and knives hammers for active pharmaceutical ingredients, with a processing capacity between 50 and 200kg / h to a particle size of between 100/1000 microns, retaining ring "Gylon" total retention of dust, interior trim polished, equipped with automatic feeder breaker system of lumps and lung with level sensor grinding chamber with cooling jacket, internal temperature probe, open-door safety sensor inerting by nitrogen flow filtration system with pneumatic cleaning and grade H-13 filter (HEPA), automatic discharge valve, closing system for the product bag computerized system validation protocol GAMP5, electrical panels and HMI  |
| 8479.82.90 | 202 | Water pumps (mixers), submersible, electric, used to mix, thicken and treat wastewater and sludge water, urban and industrial use in environmental protection in shrimp ponds, power 1kW, 8 or 4-pole, current 4 or 3.1 amps, low speed, propeller blades and with three diameters of 260 to 220mm and 740 or 1.470rpm, 64 or 69% engine efficiency shaft 304 stainless steel, double mechanical seal, tungsten carbide material, and stainless steel fasteners.   |
| 8479.89.11 | 161 | Compaction rolls for dry granulation of pharmaceutical powders for direct compression of solid dosage materials 316 stainless steel with a capacity of 400kg / h (based lactose); Funnel feed bi-party: horizontal screw feeder with vacuum station; roller compaction machines with vertical arrangement and chilled water; Hydraulic system for rollers; pneumatic conveying system for food and product emptying; 2 granulators arranged in a diagonal direction (format "D") with screens; control booth; panel command in the machine PLC.  |
| 8479.89.12 | 162 | Metering equipment inputs, automatic, for dosing the organo-mineral products continuously and accurately provided with four reservoirs 1,5m <sup>3</sup> each with dimensions of 1.5 x 1.5m storage, electric motor 4, 4kW, conveyor belts and programmable logic controller (PLC).  |
| 8479.89.12 | 163 | Automatic gravimetric dosing systems consisting of individual dosages fixed head 28 and circuitry for components designed to dispense colorants based on water and solvent viscosity and EP approximate <6.000cps - approx. 1.5, 19 parts "Multiflow" 1.5mm / 20mm opening for metering dyes used with an accuracy of +/- 0,1gr and 9 parts "selectflow" 10mm opening to base dosing accuracy + / -2G allows the dosage containers with minimum opening of 300mm, consisting of stainless steel structure, metering valves 28, scale 30 kg +/- 0.1g, semiautomatic cleaning system operator office computer and electropneumatic controls.   |
| 8479.89.99 | 872 | Machinery for coating tablets and other pharmaceutical application cores, totally perforated horizontal drum with removable baffles mixtures with an operating range of up to 189kg unit for a tablet density of 0.8kg / dm <sup>3</sup> equipped with: spray system using spray pumps or peristaltic pumps rotary piston; spray arm nozzles and the entire front door can be completely removed and turned out; front discharge system which may contain an additional discharge funnel; Inlet air treatment systems and air exhaust; coating pan with working volume of 236 liters and tray motor 1.5kW capacity, heating capacity of 175kW and outlet air temperature of + 90 degrees Celsius depending on the flow rate, assembly "cantilever" only. |

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| 8479.89.99 | 873 | Combinations of machines, automatic, for applying release layer PTFE (Teflon) and / or organic dyes, aluminum disks, used for manufacturing aluminum pans with 4.300lados production capacity disk / h composed of: pneumatic alignment system drives through rollers capable of 80discos / linear meter of track width and 1.350mm; sanding and brushing automatic disc with cylinder diameter of 250mm, 1,1kW engine exhaust system provided by wet; dust removal by wet system, such as "Scrubber", capable of 15.500mc / h for aluminum dust containing: tank with decanter, traced filtering apparatus 3kW pump nebulizer, a double membrane pump for automatic loading of purified water and filtration, two floats, fan 18,5kW, droplet separator of high performance and low resistances   |
|            |     | flow filters 2 to pump nebulizer nozzles, installation pipes and electrical control panel; Two roller conveyors with 0,55kW electric motor and working width of 1.000mm; 5 coating machines, roller type (roller) equipped with automatic height adjustment system of the roller aperture and with variable speed conveyor, 0.75kW engine; Two conveyor furnaces for primary drying, the gas and equipped with exhaust fans for air circulation, with a length of 9.000mm, useful height of 100mm, variable speed to 20m / min, thermal power 2 x 175kW and maximum temperature working 250 degrees celsius; 3 continuous conveyor furnace to primary drying, the gas and equipped with exhaust fans for air circulation, with a length of 5.000mm, useful height of 100mm, variable speed to 20m / min, thermal power 1 x 58kW and maximum temperature of 250 degrees working |
|            |     | Celsius; roller conveyor, electric motor 0,55kW and working width of 1,700mm; rack of oven loading, tabbed horizontal surface, for various diameters disks, with electric power 1,1kW installation; heating furnace, continuous loading, gas, and equipped with exhaust fans for air circulation, with a length of 25.000mm, suitable for curing the organic ink and PTFE, for disks with diameter between 170mm and 550mm, variable speed up to 2m / min, and thermal power 1.900kW maximum working temperature of 550 degrees celsius; Rack oven discharge; conveyor rollers powered, double-curved, rotated 90 degrees; coating machine type "roller" using non-adhesive products in aluminum discs with variable conveyor speed and dual-use; central control cabinet with electromechanical control   |
|            |     | supervision and management.  |
| 8479.89.99 | 874 | Revolvedores organic compost windrow (composting), equipped with pivoteado rotor, self-propelled crawler with a maximum width up to 3m swath, the maximum swath height of 1.5m, a maximum capacity of disturbance to 1.200m3 / h diesel engine and maximum engine power up to 150HP.   |
| 8479.89.99 | 875 | Combinations machines with programmable logic controller (PLC), such as "skin condenser", to automatic assembly and fixing coils (condensers) metal panels in domestic refrigerators with varying width between 500 and 830mm in length between 1,300 and 1,900mm, and thickness between 0.35 and 0.50 mm, with an average production capacity of complete 186produtos / h with working voltage of 380V - 60 Hz, more than 1.33 CPK and CP composed of: filling station and centering metal panels with three horizontal displacement tables equipped with position sensors, and three centering devices driven by electric motors; coils supply station with two placement tables model checking sensors and two end folds and closing systems of the refrigeration system; coil assembly station on metallic panels 2  |

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|            |     | with model checking sensors; Station 4 with application of tape heads with a heating system with aluminum tape sensing and temperature compensation to work between 20 and 35 degrees Celsius; 6 and station with metal panels carriers 3 being input conveyors 3 and exit conveyors.  |
| 8479.89.99 | 876 | Machines for cleaning of rigid or flexible printed circuit boards through adhesive rolls and antistatic control system with electronic control apparatus (PLC), containing feeder and unloader feeding 220V, 60 / 50Hz, 0,5kW.   |
| 8479.89.99 | 877 | Machines for maintenance mills, for moving and positioning the linings of mills, with a lifting capacity exceeding 1,500 kg, equipped with telescopic rod equipped with gripper and turning capacity of up to 360 degrees, and drive for the transport of load capacity exceeding 2,000 kg.  |
| 8479.89.99 | 878 | Machines for the formation of copper and inlay antenna in PVC and similar sheets for the production of antennas pre-rolled "dual interface" used in the production process of bank cards, telephone and the like, operating with 8 or more heads, format maximum sheet 600 x 600 mm, minimum thickness of 130 micrometers, a minimum of 0.08 mm diameter copper wire.                              |
| 8479.89.99 | 879 | inductive heat shrink machines for contraction and clamping the basis for tooling number used in turning equipment / machining, comprising induction and cooling unit, induction drive capacity: 480V induction voltage, frequency 50 / 60Hz, heating time 5s, lower induction intensity 100out, cooling unit capacity: 230V, frequency 50 / 60Hz, cooling tank 5 liters, cooling time 20 to 150s. |
| 8479.89.99 | 880 | Expansion vessels and high performance fixed diaphragm technology butyl material, maximum working pressure of 16bar vertical, of 2 liters silo 1 inch switching output of stainless steel without carbon steel flange paint on epoxy base dimensions 130mm diameter and 210mm height.  |
| 8479.89.99 | 881 | Expansion vessels and high performance fixed diaphragm technology butyl material, maximum working pressure of 16bar, vertical, 4 liters of capacity silo 1 inch switching output of stainless steel without carbon steel flange paint on epoxy base dimensions 160mm diameter and 270mm height.  |
| 8479.89.99 | 882 | Expansion vessels and high-performance rubber balloon technology, maximum working pressure of 16bar, vertical 200 liter capacity silo 1 inch switching output of stainless steel without carbon steel flange, paint over epoxy-based , dimensions of 650mm diameter and 970mm height based plastic support, embedded in the gauge body.  |
| 8479.89.99 | 883 | Expansion vessels and high-performance rubber balloon technology, maximum pressure 16 bar working, vertical 300 liter capacity silo 1 inch switching output of stainless steel without carbon steel flange, based on paint epoxy, maintenance free, dimensions 750mm diameter and height 1.050mm based plastic support, embedded in the body   |
| 8479.89.99 | 884 | Expansion vessels and high performance fixed diaphragm technology butyl material, maximum pressure 16 bar work, horizontal 24 liters capacity silo 1 inch switching output of stainless steel without carbon steel flange paint based on epoxy, dimensions 310mm diameter and 460mm height based support and support for pumps.  |
| 8479.89.99 | 885 | Expansion vessels and high performance fixed diaphragm technology butyl material, maximum pressure 16 bar work, horizontal, 36 liters of capacity silo 1 inch switching output of stainless steel without carbon steel flange paint based on epoxy, dimensions 360mm diameter and 470mm height based support and support for pumps.  |

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| 8479.89.99 | 886 | not industrial machinery computerized provided with application, built in aluminum intended for reading and product codes bars in general, such as, meats, starches, grains, cleaning LDde products and soft drinks, scale fitted up exclusively for the conference "software" with weighing capacity up to 30 kg and visual identification cameras of products, network system for artificial intelligence able to identify products based on weight, image and computer experience, specific lighting for product identification and network connections and power 220V, included, LCD display 5 inches facing interaction with the "smartphone" app.  |
| 8479.89.99 | 887 | Combinations of machines for the surface treatment of the plates and structural reinforcement of brittle ornamental stones, composed of: 1 flag crane with motorized translational movement; 1 semiautomatic loading table horizontal / vertical tilting; 1 unit storage chamber and dehydrating tower with catalysis chamber floors 40, and fitted with exhaust pipe connecting the air exchangers; 1 Vertical elevator entrance and exit of the tower; 1 motorized brush helical format for cleaning of the plates; 1 support for screen rollers for structural reinforcement of the plate; up to 4 tables connection between units for transporting trays of support plates; 1 automatic dosing system and resin mixture with mixing by manual actuation gun and interchangeable nozzle static mixers; to 5 with exhaust pipes for suction application area ok resin; 1 chamber |
|            |     | Horizontal microwave equipped with exhaust pipes and connection to an air exchanger; 1 elevator with hydraulic movement performed by pantograph; 50 trays with metal grids to support and transport the sheets in the circuit; electrical panels with PLC control for monitor "touchscreen".   |
| 8479.89.99 | 888 | Machine sweepers, driven by mechanical force, moved by hand, containing adjustable ergonomic design with pressure control and adjust the height of the lateral circular brushes 220mm and central 480mm, and removable collection reservoir with a useful capacity of 20 to 38 liters capacity and variable sweep by model 680, 700, 860 and   |
| 8479.89.99 | 889 | sweepers machines driven by batteries and with operator aboard ship; Transmission system comprising engine power 3,3kW 4 times (4HP) fed to gas; pushed out and pulled by traction batteries which ensure a constant speed, with a range of 4h; or by mechanical force pushed by hand, both contain "design" ergonomic and pressure adjustment of the side brushes and the central, adjusting them according to the operation, provided with: removable reservoir 20, 40 and 50L, equipped with a cylindrical sweeping system with central brush may have one or even two heads of additional side circular sweeping totaling in performance, giving 700, 750 and 850mm sweeping range, besides having sucking system with a filter which prevents the suspension dust sweeping on dry roads.  |
| 8479.89.99 | 890 | Stabilizers active water sports craft motion control and recess comprise two fins fixed at both sides of the hull and two propellers installed perpendicular to the hull at the bow and stern of the vessel, commanded by an electronic system for the control of movements, speed and incline panel through "touchscreen" and driven by hydraulic pumps   |

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| 8479.89.99 | 891 | Machine automatic washers dedicated floors to washing and drying of industrial and commercial flooring, powered by batteries, which may or may not accompany the equipment, operating with electric motors 24V, airship with operator on board and autonomous with washing system using 1 brush flat disc type or brush type 1 REV brush motor 380 with power at 500W and 140 2.250rpm, de150 actuator motor power 200W and the suction motor 450 and 500W of power, traction motor power 380 at 480W and 140 to 190rpm, with washing range may vary between 500 and 510mm, integrated squeegee to suction liquids with a width varying between 600 and 767mm, 57L solution tank and dirty water recovery 53L, manual theoretical yield 2.550m <sup>2</sup> / h practical productivity 1.785m <sup>2</sup> / h, maximum theoretical yield autonomous 1.938m <sup>2</sup> / h productivity autonomous practice of 1.356m <sup>2</sup> / h, low |
|            |     | Noise level with sound pressure of 63 (dB (A)), allowing you to work in sensitive areas to noise at night, access to quick-change system of brushes and squeegee blades without the use of tools, maximum speed operation 5km / h manual mode, the manual reverse 2.6km / h and 3.8 km / h in stand-alone mode and maximum rate of inclination of 2% in standalone mode and up to 15% in manual mode.   |
| 8479.89.99 | 892 | Semiautomatic winding machines to ensnare and hospital medical disposable device (mans), with a production capacity of at least 7peças / min with a PLC control (programmable logic controller), and HMI touch panel.   |
| 8479.89.99 | 893 | exclusive equipment for use in the process of stabilization and pressing power transformer windings (10 - 63MVA, 138kV), 200t capacity, maximum height 3500mm and maximum diameter of 1,600mm.  |
| 8479.89.99 | 894 | Machine combinations to manufacture and package wet wipes, with a production capacity greater than or equal 50pacotes / min composed of 12 unwinders, 12 sets of folding plates, dosage unit and moistening, seam detection unit, shear modulus , stacking unit, wrapping, label applicators, programmable logic controller (PLC) and graphical interface (HMI).  |
| 8479.90.90 | 323 | Gravimetric unloading stations for "BINS" and containers IBC type (Intermediate Bulk Container) used to transport, mixing and storage of pharmaceutical and bulk solids, equipped switchboard and control valves with butterfly valve for flow control in system automatic opening and closing by actuation arm, inflatable rubber seal, pneumatic vibration system, the presence of bin sensor operating panel "touch screen" color, PLC (Programmable Logic Controller), structure built in stainless steel AISI 316L for the parts in contact with the product and stainless steel AISI 304 in accordance with the FDA, the unit value (CIF) not exceeding US \$ 157,660.60.   |
| 8479.90.90 | 324 | Together telescopic sealants or not sealant to adjust spacing in subsea wells columns, travel "stroke" of 3m or more, elastomeric seal for molded seals, for case sealing gaskets, made of carbon steel or higher metallurgy, 2 7 connection / 8 inches or greater, minimum yield strength of 80.000psi.  |
| 8480.71.00 | 209 | Sets (kit) for basic parts reconditioning hot runner injection molding to produce preforms of polyethylene terephthalate (PET) equipped with up to 294 Interface nozzle tip insulator to the cold part with a 18,75mm 9,7mm diameter and length, 152 injection nozzles (nozzle tips) to 40,5mm in length valve stems 152 to 155 mm long, 148 setscrews 1/2 inch long x 8.5mm, 294 rings rubber piston for sealing 35mm cylinder 148 with sealing caps 39,8mm 30,40mm in diameter and length and with 2 thermocouples 1.850mm long.  |

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| 8480.71.00 | 210 | Sets (Kit) intermediate parts for reconditioning the hot runner injection molding to produce preforms of polyethylene terephthalate (PET) equipped with up to: 246 interface nozzle tip insulator to the cold part, to 18,75mm in diameter and 9.5 mm in length, 104 injection nozzles (nozzle tips) with 40,5mm long, non-rotating flange 100 dimensions 3.175 x 44.25 x 31mm, 104 rods of the resin flow control valve 155mm long, 104 adjustment screw ½ inch long x 8,55mm, rubber rings 246 for sealing the piston with 35mm diameter aluminum seal 246 seats with outer diameter of 23 mm and internal 16,4mm, 246 graphite sealing seats with outer diameter of 16,2mm and 12,9mm inner, seal 100 covers cylinder with a diameter of 39,8mm and a length of 30,40mm, titanium location 100 insulators with 44mm |
|            |     | Disk springs 100 40,56mm in diameter and 5mm in length, two thermocouples 1.850mm long, two heater bands nozzle 67mm diameter x 50mm in length and 4 bushings pin guide made in bronze alloy and 28mm diameter x   |
| 8480.71.00 | 211 | Sets (Kit) parts for basic reconditioning of hot runner injection molding to produce preforms of polyethylene terephthalate (PET) equipped with up to 294 Interface nozzle tip insulator to the cold part with maximum diameter of 18 , maximum length of 75mm and 9,7mm, 152 injection nozzles (nozzle tips) with a maximum length of 40,5mm, valve stems 152 with a maximum length of 173mm, rubber rings 294 for sealing the piston with a maximum diameter of 35mm, 2 thermocouples maximum length of 1.850mm, with or without cylinder 148 until sealing caps with a maximum diameter of 39,8mm and maximum length of 30,40mm and with or without set screws to 148 with a maximum diameter of 1/2 inch and maximum length of 8.5mm.  |
| 8480.71.00 | 212 | Molds made of steel with dimensions 820 x 920 x 680cm, suitable for making the left and right side of the outer covering automobile seats, operating at temperatures up to 35 degrees Celsius, 2 wells for use in high pressure injection, and pneumatic extraction system.  |
| 8480.71.00 | 213 | injection molds made of steel with dimensions 560 x 700 x 596cm, suitable for manufacturing the left and right side of the inner cover of automobile seats, operating at temperatures up to 35 degrees celsius, with two cavities for use in high-pressure injection, and pneumatic extraction system.   |
| 8480.71.00 | 214 | Molds made of steel with dimensions 820 x 800 x 711cm, for the manufacture of plastic covering the front bank without B / P (backed Poket), operating at temperatures up to 30 degrees Celsius, with one cavity for use in high pressure injection and pneumatic extraction system.  |
| 8480.71.00 | 215 | Molds made of steel with dimensions 820 x 800 x 711cm, for the manufacture of plastic covering the front bank with B / R (Backed Poket), operating at temperatures up to 30 degrees Celsius, with one cavity for use in high pressure injection and pneumatic extraction system.   |
| 8480.71.00 | 216 | Molds made of steel, having dimensions 650 x 700 x 441cm, for the manufacture of the pocket guide the back of car seats, operating at temperatures up to 25 degrees Celsius with one cavity for use in high pressure injection and system pneumatic extraction.  |
| 8480.71.00 | 217 | Molds made of steel, having dimensions 400 (450) x 400 x 551cm for plastic cap manufacturing finishing assembly hitter actuator automobile seats, operating at temperatures up to 35 degrees Celsius with two cavities for use in high injection pressure and pneumatic extraction system.   |

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| 8480.71.00 | 218 | Molds made of steel, having dimensions 400 (450) x 400 x 551cm for manufacturing assembly of the drive button folding system automotive seat back, operating at temperatures up to 35 degrees Celsius, 2 wells for use in injection molding high pressure and pneumatic extraction system.   |
| 8480.71.00 | 219 | Molds made of steel, having dimensions 300 (350) x400 x 381cm for the manufacture of drive assembly structure of the folding system of the seat back, operating at temperatures up to 35 degrees Celsius with one cavity for use in high pressure injection, and pneumatic extraction system.  |
| 8480.71.00 | 220 | Molds made of steel, having dimensions 230 (280) x 300 x 298cm with for manufacturing the fixing pin drive assembly rod swivel system rear plastic abutment for automobile seats, operating at temperatures up to 30 degrees Celsius with 8 wells for use in high pressure injection and pneumatic extraction system.  |
| 8480.71.00 | 221 | injection molds made of steel, with dimensions 650 x 700 x 441cm for manufacture of internal plastic cover SAB (System AirBag) of the right and left side of automotive seats, operating at temperatures up to 25 degrees celsius with 2 cavities for use in high pressure injection and pneumatic extraction system.  |
| 8481.20.90 | 118 | flow control valves with adjustable flow and pressure motor, equipped with manual fine tuning knob for manual adjustment, made of reinforced polypropylene, flow from 60 to 200 liters / min and a maximum pressure of 40bar.  |
| 8481.30.00 | 28  | Axial retention valves for hydrocarbons up to 10,000 psi operating pressure, temperature range -46 / 100 Celsius degrees and interface API 6A 7.1-16-10K flange.   |
| 8481.80.95 | 35  | Ball valves with manual drive for flow control, filter or otherwise, made of brass, threaded input and output to 5 1/8   |
| 8481.80.95 | 36  | Ball valves with flow control lever, made of brass or steel with or threaded spigot 1/8 to 5 inches.   |
| 8481.80.97 | 10  | double block valves from single pivotal movement for safe and intelligent liquid separation fluid in cleaning and sterilization processes "Clean in Place" (CIP) in beer production processes, beverages, food and other hygienic processes, mixproof, to sanitary finish with body stainless steel 1.4404 (AISI316L) machined in one piece with operation efficiency of up to 3 single valves by having one casting chamber with two auxiliary valves, two drains, two locking discs with bearings for reduction of friction with the valve body and better centering during opening and closing simultaneously moved to completely isolate the leak chamber with high resistance to pressure shock linkage with handling protection for the linkage isolation manual contact with roughening (Ra) of the surfaces in contact with  |
|            |     | without contact with the product £ 1.6 microns, operating pressure up to 10 bar, working temperature from -5 to 130 degrees Celsius and 140 degrees Celsius sterilization process, with or without support for up to two proximity sensors and device control and monitoring with an electronic module for air release time control and valve closure system of identification by magnetic induction flow control up to two solenoid valves, two position sensors and visual indication system 360 by LED light, allowing operation of adjustment by means of "auto tune" automatic valve position identification prior to operating it with communication 24V DC, AS-i, DeviceNet, 110V AC or IO-link and degrees IP65, IP67 and IP69K combined with the "Ex-zone" II 3G Ex nA IIC T4 also X + 55 degrees celsius and II 3D Ex tD A22 IP67 T70 degrees celsius X or monitoring device |

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|            |    | with two position sensors and visual indication system 360 LED light PnP communication, digital, 50mA, 4-20mA output, a position measuring system with 85mm detection range positions 2 and feedback monitored with communication 24V DC and degrees of protection IP65 and IP67 combined with the "Ex-zone" II 3 G Ex nR IIC T4 Gc (Ta -10 degrees celsius £ £ 55 degrees celsius) and II Ex 3 D tc Dc IIIC T135 degrees celsius ( -1 degrees celsius Ta £ £ 55 degrees celsius) to drive the valve lever or by pneumatic actuator (air / spring or air / air) free of internal welds with visual identification size, pressure rating, and material seal with special geometry in EPDM, HNBR, FPM, VQM, PTFE laminate or other with slots that enable its expansion in high temperatures and technology   |
| 8481.80.97 | 11 | shutoff valves for liquid fluids and / or gases, rotary motion to beverage production processes, food and other hygienic processes with direct contact with product, sanitary finish with stainless steel housing 1.4404 (AISI316L) machined in one piece with the locking disc with bearings for reduction of friction with the valve body and better centering during opening and closing with roughness (Ra) of the surfaces in contact with the product £ 0.8 microns and without contact with parts of the product £ 1.6 microns, operating pressure up to 10 bar, working temperature of -5 to +130 degrees celsius to 150 degrees celsius and sterilization process capable of operation at temperatures up to 95 degrees celsius for products, with or without support for up to two proximity sensors and control and monitoring device with an electronic module for regulating air flow to control                       |
|            |    | time of opening and closing the valve system of identification by magnetic induction with up to two solenoid valves, two position sensors and visual indication system 360 LED light, allowing operation of adjustment by means of "Auto Tune" automatic identification of the positioning of the valve before operating it, with communication 24V DC, AS-i, DeviceNet, 110V AC or IO-link and degrees of protection IP65, IP67 and IP69K combined with "Ex-zone" II 3G Ex nA IIC T4 X Tamb + 55 degrees celsius and II 3D Ex tD A22 IP67 T70 degrees celsius X or monitoring device with two position sensors and visual indication system 360 LED light PnP communication, digital, 50mA, 4-20mA output, position measurement system detection range 85mm 2 position and feedback monitored with communication 24V DC and degrees of protection IP65 and IP67 combined with the "Ex-zone" II 3 G Ex nR IIC T4 Gc ( £ -10 degrees |
|            |    | Ta £ 55 degrees Celsius) and II Ex 3 D tc Dc IIIC T135 degrees Celsius (-1 degrees Celsius Ta £ £ 55 degrees Celsius) to drive the valve lever or by pneumatic actuator (air / spring or air / air) , internal welds free with visual identification size, pressure rating, and material seal with special geometry in EPDM, HNBR, FPM, VQM, PTFE laminate or the other with grooves that permit its expansion at high temperatures and technology for secure contact   |
| 8481.80.97 | 12 | flow control valves with flow regulation butterfly type, made of high density and high molecular weight polyethylene (HDPE), high chemical and mechanical resistance, used in plastic IBC (Intermediate Bulk Container), approved for dangerous products endowed axis of the handle in steel coated with polyethylene; Dual safety packing with the axis of the handle Viton and EPDM; ETFE gasket in the valve closure disc; output connection 60 x 6; NPT quick hitch or nominal diameter of 2 inches; working pressure of 1 bar.   |

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| 8481.80.99 | 109 | Sanitary single-seat valves for flow control function with "on / off" with body stainless steel 1.4404 (AISI316L) 2 or 3-way, cleaning and sterilization processes "Clean in Place" (CIP) processes prior to pasteurization and production of beer, beverage, food, dairy and other hygienic processes with roughness (Ra) of the surfaces in contact with the product £ 0.8 microns and the portions without contacting the product with R £ 1.6 microns, operating pressure up to 6 bar, DN40 connections DN100 / OD4 OD1,5 inches to inches, with drive valves for pneumatic actuator (air / spring or air / air) screened with degrees of protection IP65 and IP67 and technology without opening breathing assist entry and exit of air, with or without control and monitoring device with an electronic module for regulating air flow to control opening time and closing valve system for identifying                   |
|            |     | magnetic induction up to two solenoid valves, two position sensors and visual indication system 360 / LED light, allowing operation of adjustment by means of "Auto Tune" automatic valve position identification before operating it, with communication 24V DC, AS-i, DeviceNet, 110V AC or IO-link and degrees of protection IP65, IP67 and IP69K combined with the "Ex-zone" II 3G Ex nA IIC T4 X Tamb + 55 degrees celsius and II 3D Ex tD A22 IP67 T70 degrees celsius X or monitoring device with two position sensors and visual indication system 360 / LED light PnP communication, digital, 50mA, 4-20mA output, with track position measuring system detection 85mm and "feedback" 2 monitored positions with communication 24V DC and degrees of protection IP65 and IP67 combined with the "Ex-zone" II 3 G Ex nR IIC T4 Gc (Ta -10 degrees celsius £ £ 55 degrees celsius ) and II Ex 3 D tc Dc IIIC T135 degrees |
|            |     | degrees Celsius) with working fluid temperature of 1 degree Celsius and 95 degrees Celsius to 150 degrees Celsius sterilization process with maximum pressure of 4,7bar with visual identification size, pressure class and equipment in accordance with standards 3a and EHEDG (European Hygienic Engineering and Design Group), with or without two position sensors and / or proximity sensor with sealing EPDM or FPM in accordance with FDA / EG1935 standards (Food and Drug Administration) with technology for safe contact with food products.  |
| 8481.80.99 | 110 | Sanitary Valves and / or aseptic single seat with stainless steel housing 1.4404 (AISI316L) machined in one piece with up to 2 segments and from 2 to 4 roads, vertical, inverted or inclined configuration (angle), for hygienic and aseptic processing in the beverage, food, dairy, pharmaceutical, among others, surface roughness (Ra) of the surfaces in contact with the product £ 0.8 microns and the portions without contacting the product with R £ 1.6 microns, free solders internal, operating pressure 5 to 10 bar, DN10 connections to DN150 / inch OD0,5 OD6 inches, with a drive lever or actuator shielded tire (air / spring or air / air) with reversal position, of a kind " booster ", 3 positions and / or long-distance, with or without sensors or proximity control and monitoring device with an electronic module for regulating air flow to control opening time and valve closing with            |

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|            |     | <p>magnetic induction identification system with up to two solenoid valves, two position sensors and visual indication system 360 LED light, allowing operation of adjustment by means of "Auto Tune" automatic valve position identification before operate it with communication 24V DC, AS-i, DeviceNet, 110V AC or IO-link and degrees of protection IP65, IP67 and IP69K combined with "Ex-zone" II 3G Ex nA IIC T4 X also + 55 degrees celsius and II 3D Ex tD A22 IP67 T70 degrees celsius X or monitoring device with two position sensors and visual indication system 360 LED light PnP communication, digital, 50mA, 4-20mA output, the measuring system position detection range to 85mm and "feedback" 2 position monitored with communication 24V DC and degrees of protection IP65 and IP67 combined with the "Ex-zone" II 3 G Ex nR IIC T4 Gc (Ta -10 degrees celsius £ £ 55 degrees celsius) and II Ex 3 D tc</p>                     |
|            |     | <p>T135 degrees Celsius Dc (-1 degrees Celsius £ £ Ta +55 degrees Celsius), with a working temperature for liquids fluids from -25 to 130 degrees Celsius and up to 150 degrees Celsius with steam sterilization process, with visual identification size, class pressure and material, in accordance with the standards 3a and HDGE (European Hygienic Engineering and Design Group) with sealing EPDM, FKM or HNBR with technology for safe contact with food products, with or without the diaphragm with temperature resistance up to 150 degrees celsius ring (O-ring), drive PEEK (polyetheretherketone) and drain system for visual identification leak in aseptic processes.</p>   |
| 8481.80.99 | 111 | <p>Valves sanitary and / or aseptic single seat, type "Overflow" (pressure relief) with stainless steel housing 1.4404 (AISI316L) machined in one piece up to 2 buds and 2-4 copies for relief and pressure control cleaning and sterilization processes "clean in Place" (CIP) and production of beer, beverage, food, dairy and other hygienic processes with roughness (Ra) of the surfaces in contact with the product £ 0.8 microns and parts without contacting the product with R £ 1.6 microns, free of internal welds, operating pressure of up to 12bar with a minimum opening pressure of the pneumatic actuator (air / spring or air / air) at 0,5bar with external mechanical adjustment opening for pressure adjustment, with or without support for up to two position sensors and control and monitoring device with an electronic module for regulating air flow to control opening time and closing valve system for identifying</p> |
|            |     | <p>magnetic induction up to two solenoid valves, two position sensors and visual indication system 360 / LED light, allowing operation of adjustment by means of "Auto Tune" automatic valve position identification before operating it, with communication 24V DC, AS-i, DeviceNet, 110V AC or IO-link and degrees of protection IP65, IP67 and IP69K combined with the "Ex-zone" II 3G Ex nA IIC T4 X Tamb + 55 degrees celsius and II 3D Ex tD A22 IP67 T70 degrees celsius X or monitoring device with two position sensors and visual indication system 360 LED light PnP communication, digital, 50mA, 4-20mA output, with track position measuring system detection 85mm and "feedback" 2 monitored positions with communication 24V DC and degrees of protection IP65 and IP67 combined with the "Ex-zone" II 3 G Ex nR IIC T4 Gc (Ta -10 degrees celsius £ £ 55 degrees celsius ) and II Ex 3 D tc Dc IIIC T135 degrees</p>                  |
|            |     | <p>degrees Celsius), with working liquid fluid temperature -25 degrees Celsius to 130 degrees Celsius to 150 degrees Celsius and sterilization process with visual identification size, class of pressure and material ring (O-ring) in EPDM, FKM or HNBR with safe technology for contact with food products, with or without a diaphragm with resistance temperature up to 150 degrees celsius and drain system for visual identification leak in aseptic processes.</p>   |

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| 8481.80.99 | 112 | Sanitary single-type seat valves "change over" (flow bypass) with body stainless steel 1.4404 (AISI316L) 3 to 4-way, cleaning and sterilization processes "Clean in Place" (CIP) processes prior to pasteurization and production of beer, beverage, food, dairy and other hygienic processes with roughness (Ra) of the surfaces in contact with the product £ 0.8 microns and the portions without contacting the product with R £ 1.6 microns pressure 6bar operation of OD1,5 inches to inches OD4 connections with drive valves for pneumatic actuator (air / spring or air / air) screened with degrees of protection IP65 and IP67 and technology without vent hole auxiliary input and output air, with or without control and monitoring device with an electronic module for air flow control for opening and closing time of the control valve system identification by magnetic induction with up to two valves                                  |
|            |     | solenoids, two position sensors and visual indication system 360 LED light, allowing operation of adjustment by means of "Auto Tune" automatic valve position identification prior to operating it with communication 24V DC, AS-i, DeviceNet, 110V AC or IO-link and degrees of protection IP65, IP67 and IP69K combined with the "Ex-zone" II 3G Ex nA IIC T4 X Tamb + 55 degrees celsius and II 3D Ex tD A22 IP67 T70 degrees celsius X or monitoring device with two position sensors and visual indication system 360 LED light PnP communication, digital, 50mA, 4-20mA output, position measurement system to track detection and feedback 85mm 2 position monitored with communication 24V DC and degrees of protection IP65 and IP67 combined with the "Ex-zone" II 3 G Ex nR IIC T4 Gc (Ta -10 degrees celsius £ £ 55 degrees celsius) and II Ex 3 D tc IIC T135 degrees celsius Dc (-1 degrees celsius  |
|            |     | working fluid temperature to 1-95 degrees Celsius to 150 degrees Celsius and sterilization process with maximum pressure of 4,7bar with visual identification size, pressure class and equipment in accordance with the standards 3a and EHEDG (European Hygienic Engineering and Design Group), with or without two position sensors and / or proximity sensor with sealing greater radial and bottom axial EPDM or FPM in accordance with FDA / EG1935 standards (Food and Drug Administration) with technology to secure contact with food products.  |
| 8481.80.99 | 113 | Sanitary Valves and / or aseptic single-seat type "change over" (flow bypass) with body stainless steel 1.4404 (AISI316L) machined in one piece with 2 buds and from 3 to 5 parts for operations flow deviations in such processes as cleaning and sterilization "clean in Place" (CIP) processes prior to or subsequent to pasteurization, production of beer, beverage, food, dairy, and other hygienic processes with roughness (Ra) of the surfaces in contact with the product £ 0.8 microns and the portions without contacting the product with R £ 1.6 microns, free of internal welds, operating pressure 5 to 10 bar, DN10 connections of DN150 / inch OD0,5 OD6 inches, with activation of the valves by handle or actuator shielded pneumatic (air / spring or air / air) with reversal of position, of a kind "booster", 3-position and / or long-distance, with or without control device and monitoring with electronic module for regulation |

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|            |     | air to the opening-time control and closing of the valve with magnetic induction identification system with up to two solenoid valves, two position sensors and visual indication system 360 LED light, allowing operation setting by function "auto tune" automatic valve positioning identification before operating it with communication 24V DC, AS-i, DeviceNet, 110V AC or IO-link and degrees of protection IP65, IP67 and IP69K combined with "Ex-zone" II 3G Ex nA IIC T4 X Tamb + 55 degrees celsius and II 3D Ex tD A22 IP67 T70 degrees celsius X or monitoring device with two position sensors and visual indication system 360 LED light PnP communication, digital of 50mA, 4-20mA output, position measurement system detection range 85mm 2 position and feedback monitored with communication 24V DC and degrees of protection IP65 and IP67 combined with the "Ex-zone" II 3 G Ex nR IIC T4 Gc (- |
|            |     | 10 degrees Celsius Ta £ £ 55 degrees Celsius) and II Ex 3 D tc Dc IIIC T135 degrees Celsius (ta £ 55 £ -1 degrees Celsius) with working fluid liquid temperature from -25 to 130 degrees Celsius and even 150 degrees celsius in the sterilization process with steam, with visual identification size, pressure class and equipment in accordance with FDA (Food and Drug Administration), 3a, EHEDG (European Hygienic Engineering and Design Group), ATEX , CRN and USP Class VI radial superior sealing and axial below EPDM or FPM or HNBR with technology for safe contact with food products, with or without the diaphragm with temperature resistance up to 150 degrees celsius ring (O-ring) , disk PEEK (polyetheretherketone) and drain system for visual identification leak in aseptic processes.   |
| 8483.40.10 | 327 | Boxes own reduction gears to the drive system and shutdown of the plant rows of non-self-propelled planters, triggered based on GPS data, with a reduction ratio of 3: 1, maximum torque of 245Nm, operating voltage from 9 to 13 , 25VDC, resistance 30ohms and time for activation or shutdown of the system 100ms.   |
| 8483.40.10 | 328 | hydraulic reverser, with actual reduction ratio 1.97: 1 forward and aft; and the nominal reduction ratio 2: 1 forward and aft; diesel engines for coupling with the maximum power 97,5kW 2.500rpm, intended for application in continuous work vessels.   |
| 8483.40.10 | 329 | hydraulic reverser, with actual reduction ratio 4.10: 1 forward and aft; and the nominal reduction ratio 4: 1 forward and aft; diesel engines for coupling with the maximum power 460kW 2.500rpm, intended for application in continuous work vessels.  |
| 8483.40.10 | 330 | Gear Boxes with molten aluminum housing with internal gears steel, output torque of the 2,65Nm 2, input rotation from 6,000 to 6.500rpm, reduction ratio 1: 1.4 and the transmission angle 30 degrees applied in brush cutters.   |
| 8483.40.90 | 216 | Boxes own gear for motion transmission shaft to another one of the planters planting rows not self-propelled, with great gear rotation 950 +/- 200rpm and rotation of small gear 1,700 +/- 200rpm, minimum torque 12, 2 nm and maximum 20,33Nm.   |
| 8483.60.90 | 50  | Couplings applied on the drive shaft well drilling motor exploration and production of hydrocarbons, made of carbon steel and has a diameter ranging from 3 to 8 inches, made of female and male thread and internal cavities for redirection of drilling fluid.  |

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| 8484.20.00 | 5  | Mechanical seals of the shaft guards submerged centrifugal pump, to prevent the passage and communication of oil between guard chambers of submerged centrifugal pumps used in gas production activities and oil, with structural parts in stainless steel or Monel steel, elastomeric parts AFLAS or HSN, seats or washers ceramic or silicon with an outer diameter between 40 and 61mm, inner diameter of 50.8mm and 15.7, between 23.5 and 42.5mm length, weighing 20 to 700g.   |
| 8501.52.10 | 8  | three-phase asynchronous electric motors for use in the "yaw" system of wind turbines; with nominal power 3,6kW, 400V voltage when in delta connection, 690V voltage when star connection; frequency of 60Hz for the engine and brakes; current electric starting 8,6A; 5A electric current operation; 1.120rpm rated speed; power factor 0.78; IP55 degree of protection; F insulation class; 230V voltage to the brake; 50Nm torque brake.   |
| 8503.00.90 | 39 | Packages with external stator 1.050mm diameter, 728mm internal diameter and 954mm length, composed of 19 subpackages 40mm mounted electrical steel sheet; coating dielectric layer plates by adhesive varnish (backlack) Stage B; 18 ventilation channels 8mm thick, two pressing rings 12 and rods; subpackages grooves 72; no voids between plates; heating and curing at controlled pressure; electrical non-oriented grain sheet with 0.5mm thickness, type M350 - 50A, surface organic coating and adhesive coating in accordance with DIN EN 10251.  |
| 8503.00.90 | 40 | Packages rotor comprising 19 plates with subpackages outer diameter of 721,6mm, internal diameter 40mm and a length of 240,1mm mounted with an electric steel sheets; coating the dielectric layer plates by adhesive varnish (backlack) Stage B; Ventilation plate 19 8mm thick provided with one-piece ventilation plate 6mm thick and elastic pins 80; subpackages with 88 slots; None voids between plates; heating and curing at controlled pressure; electrical non-oriented grain sheet with 0.5mm thickness, type M350 - 50A, surface organic coating and adhesive coating in  |
| 8503.00.90 | 41 | Equipment for multiplication of rotational speed and torque transmission for use in wind turbines, with multiplier turns to power wind turbine to 5.700kW and 60Hz frequency, input speed n1 (1 / min) from 6 to 11.8, capacity maximum 650L oil Spherical main rotor main axis rolls and forged rotor in 42CrMo4 or 34CrNiMo6 material.   |
| 8503.00.90 | 42 | suitable radiators rejection heat 133kW, water inlet temperature of 33 degrees Celsius and flow between 170 and 175L / min of water with 50% ethylene glycol, air enters the radiator 95 degrees Celsius and outlet 55 degrees Celsius, operating pressure 3 bar side of the liquid static pressure liquid 8bar design, 0,913bar air pressure, pressure drop 0,5bar, radiator tube bundle arranged in Brazed aluminum honeycombs, asymmetrical construction with different densities arrangement of the honeycomb disposed in quadrants to optimize the thermal exchange, with a total flow of 3,5m <sup>3</sup> / s air, with 23.4% of the total air flow in the quadrant higher throughput and 13.2% of the total air flow in lower quadrants of flow, proof of performance through the radiator air tunnel test operation and mounted on the generator with guaranteed temperature values of the input and output of air. |
| 8504.34.00 | 20 | Transformers cooled by oil and water single phase, medium voltage, 2.800kVA, frequency 1000 Hz, equipped with heat exchangers, oil pump and oil expansion tank used in the power generation units (PSU - Power Supply Unit) of a production of up to 500kg / h of ozone in the plant minimum concentration of 12% by weight from oxygen gas and discharge high voltage electrical current.   |

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| 8504.40.90 | 214 | <p>type photovoltaic inverter connected to the grid with power 3,12MW to 40 degrees Celsius ambient temperature, power factor and 0.92 600VAC, with one crawler maximum power point (MPPT) with up to 24 DC inputs , MPPT range of 851 to 1.300VCC (nominal voltage and FP = 1), independent monitoring for DC input, with a maximum short circuit current on the DC input 12.000A nominal phase AC current of 3.239A, maximum efficiency 98.9% Euro efficiency of 98.6%, 98.7% CEC efficiency, the degree of protection IP54, degree of corrosion resistance between C3 and C5, cooling by forced ventilation, supported wind speed of up to 250km / h , resistance to seismic activity 2B zone ASCE 7 / IBC noise less than 75dBA measured at 10m in front of the panel and 1m above the ground adjustable power factor between 0 inductive to 0 capacitive function night reactive power generation, without</p>         |
|            |     | <p>of the rated power to 1,000m above sea level, operating temperature range between -25 to +55 degrees Celsius ambient temperature, Class II surge protection for DC and AC, with a DC load protection key associated opening in the CC fuses and AC motor protection circuit breaker associated with electronic protection unit, unit value (CIF) not exceeding US \$ 524,700.00.</p>   |
| 8504.40.90 | 215 | <p>type photovoltaic inverter connected to the grid with power 3,27MW to 40 degrees Celsius ambient temperature, power factor and 0.92 630VCA with one crawler maximum power point (MPPT) with up to 24 DC inputs , MPPT range of 893 to 1.300VCC (nominal voltage and FP = 1), independent monitoring for DC input, with a maximum short circuit current on the DC input 12.000A nominal phase AC current of 3.239A, maximum efficiency 98.9% Euro efficiency of 98.6%, 98.7% CEC efficiency, the degree of protection IP54, degree of corrosion resistance between C3 and C5, cooling by forced ventilation, supported wind speed up to 250 km / H, resistance seismicity 2B zone ASCE 7 / IBC noise less than 75dBA measured / at 10m in front of the panel and 1m above the ground adjustable power factor between 0 inductive to 0 capacitive function night reactive power generation operation without reduction</p> |
|            |     | <p>of the rated power to 1,000m above sea level, operating temperature range between -25 to +55 degrees Celsius ambient temperature, Class II surge protection for DC and AC, with a DC load protection key associated opening in the CC fuses and AC motor protection circuit breaker associated with electronic protection unit, unit value (CIF) not exceeding US \$ 524,700.00.</p>   |
| 8504.40.90 | 216 | <p>type photovoltaic inverter connected to the grid with power 3,43MW to 40 degrees Celsius ambient temperature, power factor and 0.92 660VCA with one crawler maximum power point (MPPT) with up to 24 DC inputs , MPPT range of 936 to 1.300VCC (nominal voltage and FP = 1), independent monitoring for DC input, with a maximum short circuit current on the DC input 12.000A nominal phase AC current of 3.239A, maximum efficiency 98.9% Euro efficiency of 98.6%, 98.7% CEC efficiency, the degree of protection IP54, degree of corrosion resistance between C3 and C5, cooling by forced ventilation, supported wind speed of up to 250km / h , resistance to seismic activity 2B zone ASCE 7 / IBC noise less than 75dBA measured at 10m in front of the panel and 1m above the ground adjustable power factor between 0 inductive to 0 capacitive function night reactive power generation, without</p>          |

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|            |     | of the rated power to 1,000m above sea level, operating temperature range between -25 to +55 degrees Celsius ambient temperature, Class II surge protection for DC and AC, with a DC load protection key associated opening in the CC fuses and AC motor protection circuit breaker associated with electronic protection unit, unit value (CIF) not exceeding US \$ 524,700.00.  |
| 8504.40.90 | 217 | type photovoltaic inverter connected to the grid with power 3,59MW to 40 degrees Celsius ambient temperature, power factor and 0.92 690VCA with one crawler maximum power point (MPPT) with up to 24 DC inputs , MPPT range of 978 to 1300VCC (nominal voltage and FP = 1), independent monitoring for DC input, with a maximum short circuit current on the DC input 12.000A nominal phase AC current of 3.239A, maximum efficiency 98.9% Euro efficiency of 98.6%, 98.7% CEC efficiency, the degree of protection IP54, degree of corrosion resistance between C3 and C5, cooling by forced ventilation, supported wind speed of up to 250km / h Zone 2B seismicity resistance ASCE 7 / IBC less than 75dBA noise measured at the front panel 10m and 1m above the ground adjustable power factor between 0 0 inductive capacitive reactive function night power generation, without reducing operation |
|            |     | of the rated power to 1,000m above sea level, operating temperature range between -25 to +55 degrees Celsius ambient temperature, Class II surge protection for DC and AC, with a DC load protection key associated opening in the CC fuses and AC motor protection circuit breaker associated with electronic protection unit, unit value (CIF) not exceeding US \$ 524,700.00.  |
| 8504.40.90 | 218 | Three-phase inverter frequency "on-grid", with 15 to 20 kW power, operation at low voltage, no transformer topology, method of passive cooling (no fans), operating temperature of -25 to 60 degrees Celsius, LCD 7polegadas, color image, providing IP65 (protection against dust and water jets) and operating noise <30dBA, RS 485 communication ports 4-pin, Wi-Fi optional GPRS models with two trackers maximum power point ( MPPT) and up to 4 entries, maximum input voltage of 1000V in direct current, maximum efficiency of 97% with minimal current input voltage of 350Vdc continues to output alternating current range of 180 to 230V AC with a nominal voltage 220Vac, with operating frequency of 50 / 60Hz, power factor 0.8 and providing option to change, meeting the EN50438 standards, G59 / 3, G99, AS4777, VDE0126-1-1, IEC61727, IEC62109-1 / -2 ,                              |
|            |     | AS3100, EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4, a unit value (CIF) not exceeding US \$ 7508.16.   |
| 8504.40.90 | 219 | Three-phase inverter frequency "on the grid," with power of 15 to 20 kW, without transformer topology, the method of forced cooling (fans), operating temperature of -25 to 60 degrees Celsius, LCD screen 2x20Z for operation, providing level IP65 protection (protection against dust and water jets), and operating noise <30dBA, RS485 communication ports 4-pin, with Wi-Fi / GPRS "stick" models with 2 or 4 trackers maximum power point (MPPT), 1000V maximum input direct current with maximum efficiency from 97% to 98.7%, with a minimum input voltage of 180Vdc continuous current, range AC output 220 to 400VAC, rated voltage 380V network, with operations in 50 / 60Hz, power factor 0.8 and providing option to change, meeting the EN50438 standards, AS4777, IEC61727, G98, G99; IEC62109-1 / -2, AS3100, VDE-AR 4105-N, V VDE 0124, VDEV0126-1-1, TPP C15-712-1 NRS                |
|            |     | 097-1-2, EN 50549-1 / -2, RD 1699, UNE 206 006, UNE 206007-1, IEC 62116, EN 61000-6-1 / -2 / -3 / -4, unit value (CIF) not exceeding R \$ 6003.36.  |

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| 8504.40.90 | 220 | Three-phase inverter frequency "on-grid" with 30.000W power without transformer topology, passive cooling method (no fans), operating temperature of -25 to 60 degrees Celsius, 2x20 LCD, providing IP65 ( protection against dust and water jets) and operating noise <30dBA, RS485 communication ports, Wi-Fi optional GPRS model with 3 trackers maximum power point (MPPT) and up to 6 inputs, maximum input voltage of 1,100 V direct current, maximum efficiency of 98.8%, with a minimum voltage current input continuous 180Vdc with output range at AC 220 to 400Vac with a rated voltage of 380V, with operating frequency at 50 / 60Hz factor 0.8 and supplying power option to change, meeting the standards EN50549, G99, AS4777.2-2015, VDE0126-1-1, IEC62727, VDE4105-2018, NB / T 32004, IEC62109-1 / -2, EN61000-6 -2, EN61000-6-3.                                 |
| 8504.40.90 | 221 | Three-phase inverter frequency "on-grid" with 30.000W power without transformer topology, with passive cooling method (no fans) and hybrid (sinks + fans) with intelligent control, operating temperature of -25 to 60 degrees Celsius LCD for operation, providing IP65 (protection against dust and water jets) and operating noise <60dB, communication ports RS 485 and "Wi-Fi stick" models with two trackers maximum power point ( MPPT) and maximum input 1000 1.100V continuous current efficiency from 97 to 98.1%, with a minimum current input voltage of 200Vdc continues with output alternating current range of 160 to 285Vac with a nominal voltage 220 to 240Vac, with operation at 50 / 60Hz, power factor and supplying on one option to change, meeting the standards IEC62109-1 / -2, AS3100, EN61000-6-1, EN61000-6- 3, EN50438, G59 / 3, AS4777, VDE0126-1-1, |
|            |     | IEC61727 and offering resources "SmartGrid" - "Voltage Ride-Thru", "Frequency-Ride Thru", "Soft-Start", Volt-Var, "Frequency-Watt", "Volt-Watt".   |
| 8504.40.90 | 222 | Type three-phase inverter frequency "on-grid" with nominal power output of 60,000 to 65.000W topology without transformer, with passive cooling (no fans) or forced (with fans) with cc key with operating temperature from -25 to 60 degrees Celsius, for maximum input voltage "strings" of 1.000 to 1.100V and minimum drive voltage 200V, equipment equipped with 4 MPPT (s) with 3 input (s) and by MPPT maximum input current in each MPPT of 44,5A. nominal output voltage for mains 380V, the output frequency of 50/60 (+ 5%), maximum output current output 95 of the power factor of 0.8 (late) ~ 0.8 (early) with less than 3% harmonic distortion maximum efficiency 98.6% protection system composed of leakage current (aC) ground fault protection, anti-islanding protection, overvoltage protection (cc), overload protection ( cc), overload protection           |
|            |     | (Ca), reverse polarity protection (cc), lower noise level than 60dB (a), IP65, with LCD display, "RS485 communication / Wi-Fi (external)   |

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| 8504.40.90 | 223 | Three-phase inverter frequency "on-grid" with 75.000W power without transformer topology, the method of forced cooling (fans), operating temperature of -25 to 60 degrees Celsius overnight own consumption <2W, LCD 2x20, providing degree of protection IP66 (protection against dust and strong pressure water jets), RS485 communication ports, Wi-Fi GPRS, Ethernet, optional PLC model with 9 trackers maximum power point (MPPT) and up to 18 entries, maximum input voltage of 1.100V DC current, maximum efficiency of 98.7%, with a minimum current input voltage of 195Vdc continues to output alternating current range of 220 to 400Vac (3 / N / PE 220 / 380V 230 / 400V) with a rated voltage of 380V, with operating frequency at 50 / 60Hz, total harmonic distortion (THDi) <3%, 0.8 power factor and supplying option to change, meeting the VDE regulations -Ar- 4105 N, V VDE 0124, VDE V |
|            |     | 0126-1-1, TPP C15-712-1 NRS 097-1-2, G98, G99, EN 50549-1 / -2, RD 1699, UNE 206 006, UNE 206007-1, IEC 61727, DEWA, IEC 62109 -1 / -2, EN 61000-6-2 / -4  |
| 8504.40.90 | 224 | Inverters "on-grid" for photovoltaic generation phase AC output with a nominal power of 12 kW and maximum 13,2kW with maximum DC input power 14,5kW; Maximum efficiency of 98.7%, integrated DC switch-disconnector, MPPT two inputs with two DC inputs for MPPT; Maximum AC current output 19,1A; with dimensions of 310 x 563 x 219mm and weight 18,9kg; Display LCD 2x20; 34,3A maximum current short-circuit for starting and MPPT voltage 180Vcc. the MPPT tracker voltage range between 160 and 850Vcc; communication Wi-Fi and maximum altitude of 4.000m operation, unit value (CIF) not exceeding R \$ 5596.80.   |
| 8504.40.90 | 225 | Inverters "on-grid" phase for photovoltaic generation with nominal AC output power of 50kW and a maximum of 55kW; with maximum power of 75kW of DC input; maximum efficiency of 98.80%, integrated DC switch-disconnector four inputs MPPT with three current inputs for continuous MPPT. current maximum AC output 83,3A. dimensions 630 x 700 x 357mm and weight 63 kg. LCD display 2 x 20 maximum current short-circuit 44,5A / MPPT starting voltage and 200vcc. voltage range between the MPPT tracker 200 and 1.000vcc. Wi-fi communication and  |
| 8504.40.90 | 226 | Inverters "on-grid" for photovoltaic generation phase AC output with a nominal power of 60kW and 66kW maximum, maximum DC input power 72kW. Maximum efficiency of 98.80%, integrated DC switch-disconnector four inputs MPPT with three current inputs for continuous MPPT. Maximum output current AC 100A. Dimensions 630 x 700 x 357mm and weight 63 kg. Display LCD 2x20. Maximum short circuit current 44,5A / MPPT starting voltage and 200Vcc. the MPPT voltage range between tracker 200 and 1.000Vcc. Communication Wi-Fi and maximum altitude   |
| 8504.40.90 | 227 | Inverters "on-grid" phase for photovoltaic generation with nominal AC output power of 75kW and a maximum of 75kW. Maximum DC input power of 126kW. Maximum efficiency of 98.70%, integrated DC switch-disconnector nine inputs MPPT with two current inputs for continued MPPT. VXi curve scan function and V / W integrated. Maximum output current AC 114A. Dimensions 1.050 x 567 x 314,5mm and weight 82kg. Display LCD 2x20. Maximum short circuit current of 40A / MPPT starting voltage and 195Vcc. the MPPT tracker voltage range between 180 and 1000 VDC. Communication Wi-Fi and maximum altitude of 4.000m operation.  |

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| 8504.40.90 | 228 | Inverters "on-grid" phase for photovoltaic generation with nominal AC output power of 100kW and a maximum of 110kW. Maximum DC input power of 140kW. Maximum efficiency of 98.70%, integrated DC switch-disconnector ten entries MPPT with two current inputs for continued MPPT. Maximum output current AC 167,1A. VXi curve scan function and mode Volt / Watt integrated. Dimensions 1.050 x 567 x 314,5mm and weight 84kg. Display LCD 2x20. Maximum short circuit current of 40A / MPPT starting voltage and 195Vcc. the MPPT tracker voltage range between 180 and 1.000Vcc. Connecting AC wires through OT connector supporting up to 185mm <sup>2</sup> section. Communication Wi-Fi and maximum altitude of 4.000m operation. |
| 8504.40.90 | 229 | Microinversores single-phase current, maximum continuous power output of 1.200W with 4 segments of the maximum power point, for converting DC voltage to AC voltage for feeding the loads in synchronism with the mains electricity distributor, rated voltage output 220V, rated current of 5,45A output at 60Hz frequency, microprocessor, anti-islanding function, IP67 protection degree, with maximum efficiency of 96.5% and operating ambient temperature range from - 40 and 65 degrees Celsius.   |
| 8504.40.90 | 230 | Microinversores of AC power, maximum continuous power 900W output, with 4 segments of the maximum power point for the DC voltage conversion to AC voltage for feeding the synchronous load to the mains electricity distributor, rated voltage three-phase output 127 / 220V, rated output current of 2,36A / phase, frequency 60Hz, microprocessor, anti-islanding function, IP67 protection degree, with a peak efficiency of 95.5% and temperature range operating environment -40 to +65 degrees Celsius.  |
| 8504.40.90 | 231 | Microinversores three-phase current, maximum continuous power 900W output, with 4 segments of the maximum power point for the DC voltage conversion to AC voltage for feeding the synchronous load to the mains electricity distributor, rated voltage three-phase output 220 / 380V, rated current output 1,36A / phase, frequency 60Hz, microprocessor, anti-islanding function, IP67 protection degree, with a peak efficiency of 95.5% and temperature range operating environment -40 to +65 Degrees Celsius  |
| 8504.40.90 | 232 | Microinversores single-phase current, maximum continuous power of 550W output, with 2 segments of the maximum power point for the DC voltage conversion to AC voltage for feeding the synchronous load to the mains electricity distributor, rated voltage output 120V, rated current of 4,57A output at a frequency of 60Hz, microprocessor, anti-islanding function, IP67 protection degree, with a peak efficiency of 95% and operating ambient temperature range between -40 and +65 Degrees Celsius.  |
| 8504.40.90 | 233 | Microinversores single-phase current, maximum continuous power 550VA output, with 2 segments of the maximum power point for the DC voltage conversion to AC voltage for feeding the synchronous load to the mains electricity distributor, rated voltage output 220V, rated current of 2.5A output at a frequency of 60Hz, microprocessor, anti-islanding function, IP67 protection degree, with maximum efficiency of 96.7% and operating ambient temperature range from -40 and +65 degrees Celsius.   |

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| 8504.40.90 | 234 | Drives three-phase current, equipped with three units, one primary unit and two secondary units that make up the complete drive with maximum power of 100kVA, transformerless topology without tracking the maximum power point and no input voltage regulation embedded in inverter without disconnecter integrated DC to DC voltage conversion to AC voltage for feeding the synchronous load to the mains electricity distributor, nominal output voltage 480 / 277V, maximum injected current (per phase) of 120A nominal frequency of 60Hz, microprocessor, anti-islanding function, regulated input voltage external and exclusively by power conditioning unit direct current (UCPcc) which have integrated communication function with the drive and communicating via line DC power, monitoring and sending quick shutdown commands and reduction of the inverter input voltage to less than 80V, sine wave detection and reduction of the arc energy with insulation failure detection.     |
| 8504.40.90 | 235 | Power sources for communication system "leaky feeder", input power £ 95 up to 264VAC, frequency 47 to 63Hz range, temperature range 0 to 50 degrees Celsius, £ 12VDC output power or 326,5VDC, current output 2 , 7A @ 12VC or 1,8A in 27,6VDC and 0,16A in 26,5VDC, short circuit protection, battery charger.   |
| 8504.40.90 | 236 | regulatory power supply voltage, 380V, frequency: 60Hz, three-phase, endowed with 900kVA power transformer to power the smelter.  |
| 8504.40.90 | 237 | Photovoltaic inverter "on-grid" single-phase, for inverting DC voltage (DC) to alternating current (AC) with a maximum output power of 3.300 to 5.000W without transformer, passive cooling (no fans) by means of convection with input in parallel with the mains voltages ranging from 220 to 230 VAC and the following characteristics: maximum input voltage 600VCC; 90VCC starting voltage; MPPT voltage range of from 80 to 500VDC; 11A maximum current input; 1 tracker maximum power input point (MPPT) and 1 standard connectors in MC4 "MPPT"; Maximum power output 3,3kW; Nominal output current of 13,6A network (220VAC) and 13A (230VAC); 15,7A maximum current output; harmonic distortion (THDi) equal to or less than 3%; Night consumption 1W or less;  |
|            |     | Maximum efficiency of 97.5%; LCD display for operation; monitoring network information; IP65; production monitoring system; communication via RS485 serial port; with or without Wi-Fi communications adapter.  |
| 8504.40.90 | 238 | Photovoltaic inverter "on-grid" single-phase, for inverting direct current (DC) to alternating current (AC) with rated power of 5 kW output, without transformer, passive cooling (no fans) by means of natural convection with input in parallel with the mains voltages ranging from 220 to 230 VAC and the following characteristics: maximum input voltage 600VCC; 120VCC starting voltage; MPPT voltage range of between 90 to 520VCC; 11A maximum current input; 2 Maximum power point trackers inputs (MPPT) and two standard inputs in connection MC4 "MPPT"; maximum power of 5 kW output; Nominal output current of 22,7A network (220VAC) and 21,7A (230VAC); 25A maximum current output; harmonic distortion (THDi) equal to or less than 3%; Night consumption 1W or less; operating temperature between -25 and +60 degrees Celsius; Maximum efficiency of 98.1%; LCD display for operation; monitoring network information; IP65; production monitoring system; communication via port |
|            |     | serial RS485; with or without Wi-Fi communications adapter.   |

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| 8508.70.00 | 1   | Suction hoses with handle holder and inner hose flange made of plastic polypropylene material with connection sleeve made of plastic material polyethylene and body of the nominal diameter of the suction hose 35 mm and made of plastic-coated polyethylene material with vinyl acetate, for suction debris, unique in vacuum cleaners.  |
| 8514.10.10 | 100 | Plasma Furnaces type of PECVD (Plasma-enhanced chemical vapor deposition) through first microwave and electrical resistance, suitable for DLC coating, allowing layer thickness with tolerances of up to +/- 1 micron and capability Cm and CMK 1 66 and Cp and Cpk 1.33; 1 with two ports and chamber, and this chamber with a diameter of 630mm and a height of 1,000 mm; equipped with two resistors, with one on each door, with a power of 1000W x 4; with a maximum working temperature of 200 degrees Celsius; Supply voltage 400V (50Hz) Current e16A.   |
| 8514.30.21 | 2   | Electric Industrial Furnaces electrodes / arc voltaic, complete with electrode holder and the cooling water outlet base for melting raw material, equipped with three electrode base assemblies (electrode position can be adjusted by electricity or loop manual forward and backward), a set of basic molybdenum base and nitrogen inlet guide tube melting pot with a height of 1.100mm, 3.600mm diameter, base 900 x 450 x 1,700mm, the output electrode 6 x   |
| 8514.40.00 | 19  | tooth straightening equipment with smoothing of folds and cylinder pressure, automatic control of anode current, automatic protection, tray feeder, electromagnetic brake, speed and service cylinder, equipped with: tray unit, hardening generator and inductor, closed cooling system, enclosed cleaning system tray straightening unit, the straightening unit pressure cylinder, technical specification: width tray 6 to 38mm, thickness of 0.4 to 1.3mm tray spacing 3 the tooth 18tri, capacity 5 to 15m / min, air pressure of 6,3bar (91psi), voltage standard 10% +/- 400VAC-3 phase, +/- 1% 50-60Hz direct earthing system . |
| 8515.21.00 | 193 | Machines for resistance spot welding of electrical connectors in cell lithium-ion batteries (Li-ion), with a cycle time of between 14 and 16s; with automatic positioning system; with control voltage, current and time; Pneumatic drive head; man machine interface with touch screen; accompanied template for positioning of the components and copper electrodes; mounted on aluminum structure; 30kVA with input voltage.  |
| 8515.80.90 | 139 | Semiautomatic devices for applying ultrasonic welding, to frame and protective sheet fixation in various materials such as PVC and the like, on pre-rolled dual interface antenna, maximum format of 800 x 800mm sheet.  |
| 8515.80.90 | 140 | automatic welding machines carbide inserts, cermet or polycrystalline diamond (PCD) by circular saws diameter exceeding 30 mm but less than or equal to 2200 mm, with a high frequency generator with conveyor teeth.  |
| 8515.80.90 | 141 | Machine for welding fiber laser crystal Nd <sup>3+</sup> : YAG laser with a wavelength of 1.064 microns, with adjustable frequency input between 0 and 150Hz, the nominal active power of 400W, three-phase operating voltage (380V phase voltage) with current 60A nominal phase having water cooler connected to a rated current of 32A phase with key protection  |

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| 8602.10.00 | 28 | <p>machine combinations, exclusively railway application for diesel-electric locomotives with brute power 4.500HP, intended for cargo transport, composed of: diesel engine with its respective control device, conduits and lube oil filters, 12-cylinder "V", 4-stroke, with gross power of the 4.500HP 1.050rpm; muffler manufactured from steel and alloy steel screens, designed to withstand exhaust gas at high temperatures; set of two rail 500Ah battery charge capacity, designed to withstand typical impacts and vibrations of the load rail; harness assembly for interconnection between components; Microprocessor panel interface to Arcnet and Ethernet networks, hub of digital and analog signal outputs to control the locomotive; set of two control panels "smart display" with man-machine interface for</p>  |
|            |    | <p>data visualization, programming parameters monitoring, integrated distributed computing other embedded computers and command all panels and systems connected to the locomotive communication networks; set of panels responsible for receiving, translating and transmitting the command signals from the sensor via the locomotive speed Arcnet protocol; microprocessor control unit of the fuel injection for the diesel engine, interface with the command and control networks of the locomotive; set of three electronic billboards type "skipper cycle" for control of auxiliary electric motors integrated locomotive to the Arcnet network; central data processing and wireless network, used for processing specific railway applications; coating material used in the glazed inner and aesthetic finish of the operator's cab; Microprocessor panel for command,</p>                               |
|            |    | <p>monitoring, diagnostics and control of the electronic brake system of the locomotive; Microprocessor panel with redundant system transmitting and receiving radio signals for remote control of the locomotive; central command electro and electronic brake system control valve, used to transmit signals to the control system and the brake cylinders of the composition; set of 3 control panels of battery charging systems, main and auxiliary alternators integrated into the Arcnet network; power power supply with input voltage between +25 and +85 VDC and outputs +5 V, -15 V, +15 V, +24 V and -24 V; system for registration of functional events of the last 48 hours locomotive operation for the fault detection and investigation of causes of accidents; device with exclusive communication function via radio on the coupling conditions of the composition and availability of these</p> |
|            |    | <p>information to the other subsystems of the locomotive via the network; set of rectifier diode modules average direct current 3.900A to a 175 degrees Celsius junction temperature, mounting in three panels of electrical current rectifiers intended for converting AC current into DC power and frequency of inversion circuits ; reversing device main alternator power circuit for starting the diesel engine; equipment Command Master of the locomotive, including acceleration, dynamic braking and direction of movement; together with IGBT modules 36 rated voltage and current of 1200A and 2,5 kV, with operation capacity between -40 and 67 degrees Celsius, accompanied by power capacitors, current transducers, interconnections devices and control and protection for the assembly in converter assembly of voltage and frequency, for feeding engines</p>                                    |

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|            |   | traction specified for railway cargo handling; set of power resistors and control devices designed to withstand high temperatures resulting from electrodynamic braking of the locomotive through kinetic energy conversion into electricity; assembly components for mounting on railway bogies, including shock absorbers and suspension system and brake air cylinder; fan with blades made of steel, with a total outer diameter of 72 inches, designed for the engine cooling system of diesel; set of cooling system components 2 stages for the engine intake air diesel, including two air-air heat exchanger and the first heat exchanger air-water, and two fans; plate-type oil cooler designed for cooling the lubricating oil of the diesel engine; transfer system and monitoring of fuel, consisting of pump |
|            |   | electrical, control devices and monitoring system with data interface; components for the locomotive compressed air system including air tank, air dryer consists of two towers, memory circuit, and flange type heat exchanger air-air finned aluminum; Cooling for air blower assembly of traction motors, alternator traction and rectifiers inverters, centrifugal type, equipped with cooling air filtration system and air exhaust of the centrifugal type, designed to exhaust air from the inertial filter engines traction; air conditioning unit of the operator's cab.   |
| 9011.90.90 | 3 | special tooling used for service in medical microscopes and equipment, consisting of: tool for adjusting brightness and camera alignment and LED tool for camera resolution calibration, mobile optics with tool inside for laser replacement check and adjust pedal and tool replacement "scanner" and main control camera "keratômetro".  |
| 9011.90.90 | 4 | Sets of special tools used to service medical microscopes and equipment, consisting of: carrying case and storage, test look tool, mirror sighting tool, pupil adjustment crosshairs tool, retinal model tool, position adjustment guide tool tower and support tool for power measurement tool.  |
|            |   | #VALUE!   |
| 9014.80.90 | 3 | Radio beacon for use in vessels or lifeguard boats, in order to assist in search and rescue in emergencies (AIS-SART); VHF transmitter; Operating frequency: AIS1, 161 975 MHz AIS2, 162.025MHz; data rate: 9.600bps; Bandwidth: 25kHz; Output power: 1W EIRP; type of AIS message: Message 1, Message 14; Modulation: GMSK; Antenna: integrated on the PCB; lithium battery, non-rechargeable with up to 96 hours of life; screening capacity: 48 channels; Operating Temperature: -20 to +55 degrees Celsius; soaking capacity: 10m deep.   |
| 9014.80.90 | 4 | Radio beacon emergency position indication (EPIRB); devices used by vessels to alert search and rescue services; enabling rapid location in emergency events; when activated transmit a coded message in the frequency of 406MHz, which and monitored by the COSPAS-SARSAT system; Alerts are then relayed by the coast station for the search and rescue coordination center (MRCC) nearer; devices also emit a signal in the frequency 121,5MHz to aid in approaching aircraft.   |

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| 9015.80.90 | 74  | Columns instrumented for geotechnical monitoring of soil, providing data in real time, continuously and automatically, to identify strains in 3 directions simultaneously, including temperature and vibrations, comprised of: 250 stainless steel modules of a 1m length; of which 125 modules each with three inclinometer sensors, accelerometer sensors 3 and one temperature sensor; 120 other modules each with 2 inclinometer sensors, two temperature sensors 4 modules each with telescopic joint 3 of linear displacement sensors, three sensors inclinometer, three temperature sensors, one module with digital compass, one inclinometer module and one temperature sensor; together provided with reinforced, polyurethane centering a head suspension; calibrated and tested every 30 days. |
| 9015.90.90 | 14  | printed circuit boards fitted with microprocessors, designed and designed specifically for logging tools, drilling, measurement and data acquisition in the exploration and production of oil and gas wells, impact-proof and high vibration, 0 working temperature up to 175 degrees celsius, can operate at low voltage between 3 and 60V and high voltage reaching 1.200V.  |
| 9015.90.90 | 15  | Embobinadores for installation of modules instrumented column 250 1m mounted on coil 8 segments of 2.8m diameter and 2m wide, made of aluminum alloy, operated with a double system of hydraulic cylinders; a rotating unit for rotating the coil consisting of two sets of diesel engine and screw mechanisms, mounted on a metallic base of high strength steel with translation mechanism attached to a mat type of support structure with a width of 2.3 m and a length of 2.4m, with a hydraulic system, two-cylinder engine, control panel and radio command.  |
| 9015.90.90 | 16  | internal physical connection devices, with a length between 8 and 54 inches, made of Inconel steel 718 and designed to enable transmission of logging tools data and real-time measurement, as well as the distribution of energy between the drill string equipment, establishing a communication circuit by alternating current for operation up to 150 degrees celsius, and pressure up to between 25,000 35.000psi.  |
| 9015.90.90 | 17  | Cubicles connection devices between drilling tools, measuring and logging of oil wells made of inconel steel, outer diameter between 6 and 9½ inches, with variations pin thread and box ends, the central thread for stabilizing shirt that connects with different equipment for different threads.  |
| 9015.90.90 | 18  | guard bands against shocks and contact for antenna transmitter and receiver installed in logging and measuring oil well equipment, with or without threads, made of alloy stainless steel or inconel steel, coated laser with tungsten carbide and with external diameter They vary between 5.165 and 9.875 inches.  |
| 9015.90.90 | 19  | Compartments for connection between devices drilling tools, measuring and logging of oil wells, made of carbon steel or inconel steel, outer diameter between 4 and 11 3/4 inches, with variations of pin and box threads at its ends and used for connecting different devices of varying threads.  |
| 9018.19.80 | 131 | Sensor acquisition and recording biopotential physiological data with analog signals transduction / digital via USB interface; with maximum resolution of 24bits, used for practical classes in health care courses for ECG recording and / or EMG and / or EEG; ability to acquire two simultaneous channels; sampling frequency up to 1 kHz; exclusive channel for grounding; use shielded cables and disposable electrodes.   |

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| 9018.19.80 | 132 | Sensor acquisition and pulse physiological data record with piezoelectric transduction analog signal / digital via USB interface; used for practical classes in health care courses for pulse rate registration; ability to acquire a channel; with maximum resolution of 16 bits; sampling frequency up to 1 kHz.   |
| 9018.19.80 | 133 | Sensor acquisition and recording of physiological data of blood pressure with piezoelectric transduction analog signal / digital via USB interface; with a sphygmomanometer; used for practical classes in health care courses; ability to acquire a channel; at maximum resolution of 16bits; sampling frequency up to 1 kHz.   |
| 9018.19.80 | 134 | Sensor acquisition and recording of physiological data reflection with piezoelectric transduction analog signal / digital via USB interface; used for practical classes in health care courses for the neurological reflex stimulation record; ability to acquire a channel; with maximum resolution of 16 bits; sampling frequency up to 1 kHz.   |
| 9018.19.80 | 135 | Sensor acquisition and recording of physiological data clamping force with piezoelectric transduction (hand dynamometer) analog signal / digital via USB interface, used for practical classes in the health courses to record the handshake force; ability to acquire a channel; at maximum resolution of 16bits; sampling frequency up to 1 kHz.   |
| 9018.19.80 | 136 | Sensor acquisition and recording of physiological data type thermocouple for continuous recording of skin temperature; transduction with analog signal / digital via USB interface; used for practical classes in health care courses; ability to acquire a channel; at maximum resolution of 16bits; sampling frequency up to 1 kHz.  |
| 9018.19.80 | 137 | Sensor acquisition and recording of physiological data of respiratory rate, with piezoelectric transduction analog signal / digital via USB interface; used for practical classes in the health courses to record the chest expansion; ability to acquire a channel; at maximum resolution of 16bits; sampling frequency up to 1 kHz.  |
| 9018.19.80 | 138 | Sensor acquisition and recording of physiological data of heart sounds with transducing mechanical vibrations into digital signals via USB interface; used for practical classes in health care courses; ability to acquire a channel; at maximum resolution of 16bits; sampling frequency up to 1 kHz.  |
| 9018.19.80 | 139 | Sets acquisition sensors and recording physiological data with transduction analog signal / digital via USB interface; sampling frequency up to 1 kHz; used for practical classes in health care courses; It can be configured with sensor heart sounds with an acquisition channel and maximum resolution of 16bits and / or respiratory rate sensor with a channel acquisition and maximum resolution of 16bits and / or clamping force sensor with acquisition and resolution channel maximum 16bits and / or neurological reflex sensor with an acquisition channel and maximum resolution of 16bits and / or skin temperature sensor with an acquisition channel and maximum resolution of 16bits and / or pulse rate sensor with an acquisition channel and maximum resolution of 16bits and / or blood pressure sensor to an acquisition channel and maximum resolution of 16bits and / or biopotential sensor with two acquisition channels, |
|            |     | a ground channel and maximum resolution of 24bits.   |

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| 9018.19.80 | 140 | multiparameter monitors vital signs of adult, pediatric and neonatal used specifically to monitor, display, revise, store, trigger alarms and transfer multiple physiological parameters recorded in external modules with degree of protection 1PX1; color display with multi-touch operation, access on-screen help for technical alarms and schematic design, 12.1-inch size (resolution of 1280 X 800 pixels), 15.6 or 18.5 inches (both with a resolution of 1920 X 1080 pixels), 19 or 22 inches (both with resolution of 1680 x 1050 pixels) wide viewing angle of at least 170 degrees and automatic brightness adjustment; "Slots" or "rack" expansion to connect interchangeable external modules; tools to support clinical decision through early warning score (EWS), Glasgow Coma Scale (GCS), summary of the last 24 hours of ECG and SpO2 Scream (target management panel       |
|            |     | SpO2 and ST segment of the graph); high precision technology to reduce false alarms by analyzing together the ECG signal and the plethysmographic waveform signal; drug calculation function, hemodynamic, oxygenation, ventilation and kidney; operating capacity in intubation modes, CPB (cardiopulmonary bypass), privacy and night; with one or more DVI (digital video interface), 4 or more USB 2.0 ports, one or more analog output and support for keyboard, mouse and code reader 2D bar, and may contain one or more of the following optional: modules external interchangeable physiological parameters: MMP integrating ECG (3- or 5-selectable taps, and optionally 6 or 12 selectable taps, analysis and monitoring for at least the multi-taps 24 kinds of ECG arrhythmia, measurement and monitoring interval QT / QTc, and heart rate), breath, oximetry (SpO2)              |
|            |     | Temperature, Blood Pressure (Blood) Noninvasive (PNI) and Blood Pressure (Blood) Invasive (PI); SpO2 (Oximetry), including perfusion index (PI) for graphical and numerical SpO2; Temperature; Blood pressure (arterial) Invasive (PI); Cardiac Output (DC); EtCO2 (capnography); Central Venous Oxygen Saturation (ScvO2); Impedance cardiography (ICG); Continuous Cardiac Output (DCC); Anesthetic gas (GA); Respiratory Mechanics (MR); Electroencephalogram (EEG); Bispectral Index (BIS); Neuromuscular Transmission (NMT) and / or Regional Oxygen Saturation (rSO2); possibility to monitor rotation of the landscape mode (positioned horizontally) and the portrait mode (vertically positioned); communicating over Wi-Fi protocol IEEE 802.11a / b / g / n; telemetry connection with other monitoring devices vital signs.   |
| 9018.19.80 | 141 | Monitors multiparameter vital signs used specifically to monitor, display, revise, store, trigger alarms and transfer multiple physiological parameters of adults, pediatric and neonates in medical institutions and hospital environments, with ECG functions (electrocardiogram) with analysis and monitoring of 3 5 or selectable taps, and optionally selectable taps 6 or 12, ST segment analysis, monitoring and analysis of 25 types of arrhythmias, measurement and monitoring of QT / QTc, and heart rate (HR); Breathing; SpO2 (Oximetry), including perfusion index (PI) for graphical and numerical SpO2; temperature; noninvasive blood pressure (NBP); invasive blood pressure (pi), cardiac output (DC); EtCO2 (capnography); with degree of protection 1PX1, storage capacity up to 2.400h data graphical or tabular trends of one single patient, color screen with operation |

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|            |    | multitouch, access on-screen help for technical alarms and schematic design, and dimensions of 10.1 or 12.1 inches (both with a resolution of 1,280 x 800 pixels) or 15.6 inches (resolution of 1,366 x 768 pixels) two (2) USB 2.0 connectors, support tools, clinical decision by early warning scores (EWS), coma scale "Glasgow" (GCS), summary of the last 24 hours of ECG, oxycardiorespirograma and SpO2 Scream (panel target management SpO2 and ST segment of the graph), simultaneous measurement mode SpO2 (pulse oximetry) and NIP (non-invasive blood pressure) in a single member, high precision to reduce false alarms technology through the joint analysis of the signal ECG and plethysmographic waveform signal; drug calculation function, hemodynamic, oxygenation, ventilation and kidney; the operating capacity intubation modes, privacy and night, and optionally in the CPB mode (bypass |
|            |    | Cardiopulmonary), and may contain one or more of the following options: "slots" for connection of interchangeable external modules of physiological parameters of cardiac output (CO), invasive blood pressure (PI), EtCO2 (capnography), gas module anesthetic (GA ), bispectral index (BIS) and / or neuromuscular transmission (NMT); communication via Wi-Fi protocol IEEE 802.11a / b / g / h.  |
| 9018.19.90 | 81 | Probes noninvasive finger for connection to analysis monitors nociception level, allowing the measurement of physiological parameters through a peripheral temperature sensors, galvanic skin response (RGC), movement (accelerometer), photoplethysmography (PPG), pulse, High variability of pulse - rate (0,15-0,4Hz) providing a numerical scale of nociceptive response levels from 0 to 100.   |
| 9018.19.90 | 82 | Disposable or reusable sensors for non-invasive continuous monitoring of arterial oxygen saturation (SpO2), pulse rate (PR), perfusion index (PI), plethysmographic variability index (ISP), methemoglobin saturation (SpMet) , hemoglobin saturation (SpHb), carboxyhemoglobin saturation (SPCO), and total oxygen content (SPOC) for adult use, pediatric and / or neonatal performing reading in patients with good or low perfusion and motion, in hospital  |
| 9018.19.90 | 83 | Flexible forehead sensors for use with module for regional oximetry, adult, pediatric or neonatal measuring and continuous monitoring of oxygen saturation of hemoglobin in the regional tissue (rSO2), including brain tissue, for use inpatient or outpatient.   |
| 9018.19.90 | 84 | Modules for regional oximetry, adult, pediatric or neonatal measuring and continuous monitoring of regional hemoglobin oxygen saturation in tissue (rSO2), including brain tissue, for use inpatient or outpatient.  |
| 9018.19.90 | 85 | Modules for continuous, noninvasive monitoring oximetry tissue somatic (StO2) and brain (SctO2) using NIRS method (near infrared wavelength), consisting of modules for monitoring of physiological parameters, performing the data monitoring function adult, pediatric, or premature infants, are composed of five wavelengths of infrared light proximal (685, 730, 770, 810 and 870nm) and approximate weight of 1,12kg having audible and visual alarm system for measurements outside the limits set and ability to select the region of the body to be monitored to adjust the specific algorithms, acting as part of advanced hemodynamic monitoring platform, called tissue oximetry system.  |

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| 9018.19.90 | 86  | Disposable sensors adhesives or non-brain tissue oximetry somatic or for single use, intended for non-invasive continuous monitoring and oximetry StO <sub>2</sub> with SctO <sub>2</sub> ranging from 5 to 98% saturation with +/- 3.05% accuracy and ability to measure the tissue perfusion index (TPI), an indicator of the concentration of hemoglobin in the sensor, available in adult size (³40kg), pediatric (³3kg), newborn (<8kg) and premature (<8kg, non-adhesive), exercising collecting feature data necessary for the monitoring of adult, pediatric, newborn or premature babies, by applying light at a wavelength of the near-infrared to assess quantitative and qualitative manner, the molecular components related to tissue oxygenation , an integral part of advanced hemodynamic monitoring platform, called tissue oximetry |
| 9018.19.90 | 87  | surgical simulators with "software" inside, 14kg, for simulating technical exercises of basic skills and techniques necessary to perform surgical procedures with the endoscopic system.   |
| 9018.20.90 | 17  | Apparatus with two laser cavities 755 and 1.064nm, maximum creep 300Joules / cm <sup>2</sup> , with repetition rate up to 5Hz, with adjustable pulse durations of between 0.5 and 300 milliseconds, with no handpieces cooled to treatment of psoriasis, vascular and pigmented lesions, "pseudofolliculitis barbae", plantar warts, and permanent reduction of hair.  |
| 9018.20.90 | 18  | Apparatus ultraviolet or infrared rays, laser binary emission wavelengths: Alexandrite 755nm and Nd: YAG 1.064nm with synchronized and adjustable proportions, square beam nozzle of from 2 to 30mm laser-phase voltage PhN + PE 230V alternating current, 50 / 60Hz, 25A, de110 the output power 140W, maximum energy of laser 55 Joules to 80 Joules, nominal input power 2,73kVA the maximum 6,9kVa, class 4, laser I / BF-EN 60825-1: 2014.  |
| 9018.50.90 | 152 | ophthalmic equipment for measuring the axial length and computerized evaluation of the anterior segment of the eye through scanning rotational tomographic using a slit lamp (LEDs UV-free 475nm blue), a camera "Scheimpflug" and an auxiliary camera for tracking the position of eye and the pupil, cornea measurement capability with bends of 3 to 38mm or 9-99 diopters capture up to 100 images 2s (mode - fine scan cornea), up to 50 images 2s (138,000 lifting points on the 3D scan mode), up to 15 images enriched 0.3s / TVs, 50 2s combined images (mode / 3D scan) to measure the cornea, anterior chamber, iris and lens through tomography, incorporates an aberrometer with sensor "Hartmann Shack" for measuring the total aberration, adding internal and external aberrations and validate the visual                             |
| 9018.50.90 | 153 | Equipment of the ophthalmic camera type of high-resolution, non-contact, designed to capture, display, store images "in vivo" of the retina, ocular surface and visible attachments, equipped with: continuous operation mode, with 25mm working distance of the cornea the glass; picture modes include reflectance in "True Color" to scan in blue, green and red, infrared reflectance; fundus autofluorescence with green or blue excitation, stereo image and image of the outer surface of the eye; options field of view with a single image (L x H): 45 x 40 degrees, or an assembly with up to 9 images the field of view (W x D): 83 x 78 degrees, compensating for the ametropia of -15D + 15D; control   |

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| 9018.90.10 | 62 | Syringe pumps for intravenous infusion liquids in adult, pediatric and neonates, with degree of protection IP34, infusion accurate to $\pm 2\%$ or $\pm 0,005\text{ml / h}$ (whichever is greater) KVO rate in the range of 0, 1 to 5 ml / h from 100 to 240V voltage and a weight less than 1.8 kg (without the clip shank), equipped with monochrome LCD display screen of 3 inches and a resolution of 240 x 128 pixels; Lithium battery lasting up to 6 hours; RS232 interface and nurse call connector; 5 alarm levels occlusion pressure at 75, 150, 300, 525 and 900mmHg; the general alarm volume of the adjustable pump 1 to 8 levels; library for up to 200 drugs; internal memory to store up to 1.500registros, and optionally with communication via WiFi IEEE 802.11b / g / n.   |
| 9019.20.10 | 39 | Lung ventilators for bedside or intra-hospital transport, for use in neonatal, pediatric and adults who need support invasive and non-invasive ventilation, with technology "control proctective" parameter setting and monitoring out of isolation, oximetry SPO2 "bluepro "volumetric capnography technology" Cap-One "touchscreen 17-inch LCD and resolution 1280 x 1.024pixels, simultaneous display of up to 5 graphics, data storage 168 hours monitored and autonomy of 3 hours of battery life, high flow oxygen therapy 1 to 60L / min help button basic description parameters, endotracheal tube clearance and leakage compensation mode "Gentle Lung" with applications for aspiration procedures, recrutabilidade evaluation, recruitment maneuvers and PEEP titration auxiliary esophageal balloon pressure, determination of transpulmonary pressure and  |
|            |    | Test spontaneous ventilation proximal and distal flow sensor, communication protocol, communication with and monitors vital signs ultrasonic nebulizer.  |
| 9022.14.11 | 14 | Apparatus X-ray, remote controlled, tube-type on the table (island), composed of collimator, remote command console, 1 or 2 monitor (s), x-ray tube, high voltage cables for image acquisition digital radiographic and fluoroscopic for medical diagnosis, with exposure to x-ray field and manual or automatic and adjustable square fluoroscopy; selection of 5 or more exposure field sizes for radiography; with or without antidifusora grid; flat panel detector (FPD) of 17 x 17 inches with a Cesium Iodide scintillator; Table tests on carbon-fiber-reinforced polymer (CRFP) with dimensions of buffer equal or greater than 765 x 2.350mm, capacity for patients equal or greater than 315kg horizontally in Table angle of -90 degrees to +90 , the stand port tube with longitudinal displacement equal to or greater than 160cm with or without compression cone with motorized adjustment of height                           |
|            |    | table; generating X-rays with frequency equal to or higher than 50kHz, the maximum rated power of 65 or 80 kW, adjustable radiographic voltage range of 40 to 150 kV in steps of 1kV and fluoroscopic voltage range of 50 to 125kV, mAs setting range greater than or equal to 0.5 800mAs in 65 steps or more, with radiography capacity in series to 15quadros / s; keyboard, mouse, software, cable connections and manual, with or without kit SID 180cm, optional kit to 500lbs (227kg), unit of radiation dose calculation, dose of radiation meter kit, kit for radiography by slot (slot ), "bucky" mural (manual or motorized), automatic control kit display, tomosynthesis, compressor range, support (s) to the legs, local control console with or without monitor (s), car monitor stand (s) , protocol (s) DICOM additional workstation, digital subtraction angiography, kits for reducing metal artifacts, the stand pipe port |

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|            |     | X-rays (manual or motorized) with rails and collimator, second tube (s) X-ray support (s) for hands, one or more antidifusora bars, one or more flat panel detectors wireless, drainage bag, pedal for examination room, IV pole seat for cystourethrogram stabilizer (s) and UPS (s).   |
| 9022.14.19 | 45  | Mobile apparatus for acquisition and display of diagnostic images by x-ray surgical procedures, provided with: movable arc "C" with rotation at or below 165 degrees capacity plan digital detector dimensions 20.5 x 20.5cm or 31 x 31cm, x-ray tube with stationary anode generator operating at 2 or 2,4kW voltage, pulsed fluoroscopy of 1 to 25 pulses per second, two monitors 19 inch or 27 inch monitor with 1 control "touchscreen" up to 3 user interfaces synchronized with screen "touchscreen", USB output; with or without stand for monitor, wireless pedal, printer, DICOM connection, WLAN connection, "software" vascular laser positioning, CD / DVD and protective plastic covers.   |
| 9022.90.90 | 48  | Ionization chambers comprise a copper plate in a cylindrical casing encapsulated stainless steel alloy, polarized by a voltage -500VDC with the air pressurization 2PSI CGA Type 1 Level And leak rate 1x10-7CC / s 6PSI, dimensions 2cm thick and 20cm height and diameter in an environment filled with ionizing gas compressed.   |
| 9022.90.90 | 49  | Device emission of electrons, referred to as electron emitters guns being triode valve, constituted by a filament coiled shape mounted in a steel body and rubber and cylindrical, cathode and anode (electrode), and also have a grid that It makes it possible to vary the amount of emitted electrons, allowing to vary the range of energies emitted by the machine, activated by a DC voltage - direct current "DC - Direct Current," approximately 5,3V and excited by high voltage of up to about 25.000.   |
| 9022.90.90 | 50  | Modules microprocessor controllers multi blades collimator system (MLC) consisting of a metal box aluminum containing internal connectors, LEDs and digital controller printed circuit board (microprocessor) with dimensions of 28 x 28 x 6 cm, voltage 110VAC input, 12 or 24 VDC operating voltages.  |
| 9024.80.90 | 63  | mechanical properties analyzers equipment, contact pressure, contact area, force, momentum, torque, speed, between paint roller and flat surface for use in laboratory studies of the physicochemical properties of the paint, with approximate dimensions of 6, 5 inches high by 5 inches wide, provided with: first transducer plate, one cable for transducer angled connector, two interfaces and power supply for the transducer 1 DAQ (dual) calibrator transducers 1 additional calibrator DAQ cable 1 power, one power bus (16-bit), with screw terminals, 1 metal frame of mechanical support in stainless steel, 1 frame (application surface), one "notebook", supplemented by system computer acquisition, calibration and monitoring data, tools for assembly, shown disassembled in cases and boxes. |
| 9027.10.00 | 195 | compact portable equipment for measuring concentrations of nitrogen oxides (NO, NO2), carbon monoxide (CO) and carbon dioxide (CO2) into the vehicle exhaust gases and diesel and gasoline in actual use (PEMS ) through the use of test cell analyzer proven optimal for mobile application, conditioned by temperature to ensure reliable measurements under ambient conditions varying in the range of 0 to 5.000ppm to NO; 0 to 2.500ppm to NO2; 5vols to 0% for CO and 0 to 20vol% for CO 2; accompanied by: cable set, protection, towing bracket, two support arms, 1 flight bag, analyzer linearity protocol, operating manual, control and operation software, heated sample line with  |
|            |     | integrated heated sample probe, external standard calibration module eCAL, connection cables for gas ions and PEMS set of connection pipes for gas cylinders; modules for management of electrical energy needed to operate the  |

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| 9027.10.00 | 196 | Portable particle counters capable of measuring emissions of particle number (PN) in real time directly in the exhaust pipe of motor vehicles with drive pretreatment of particles with two dilution stages, 1 heated in the range of 1 to only 150 degrees celsius ensuring the concentration of solid particles in the number and the other with cold diluted at a ratio of 5: 1, with overall rate of dilution of fixed 10: 1 .; with a sample flow rate of about 0.5 [l / min]; measuring range of the inlet concentration of 3,000 to $3 \times 10^7$ [# / cm <sup>3</sup> ]; with electronic particle counter (EPC) based on an electronic measuring principle with the ability to cope with severe road conditions such as gradients, vibration, acceleration and extended environmental conditions (-10 to 45 degrees Celsius to 3,000 meters altitude) ; with advanced sensor diffuser charger on the main unit PN PEMS; followed by |
|            |     | Volatile particle remover heating line 1.35m heating element in the Y-splitter, probe kit, transfer line set, sample probe kit, kit mounting arm, bacteria box including mounting brackets by connecting cables and mooring.  |
| 9027.10.00 | 197 | gas monitors that allows up to four integrated gas sensors with 4 high-precision temperature-compensated channels, 360-degree alarm, visualized by light for up to 5 m, with LED for evaluation of maintenance, calibration storage capacity, historical alarm and log data, programming capacity of up to 3 alarms with short-term exposure limit of evaluation (STEL) and the weighted average time (TWA), "display" LCD, backlight adjustment, input power 9 for non-IS 24VDC to 17VDC and 9 to S, operation temperature $^{\circ}C$ -20 to +40 degrees celsius, IP67 protection degree, current consumption <24Vdc @ 25mA, <15Vdc @ 35mA, may or may not have: connectivity RS485 digital external input 2, 1 analog, two external output digital programmable and independent.   |
| 9027.10.00 | 198 | Detectors portable multigas with housing rubber and size: 43 x 130 x 84mm, with "display" at the top, which detects up to 5 different gases through electrochemical sensor technology, catalytic, or infrared photo-ionization (PID), with an operating menu in Portuguese, operation by a single button, pause and resume the TWA calculation, status indication, audible alarm 95dB, vibrating alarm, intrinsically safe for use in hazardous areas with national approval Inmetro, up to 130h level data all gas sensors at intervals of 10s, powered by a rechargeable lithium ion battery.   |
| 9027.10.00 | 199 | Detectors portable multigas with rubberized casing, resistant to drops up to 4m, size: 80 x 135 x 35mm, with "display", that detects oxygen (O <sub>2</sub> ), carbon monoxide (CO), hydrogen sulfide (H <sub>2</sub> S) and inflammable gases by oxygen sensors, electrochemical and catalytic, with operation by a single button, pause and resume the TWA calculation, indication "status" beep 95dB, vibrating alarm, intrinsically safe for use in hazardous areas , up to 130hr gas level data for all sensors at intervals of 10s, powered by a rechargeable lithium ion battery.  |
| 9027.10.00 | 200 | Detectors of toxic gases, oxygen, or gases, for technologies: electrochemical or catalytic; flameproof or intrinsically safe to; with 4-20mA output wires 2 or 3; size 156 x 166 x 195 x 111mm and 166 x 111mm; 0.5 to 2.5mm <sup>2</sup> endings, for wall and ceiling with repeatability <2% FSD (Typical) with INMETRO certification.  |
| 9027.10.00 | 201 | Oxygen detectors, toxic or flammable gases, with gas detection technology through electrochemical sensors, catalytic, or infrared photo-ionization (PID), for wall and ceiling, size 156 x 166 x 109mm, with 2-wire output 4- 20mA, which can be connected to an addressable network using Modbus RS-485 output, with local audible and visual alarm, display front OLED, non-intrusive operation magnetic key and 3 internal relays 1A 30Vdc, alarm 1, alarm 2 and fault, for connection to external devices.  |

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| 9027.10.00 | 202 | Monitoring equipment continuous gaseous emissions from the sulfur recovery plant (Claus process), equipped with: sampling probe "Hastelloy" heating and "blowback" vapor (timed blast to remove impurities), heated line to sample transport flow meter for optical flicker regulators double stage pressure gas analyzers for the measurement of SO <sub>2</sub> and H <sub>2</sub> S ultraviolet technology - UV double beam and O <sub>2</sub> with zirconia cell technology, assembled fiber enclosure glass with logical programmer (PLC) to continue setting the whole system and sending signals and results, programming "Span, zero-checking routine, automatic calibrations and mathematical correlations by" software ".  |
| 9027.30.19 | 55  | Equipment for chemical analysis "on-line" of bulk materials through the near infrared spectrum technology (NIR), without the use of ionizing radiation for use in conveyor belts, equipped with: lighting head made of a set of light sources NIR radiation stations, including an infrared spectrometer near (NIR) to transform "Fourier" (FTIR), and a control unit containing industrial PC containing interfaces, "software" basic processing of spectral data and VPN remote access, heating and cooling system and power supply, for operation at room temperature with work between -40 to +55 degrees celsius and humidity range anywhere with facility aluminum structure with dimensions approximately . 1,500 x 1,500 x 1,500 mm (L x W x H).   |
| 9027.50.20 | 130 | Systems fully automated and computerized microscopy for reading cell substrates immunofluorescence slides, tissue antigens points and also mosaic providing a diagnosis on the computer screen; patterns ID for Hep-2 (ANA), ANCA and mixed patterns, including their titles; classification of results as positive or negative including "Crithidia Luciliae" (DNA); fast processing (13s / image); merging the results for the patient to a fully digital diagnostic process; digital archiving of fluorescence images and their results; bidirectional data exchange with the laboratory information system (LIS); Magazine for 500 wells (for blades 50 or 10 wells); automatic feeding of the blades; QR Code reader Integrated code; LED reading by the light source 620 to 630nm; digital cameras of high resolution; capacity up to three lenses (10x, 20x and 40x) focusing |
|            |     | automatic.   |
| 9027.50.90 | 175 | Automatic counters particles by laser light lock (obscuration of light) for particle counting pharmaceutical products (injectable and ophthalmic), a viscosity of up to 50cp, sample flow rate of 10 to 100ml / min design to ensure a small sample (1 ml) to large volumes (> 1,000 ml) power 100 / 230VAC, 50 / 60Hz, with sensor with factory calibration certificate with durability 6 months and measuring range of 1.3 to 150um, with "software" / licenses operation, which enables the programming of POPs on the counter, review and approval workflow on the counter, electronic signatures, electronic records safe direct counter.   |
| 9027.50.90 | 176 | Automatic counters portable particles by laser light lock (obscuration of light) for particle counting in liquids (oil, water, fuel and glycol) with 1 viscosity range to 425cSt without dilution sample flow rate of 15, 30 and 50 mL / min fixed flow rate, ISO MTD calibration choose up to nine particle size channels, with local pressure of 100psig, internal pump for reading fluid to 150Cst above that require external pressure, counter with self-diagnosis, communication by ethernet port and USB port, lithium-ion rechargeable battery with sampling 6h operating time remains within a range of 3 minutes, AC adapter: 100-240VAC universal, digital data export and also built-in thermal printer, "display"   |
|            |     | "touch screen".  |

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| 9027.50.90 | 177 | Counters aerosol particles, the portable light scattering method, with 6 channels for particle counting, 28,3L flow rate / min +/- 5% to meet routine applications, mobile and remote monitoring of the clean room with High resolution and high sensitivity 10-inch LCD monitor and built-in thermal printer, with power supply from 80 to 264V, 47 - 63Hz, lithium battery, counter material stainless steel 316, classification IP20, Ethernet Communication, 3 doors USB host, proprietary DIN port for moisture sensor probe temperature and relative, download data via USB, with the possibility of loading sample map for environmental monitoring and routine sampling configuration for each location directly on       |
| 9027.50.90 | 178 | Counters aerosol particles, the portable light scattering method, with 6 channels for particle counting, flow rate 50L / min +/- 5% to meet routine applications, mobile and remote monitoring of the clean room, with LCD monitor High resolution and high sensitivity of 10 inches and built-in thermal printer, with power supply from 80 to 264V, 47 - 63Hz, lithium battery, counter material stainless steel 316, classification IP20, Ethernet communication, 3-door " host "USB, owning DIN port for moisture sensor probe temperature and relative," download "of data via USB, with the possibility of loading sample map for environmental monitoring and routine sampling configuration for each location directly on |
| 9027.80.12 | 19  | Electronic viscometers in line for fluid viscosity control in flexographic printer suitable for work in hazardous atmospheres, measures the viscosity of the fluid through a vibrating sensor system; consists of the control panel, cable, external temperature sensor and meter "O-ring" Teflon encapsulated silicone measurement field 9 / 140s (Ford-4) with sensitivity of 0.1 s.  |
| 9027.80.12 | 20  | Automatic viscosity analyzers for cellulose pulp product with ability to perform sample cut automatically weighing, disintegration and dissolution of up to cellulose 96folhas / day, using capillary tubes equipped with cutting device, a precision balance, sample cups and rotating table, and 6 viscometer workstations including dispersion, dissolution, measuring, cleaning and drying with HMI software.   |
| 9027.80.99 | 536 | osmolality test equipment for use in the process "upstream" processing "downstream" formulation, capable of detecting even osmolality 4.000mOsm / kg H2O, screened "touchscreen" with cooling engine with code bed bars, with one sample capacity storage temperature of 20 to 45 degrees celsius (-4 to +113 degrees fahrenheit) with a resolution 1MOsm / kg H2O.   |
| 9027.80.99 | 537 | Automated systems and computerized continuous random access to diagnostic tests "in vitro"; methodology UGLY - Fluoroenzimaimunoensaio; Integrated storage chamber cooled reagents; processing module chamber with immunoreactivity and enzymatic reaction chamber with a fluorometer to read fluorescence; code reader integrated bar; sample loading module with loading capacity of up simultaneous 800amostras; automatic washing module; automatic pipetting module; module automatic washing solution preparation.  |
| 9027.80.99 | 538 | Portable insulin continuous infusion system controllers with measuring glucose rates in blood, by analyzing the electrochemical variation with the blood sample in the test strip, controllers calculator integrated bolus and remote control function via connection "Bluetooth" the insulin continuous infusion system, with or without micro pump, cannula applicator, case, uSB cable and charger.  |

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| 9027.80.99 | 539 | particle size analyzer (granulômetros) for dust and / or suspensions and / or aerosols and "sprays" by laser diffraction or image, or light scattering having 1 to 8 complementary or interchangeable lenses for the measuring range from 0.1 to 875 microns, or from 0.1 to 8750 microns, or 1 to 7 or complementary interchangeable lenses measurement range of 0.55 to 33,792 microns or a measuring range from 0.5 nanometers to 10 microns.   |
| 9027.80.99 | 540 | Analyzers "in-line" automated and continuous with optical spectroscopy technology for analysis of organic molecules in mashing processes of grains for production of beer, with analysis of 6 major parameters such as degree of polimerização (DP) and its main component parts listed in enzyme and correlation fermentability of activity, glucose analysis (w / w%) maltose + Maltotriose (w / w%) degree Plato (w / w%), RDF (Real degree of fermentability) and temperature (degrees celsius) operating with unique patented technology of quantum phenomenon evanescent wave disturbance for measuring their mid-infrared spectrum (MIR) in the upper track 400 cm-1 and less than 4.000cm-1 with spectral bands analysis of dissolved particles of 1nm and granulation of 1 micron, with scanning spectroscopy operations, optimization and control of the mashing process in real time without the need for |
|            |     | processing manual samples, the spectrum record of the mash tub via multivariate calibration system, peaking control of gelatinization, with intervals of 30s monitoring the mash and up to 100 ppm detection limits, allowing increased mash tun capacity in up to 25% reduction in the use of enzymes in up to 30% adjunct optimization with savings of up to 15% of the grains account, increase the actual degree of fermentability (RDF) up to 3% and higher production of alcohol, with head analysis with diamond cell operating temperature from 5 to 90 degrees celsius, with cleaning solution recirculation function for metering chamber, controlled by control unit with "machine learning" integrated automation of production through connection Ethernet and "software" of data analysis and real-time control network, accompanied by pipes, pump, valves and interconnecting connections.           |
| 9027.80.99 | 541 | automatic particle counters for light blocking laser (obscuration of light) for particle counting in liquids (oil, water, fuel and glycol), with a viscosity range of 1 to 425 cSt without dilution, particle sizes between 2 and 100um, sample flow rate between 10 - 100 ml / min, maximum concentration 18.000partículas / ml sample, calibration ISO MTD, up to 18 channels choice of particle size, external pressure requirement for operation by compressed air or air pump / vacuum counter with self-diagnosis, ethernet port for communication and two USB ports, power 110 to 240V, digital data export without external thermal printer, display 7 inch color without "touchscreen".   |
| 9027.80.99 | 542 | semi-automatic systems for color and standardization of blades used in hematological analysis, with coloring capacity of up to 60lâminas / h, enough coradores package for up to 900 sheets, user-adaptable pump setting for standardized staining cells on slides to be analyzed in sequence under a microscope equipped with continuously feeding the loading platform with spiral gear, processing system "Platen" precision controls, slides stained dryer, tray independently waste cassette collection of blades, simplified maintenance mechanism and connection 110 - 230V.  |

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| 9031.10.00 | 131 | automatic balancing machines including milling a correction unit and carrier measurement of armatures balance with mass to 3kg axis lengths of 80 to 240mm and with shaft diameters of between 3 and 15mm, measurement unit microprocessor to "touchscreen" colored correction unit for milling, automatic cycle, class C protection cover made of polymeric material heat-resistant steel sheet according to ISO 21940-23 class C 600/320 (protection against projecting parts), including interlock electric door at the station while the measurement is performed.  |
| 9031.20.90 | 215 | Equipment validation repair and maintenance services in receiver modules MDRP and MDR with the covers to be installed in secondary radar air traffic monitoring, performing integrated testing and testing-type amplification and signal processing responses from transponders, processing received signals the antenna on the S-way (sum), D (difference) and W (control) and releasing the video signals for the extraction function, performing functions of local frequency generation, reception and conversion RF / IF, analog to digital conversion, video processing, OBA processing (f (D / S)), output interface and function "bite" through specific software, comprising: feed tray module (Main power), signal processing module MDRP (MDR receiver interface ), measures reading and drawer module (BITE Receiver interface), 2 computer type industrial PC for data processing module |
|            |     | switching "switch" (KVM SWITCH), ethernet point router (Ethernet switch), steel cabinet with support mobile arm type for LCD monitor setup, USB connection to keyboard and optical mouse with USB connection.   |
| 9031.20.90 | 216 | Equipment for monitoring the track geometry and measurement of dedicated tracks parameters with high accuracy; optical laser sensor of left and right rail; with inertial measurement unit (IMU); with a control and processing unit; and sample rate of up to 100Hz, 2 - measuring 1.000pontos / m.  |
| 9031.49.90 | 497 | digital equipment used to measure the refractive and prismatic power lenses in glasses and also contact lenses, guide and mark uncut lenses and determine the degree of the lens (single, bifocal, trifocal, or multifocal) already engaged in eyeglass frames, equipment It consists of: coupled thermal printer 7-inch LCD command screen multi-voltage power supply (110 / 220V) and 60Hz frequency, height of 478 by 175mm wide and 255mm deep, the lens holder lever, button front to start the measurement, the lower module with the sensor for measuring the absorption capacity of the UV rays (optional depending on the acquired equipment model) lenses table with a lever to raise the height of the table, side USB connector, RS-232 connector camouflaged by a side cover, the side power switch, power input cable to the bottom, has functionality for measuring lenses             |
|            |     | with a diameter of 16 to 100mm, interpupillary distance of 10 to 80mm, cylindrical lenses from 0 to +/- 10D, spherical lenses from -25 to +25 to 12mm vertex and axis from 1 to 180 degrees ABBE value of 30 to 60 and can be mounted on table or counter.  |
| 9031.49.90 | 498 | Modules data processing computerized, with the ability to read 1D and 2D Data Matrix for drug tracking process and or loading and pallet box labels, comprising industrial computer, autonomous power supply unit (UPS), label printer and manual scanner to add cartridges boxes and pallets, HMI touch screen.  |

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| 9031.49.90 | 499 | Modules computerized data processing, with the ability to print Data Matrix codes for process traceability of medicines, inspect data quality and to ISO / IEC 15415-2 and automatically rejected where the anomaly, composed of industrial computer, standalone module power (UPS), code printer 1 and 2D and variable data "Thermo Ink Jet" or Laser, inspection cameras with internal lighting and manual scanner for taking samples with programmable logical controller and HMI touch screen, able to operationalize cartridges The dimensions = 35-120 / B = 15-100 / 50-200 C = positive using logical transport system with a device for separating and aligning cartridges through "infeed" with lateral conveyors with motors and splints and reject pneumatic and / or mechanical able to operate 400cartuchos /   |
| 9031.49.90 | 500 | Modules computerized data processing, with the ability to print Data Matrix codes for process traceability of medicines, inspect data quality and to ISO / IEC 15415-2 and automatically rejected where the anomaly, composed of industrial computer, standalone module power (UPS), code printer 1 and 2D and variable data Thermo Ink Jet or Laser, with inspection cameras with internal lighting and manual scanner for taking samples with programmable logical controller and touch screen HMI touch able to operationalize dimensions cartridges a = 30-120 / B = 15-100 / C = 65-200 using dual belt system (upper and lower) for transport and waste pneumatic and / or mechanical able to   |
| 9031.49.90 | 501 | Modules data processing computerized, to print, scan and apply labels with codes 1 and 2D Data Matrix automatically derived from the internal aggregation process of "packer case", composed of industrial computer, standalone module supply (UPS), printer codes 1 and 2D and variable data, inspection cameras with internal illumination for labels and / or high resolution cameras for reading codes 1 and 2D to boarding box aggregation, manual scanner for taking samples and manual printer with logical controller programmable HMI touch screen, able to operate shipping boxes of 600 x 400mm transportation system using linear conveyors   |
| 9031.49.90 | 502 | Modules data processing computerized, for installation on automatic or semiautomatic boxing machine, with the ability to read codes, 1 and 2D DataMatrix, automatically multiple inserted cartridges in shipping boxes for drug tracking process and generation data for printing boarding box label, with 100 codes reading area in an area of 400 x 600 mm, composed of industrial computer screen "touchscreen", high resolution camera and high-intensity lighting, "scanner" manual for manual activities, standalone module supply (UPS), with or without manual label printers.  |
| 9031.49.90 | 503 | Microscope optical for analyzing embossing points lids metal including residual point measurements opening slot, bubbles waste ID in the cover, the residual thickness of the rivet, thickness of plates, etc., applied in laboratories of the food and beverage industries canned in general, measurements can 4 to 5 measuring points within 30s to standalone feature for the measurement of any thickness can, repeatability of measurement with varying resolution and accuracy of 0.001mm (0.00004 inches), approach / 1,000x focus, focal length of 8mm / 0.3 inches, equipped accessory for calibration accurately 0,100mm / 0.004 inch with ISO certification, with motorized autofocus unit allowing accurate and independent readings, set of enhanced autofocus and LED lighting , connected to an integrated control computer with communication ports for |

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|            |     | RS232 and internet network, controlled by "software" control with security settings for frequent calibration every 8 hours and safety requirements required for analysis of specific fields, and contains configuration user levels, with visualization of the analyzed magnified object to monitor and optical lenses as "backup" with USB 2.0 connections and HDMI with SQL database data storage control unit, testing table with handling capacity on the X / Y, power 100 - 240V AC / 50 - 60Hz, followed industrial drive operating pedal, mini keyboard and monitor with a touch screen 15-inch TFT (Thin Film Transistor). |
| 9031.80.12 | 40  | Equipment for measurement and evaluation of 2D contour and roughness depth; with separate operating levels for different roughness and contour programs; with rapidly changing options between the roughness and contour measurements through "software" and change the mechanical components such as the drive unit, the probe (for roughness) mfw-250 and probe 175 and 350mm (for outline).   |
| 9031.80.99 | 107 | modular automatic or semiautomatic machines for pressure resistance test in glass bottles by injection of compressed air, with a height of 90 to 380mm, diameter of 45 to 130mm, a capacity lower pressure to 80bar, provided with: unit lifting and loading station, filling station and test station, pressure transducer, proportional valve, electrical cabinet and programmable logic control.  |
| 9031.80.99 | 108 | Deformable barriers, vehicle impact testing, externally composed of aluminum alloy plates, for structures and inwardly shaped hives, also in aluminum alloy, with a total weight up to 30kg, the total length of up to 1,900mm, overall width up to 1.100mm and height total of up to 1.100mm.   |
| 9031.80.99 | 109 | Machines for performing functional tests on electric screwdrivers; 4 with ability to perform tests on the product; verifies the correct operation of the electric charging of the batteries, checking the operation of the LED lighting, check the operation of the LED indicating the battery level of the product and verifying the speed (RPM) of the tool chuck; with cycle time of between 15 and 16s / piece; with programmable logical controller brand, sensitive man  |
| 9031.80.99 | 110 | Tops for measuring the external profile of the nozzle body to ensure specifications of diameters, angles, chamfers and radii lengths; Statistical capability cg / CGK greater than or equal to 1.33 and less than or equal to GRR 10% for the controlled characteristics, with a precision of 0.02 mm tolerance of the product, measurement performed by the camera; provided with pressurized air intake 6bar with AC electrical system, air filtering and pressure regulating system, reservoir for lubricating oil and pneumatic aggregates.  |
| 9031.80.99 | 111 | Stands for diameter measurement and position of the fixing holes and the hole of the oil nozzles with statistical capability cg / CGK greater than or equal to 1.33 and less than or equal to GRR 10% for the controlled characteristics, accurate to 0, 01mm tolerance, measurement performed by camera and also by contact; accompanied by electrical distribution panel with cowl acrylic, measuring table and structural aluminum profiles.  |

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| 9031.80.99 | 112 | Combinations of automatic machines, such as "offline", suitable for monitoring, detection and separation defects preforms of polyethylene terephthalate (PET) dimensions up to 60mm outer diameter and up to 160mm in overall length, through high definition cameras, and "software" dedicated, trained to inspect, among others, geometric characteristics such as length and shape deviations, defects in material, color deviation, holes and grooves in the injection point defects in the ring seal the cavity and reading the number contamination, capable of monitoring up-forms 72.000pré / h (according to the dimensions and weight of the preform) composed of: filter boxes, feeding system, orientation and positioning entry, inspection equipment for optical analysis by up to 18 digital cameras high resolution with their lenses and lighting system technology |
|            |     | polarization, controlled by PLC with respective programs (software) for image processing and data collected, display unit "HMI" touch monitor to the touch, electrical systems, mechanism for automatic rejection of defective products and ejection system.   |
| 9031.80.99 | 113 | incremental encoder means (encoder) rotating the optical type digital square wave signal with maximum torque up operation 0,014Nm, maximum operating speed of up to 120rev / min, shaft diameter up to 6,40mm, operating supply voltage 5,25VDC maximum, maximum supply current of up to 50mA, the resolution 64ppr 8, support mechanical vibrations of harmonic motion with an amplitude of mechanical shocks 15G and 100G, operating temperature of -40 to 85 degrees celsius, mechanical life 1 million cycles, equipped with embedded electronics, terminals, packaging and metal shaft.   |
| 9031.80.99 | 114 | lung simulator devices designed to simulate human breathing, coughs and more than 35 kinds of lung diseases capable of simulating amount of 2 to 2.700ml, flows up 280lpm, respiratory frequencies from 0 to 150respirações / min, resistors 3-500 cmH2O / l / s, complacency 0.5 to 1,000 ml / cmH2O capacity and total volume of 3,1L.   |
| 9031.80.99 | 115 | Instruments for measuring micro hardness professionals to analyze the mechanical and elastic properties of materials by nanoindentação with a maximum depth of indentation comprised between 0 and 150, of special design to 500 microns; hardness measuring range of 0.001 to 120,000N / mm <sup>2</sup> , with a measuring function and calculate material parameters, according to DIN EN ISO 14577-1 and ASTM E 2546; a microscope with three magnification levels for accurate positioning of the measurement point; autonomous determination, highly accurate level zero to fast forward; Programmable XY table for automatic measurement points test; with results and analysis interface; power supply for the measuring head position / device: 100 - 240VAC; uncertainty of measurement - Measuring  |
| 9031.80.99 | 116 | Encoder with electromechanical devices 9 to 16VDC voltage, maximum current of 30mA operation and output frequency of 360Hz for greater accuracy, supports a range of 2 to 2.500rotações / min adaptable to axes 1 and 1.25 inches in diameter, proper to measure the rotation of hydraulic motors that move the axis of the seed distribution system planters not self-propelled machines.   |
| 9031.80.99 | 117 | Electromechanical Devices encoder with 5 +/- 0.25V operating voltage, current of 60 +/- 10mA working temperature of 0 to 70 degrees Celsius, 4 kHz output frequency 200rpm, output resolution of 1,200 cycles per turn , fit for measuring the rotation of hydraulic motors that move the shaft fertilizer distribution system of planters not self-   |

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| 9031.80.99 | 118 | electronic sensing parameters roller belt conveyors (vibration, temperature, speed, RPM) to operate within the rollers with a distance of 350 to 2.250mm bearings, shaft diameters from 30 to 60mm, the operating speed of 350 1.500rpm, energy self-generation, monitoring "online" automatic 24 x 7 network via data transfer "wireless" with information "status" and signal strength. |
| 9406.90.20 | 12  | Cabins structured to cells optical measurements 3D industrial with automated positioning by means of one or more arms robot 6 or more degrees of freedom controller and rotary table, devoid of measuring head, for use in inspection and survey 3D coordinates of surface points, quality control and reverse engineering.   |

































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