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Technical specification of the single manufacturer Glove Box with gas purification for work under controlled atmosphere of argon or nitrogen (with <1 ppm oxygen and moisture level) and integrated with Solvent Purification System (SPS)

Glove Box

General Features:
One two port glove box with minimum dimensions of 900mm x 1200mm x 780mm (H x L x D) made of stainless steel (SS) and polycarbonate front window with coating to resist chemical and scratches. Automatic box pressure control in adjustable range between –15mbar to +15mbar (operated at over or under pressure). PLC controller with color touch panel for full auto operation of the glove box. Additional water proof foot switch for pressure adjustment while operating the box. Refrigerator (minimum volume 18 L, 3 SS trays), on left side. Integrated heat exchanger with the box. Height adjustable stainless steel shelves (3 No.). Solvent trap, DN 40, with 5 kg charcoal with inline and by-pass valves for easy replacement of the charcoal. 2 DN 40 KF Flanges with one electrical feed-through.

Gloves and glove port: Butyl gloves with minimum 0 .4 mm thickness
Glove Port feedthroughs of size 220 mm diameter with one internal port cover for change of gloves.

Antechambers:
Mini antechamber on the right side*:* SS of minimum size 150 (D) x 400 (L) mm, hinged typed doors. Must include sliding tray.
Main antechamberon the right side*:* Vacuum/Refill process should be auto operation type with No. of cycles for evacuation and refill features.
Cylindrical antechamber, stainless steel, thickness 2.5mm. Inside dimensions 390 mm diameter x length 600mm. Must include sliding tray. Door lock spindle type

Purification method and purifier: Fully automatic, single filter purifier column with gas circulation system for cleaning with inert gas and to absorb O_2 and H_2O and fitted with electro-pneumatic valves. Oxygen removal capacity of the catalyst minimum must be atleast35 litres and moisture removal minimum 1 kg. Integrated circulation blower with flow rate of more than 85 m^3/h with automatic circulation speed regulation to save energy.

Vacuum pumps: Dual stage rotary vane pump (minimum 12m3/h), with oil mist filter and oil recirculation, automatic gas ballast control,Vacuum pump should be automatically put off. Additionally, positive pressure regulation of box when vacuum pump is off.

Regeneration and sensors: Fully automatic Regeneration with auto restart.
Solid State, PLC controlled Oxygen probe, Measuring range 0 to 100 ppm
Solid State, PLC controlled, Moisture probe, Measuring range 0 to 50 ppm

Solvent Purification System (SPS)

The purification system should be integrated with above glove box to dispense solvent in glove box and/or directly. The system must include leveling feet and casters and must have a spill tray with it. The system must include an oil free diaphragm vacuum pump, 20L/min, ultimate vacuum 8 mbar.

General features:

A fully enclosed vertical system, for 4 solvents is desired in one solvent purification system. The solvents to be purified are: (1) Toluene, (2) Tetrahydrofuran (THF), (3) Hexane, (4) Diethylether. The accepted level of dryness should be below 1 ppm of water and oxygen in the solvents.

Technical Specifications:

(1) The reservoirs must be enclosed in a fire and explosion proof and corrosion free cabinet type 90 in accordance to EN14470-1.
(2) The system must have double column purification for each solvent. Details of the technique for drying should be provided.
(3) Each column should be of minimum 4 L capacity. The flow rate from each column must be of up to 1 L/minute. Each column must be able to dry minimum 600 L of solvent before the column requires replacement.
(4) The entire system must be free of cross-diffusion. Dispensing of solvent must be controlled by a manifold system operating under an inert atmosphere of dinitrogen (or argon). All required glassware and accessories **with one extra set** must be supplied along with the system.
(5) For each solvent, a stainless steel reservoir with a re-sealable lid, a degassing valve, and a pressure relief option for solvent storage (with a minimum capacity of 15 L) should be supplied.
(6) The system must be fitted with independent regulation for each solvent, Independent pressure gauges for each solvent, color coded stainless steel line per solvent
(7) The system must be fitted with working shelf which is height adjustable. The system should be fitted with vapor collection hood over the solvent dispensing tray. The working shelf should be fitted with clamping rods for holding the glassware.
(8) The system must include a 4" exhaust duct which can be connected to a facility exhaust system.

Glassware: 6 x 250 ml round bottom flask with 1 x NS 29/32 connection with ground neck 1 x NS 14/23 opening with ground neck and PTFE cut-off cock. 1 x opening to draw solvents with a syringe, inner Ø 10 mm with screw cap for septum plug; with PTFE cut-off cock 1 x NS 14/23 opening with ground neck and PTFE cut-off cock on the bottom.