



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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Tender Specification for Gas Chromatography System.

Microprocessor based Gas Chromatography system for analysis of gaseous sample – CH₄, CO, CO₂, N₂ and O₂ in a gas mixture by TCD in a single injection. The system should have automatic/electronic gas control system for all flows/pressure and can be controlled from chromatography management software. User friendly operation to manage the work from LCD Screen with Keypad as and when required. Automatic heated gas sampling valves should be quoted for Gas sample injection, column switching and backflush. Moisture should be backflushed to enhance the system performance. The system should be plumbed & tested in the factory for the mentioned application.

O₂: 100ppm to 100%

N₂: 100ppm to 100%

CO: 100ppm to 100%

CO₂: 100ppm to 100%

CH₄: 100ppm to 100%

Column Oven

Column Oven Size should be 18 ltrs or more

Operating Temperature range: Ambient +5 °C to 450 °C or better

Temperature Set Point Resolution: 1 °C

Number of Ramps/Plateaus: 7/8 or more

Maximum Heating Rate: 50 °C/min or more

Oven Cool-Down (22 °C ambient): 400 °C to 50 °C in < 6 min

Performance Specifications

Typical Retention Time Repeatability: 0.008 min or better

Typical Peak Area Repeatability: <2% RSD or better

Automatic / Electronic Pressure Control

Up to 10 channels or more of integrated electronic gas control

Pressure Set Points Minimum Increments: 0.01 psi in all ranges

Electronic Carrier Gas Control for Capillary/Packed Column Injector & Auxiliary

Pressure Range: 0–145 psi or more

Modes: Constant Pressure, Constant Flow and Programmed Pressure

Auxiliary Electronic Carrier flow/pressure Controller – Qty 1

Injector

Can be installed minimum Number of Injectors: 2 or more

Packed Column Injector with electronic gas controller – Qty 1

Suitable for different OD Packed columns and wide bore Capillary columns with adaptor

Temperature Range: 50 degC – 450degC

Detector

Can be installed minimum Number of Detectors: 3 or more

Thermal Conductivity Detector with electronic gas controller – Qty 1

Compatible with different OD Packed columns, narrow & wide bore capillary columns

MDL: <800 pg Dodecane/ml He or better

Sensitivity: 10 μ V /ppm for Dodecane or better

Linear Dynamic Range: >10⁴ or better

Maximum Temperature: 400 degC or better

Column

- Porapak Q 3 feet X 1/8' SS 80/100 or Equivalent - Qty 1
- Porapak Q 6 feet X 1/8' SS 80/100 or Equivalent - Qty 1
- Molecular Sieve 5A 9 to 10 feet X 1/8" SS 80/100 mesh or Equivalent - Qty 1

Automatic Heated Gas Sampling Valve & Installation/Startup Kit

- Automatic heated 6 port column switching valve – Qty 1
- Automatic heated 10 port inject & backflush valve – Qty 1
- Additional separate heated valve oven to keep all gas sampling valves – Qty 1
- 1ml loop with fittings – Qty 1
- Installation/Startup Kit – Qty 1
- 1ml Gas tight syringe – Qty 1
- AGSV line filter with fittings – Qty 1 sets

Software

Suitable Chromatography Management Software 32/64 bit windows 2000 / XP/7/10 based or latest with PC, Printer to manage the entire work from software should be quoted

Warranty

- One year standard warranty should be quoted.

Calibration Standard

Calibration Standard must be supplied

- Calibration Standard O₂, N₂, CO, CO₂ in balance Helium 0.5ltrs WC – Qty 1
- Calibration Standard CH₄ in balance Helium 0.5ltrs WC – Qty 1

Accessories to install the equipment

- UHP grade Helium Gas filled Cylinder 47 Lit. appx Water capacity with Double Stage SS Pressure Regulator - Qty 1 set
- 5 KVA Online UPS, 230 Volt AC, 50 Hz, Single Phase I/P & O/P, 30min backup – Qty 1
- Gas purification panel with fittings for Helium should be quoted.