



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai 400076.

Ref.: 6100002483

PR No.1000051141

Item Description: Dry Scrubber (Cleansorb Fabine)

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1.	Dry Scrubber (Cleansorb Fabine)	<p>Dry bed chemisorber waste gas treatment system. 200 liter absorber column in air-extractable cabinet with safety and monitoring elements.</p> <p>Specially configured to absorb exhaust gas so that the following column outlet concentrations are not exceeded until the end of chemisorbent capacity or lifetime*:</p> <p>H₂S: < 5 ppm H₂Se: < 0.015 ppm DeTe: < 0.1 mg / m³ (Te) Mo(CO)₆: < 10 mg/m³ (Mo) W(CO)₆: < 5 mg/m³ (W)</p> <p>([H₂, N₂]) ** **</p> <p>Note: CHF₃ are chemically inert that they will not be abated. However the reaction products HF and F₂ will be abated.</p> <p>The system must be compatible to any alterations in the chemistry of the operations.</p> <p>Max. total volumetric flowrate: 250 slm</p> <p>Pressure drop at max. volumetric flow: < 500 Pa</p> <p>System Description: Powder-coated steel cabinet as enclosure for the absorber column, system electronics and components.</p> <p>Dimensions (mm, HxWxD): 1,550 x 830 x 1,011</p> <p>Key-lockable front-side door. Header connection and air intake vent for cabinet extraction. Bolt holes for anchoring.</p> <p>Refillable absorber column and ADR-authorized transport</p>		

vessel with UN code number. Constructed from corrosion-resistant 316L stainless steel. Ø 560 mm, incorporating:

- Caster wheels on base
- Integrated ball valves at column inlet and outlet, DN40 ISO-KF
- Hand lever tool for opening and closing of ball valves
- Quick connect port, Ø 3 mm, for gas sampling at column outlet.

Pipework and Components

Internal gas lines constructed with solid 316L stainless steel piping and flexible bellows tubing.

Pressure transducer, -500 ... + 500 mbar to monitor inlet pressure of column.

Two gas sampling ports, one each at system inlet (manual valve Ø 6 mm) and outlet (quick connect).

Internal column bypass line, DN40 with two 3/2-way pneumatic valves. Opens if over-pressure set point is exceeded, to route gas past the column.

Assembly of pressure regulators, flowmeters, and ball valves to enable automated (PLC-controlled) functions:

- Inert gas purging of absorber column and gas lines
- Pressure-decay leak testing of absorber column and gas lines.

Inductive "Column in Place" switch to detect presence or absence of column. Proximity switches to monitor position of critical valves.

Operating Panel and Controls

Stainless steel operating panel at front of system. Engraved flow chart schematic with colored LEDs to indicate status of valves. Alphanumeric display of system inlet pressure.

Push-button activation of:

- Column bypass operation
- Gas sampling unit
- Inert gas purge
- Automated pressure decay leak test.

PLC-controlled electronics with LED and buzzer status signals for:

- Bypass Open/ Closed
- Inlet Pressure Warning/ Alarm
- Column in Place
- Column Capacity Endpoint
- Leak-test status.

Remote signaling available via:

- hardwired volt-free contacts
- RS232/ 422

Key switch with selection of two user authorization levels.

		<p>Two endpoint detection sensors type B</p> <p>Electrochemical gas sensor, reusable, to indicate when the column has reached its capacity endpoint. Timer-controlled piston pump for gas sampling to endpoint detector. Two selectable sampling points:</p> <ol style="list-style-type: none"> 1. To detect endpoint prior to gas breakthrough at column outlet (typically at 90 % of column capacity) 2. At the outlet of the main column. <p>(The outlet of the backup absorber line is NOT monitored by the Endpoint Detection unit.)</p> <p>Second, reusable electrochemical gas sensor to indicate when the column has reached its capacity endpoint based on detection of different gas to that of first endpoint detector.</p> <p>Output signals from both gas sensors are combined to show a single collected Endpoint warning at the operating panel. Signals from both sensors are available as separate volt-free contacts.</p> <p>Relief line with Mini-Absorber Cartridge</p> <p>Relief line opened by control system to relieve over-pressure or other critical event, as defined by the system control software. Mini-Absorber Cartridge integrated into relief line. Intended for short-term containment of reactive gases remaining in exhaust line, not for temporary or continuous waste gas removal.</p> <p>Gas wetted components not ex compliant</p> <p>Gas wetted components (e.g. pressure sensor) with standard configuration</p> <p>Power supply: 230 VAC / 50/60 Hz / 1-Phase (CE)</p> <p>Cables and components compliant with CE standards. (Single phase, L, N, PE)</p> <p>Compatible facility connections.</p> <p>Units on operating panel – psi</p> <p>Pressure displayed in psi</p> <p>Documentation in English</p> <p>Operating manual provided in English language with customer-specific specifications.</p>		
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