



Technical Specification No. MS-UC-2022-01

19-07-22

Specification for Gas Chromatograph (Material code to be generated)

Gas Chromatograph (GC) with two injection ports, two numbers Flame Ionization Detectors (FID) and a PC based software for control and integration, working on Windows platform with latest PC configurations. The GC should have display with user friendly setting and monitoring of all temperature and flow parameters. Detailed specification follows.

1. Oven

Oven Temperature setting: ambient + 5 deg C to 400 deg C or above
Accuracy: ± 1.0 deg. C
Increment: 1 deg C
Number of temperature ramps: Five minimum
Rate: 1 deg C to 40 deg C or above, per minute
Should have Safety measures for column flow and temperature over shoot

2. Inlet (Injection port)

Two purged packed injection port suitable for direct injection to 1/4 or 1/8 inch dia columns and 0.530 microns (mega bore) capillary columns.
Should be able to inject liquid samples directly.
Should have electronic pressure / flow controller for carrier gas, Hydrogen and Air
Electronic flow / pressure control, Flow 0 – 100 ml/min or higher
Pressure 0 – 100 PSI or higher
Inlet temperature: ambient + 10 deg.C to 400 deg.C or above

3. Detectors

Two numbers of Flame Ionization Detectors (FID), with electronic pressure / flow control for Hydrogen, Air (fuel gases) and for Make-up gas.
Minimum detection level 3 pg C/s or less
Linear dynamic range: $>10^7$
Detector temperature: 400 deg. C or above
Should have flame out warning

4.Column for Urine Phenol Analysis

Length : 10 feet
Dia : 1/8 inch
Material : Stainless Steel / Chromium Nickel Steel
Liquid phase : 10 % Free Fatty Acid Polymer (FFAP)
Support : Chromosorb W / HP, 80 / 100 mesh
Quantity : 3 No.s
Guard Column : 1/8 inch dia, 6 inch length 10 % FFAP
(Pre column)
Quantity : 10 No.s
SS Union & ferrules for
connecting Pre column and Column : 2 no.s

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5. GC Controlling and integration Software, Computer and Printer

The software should be able to control the GC fully. The software should have real time data acquisition from one or more detectors at a time and post-run analysis. Should have high-speed data acquisition, quantitative and qualitative processing of acquired data and complete data management. Should have facility for easy data transfer, customized report generation, data management etc. Should be able to generate the analysis report in Area %, Normalization (Norm %), External Standard (ESTD) and Internal standard (ISTD) with provision to calculate non calibrated peaks also. Should be able to create, modify, store and retrieve analysis methods and calibration data.

Separate offer with detailed specification of offered Computer (for running the GC Software) and Laser Printer shall be given along with the technical bid.

6. Installation and Commissioning of GC & Software

Installation and commissioning of the system in all respects shall be done at Petrochemical Laboratory by the Supplier after receipt of the items and within 30 days after intimation to the supplier / authorised agent.

A start-up kit with all necessary items (like nut, ferrule, unions, "T" joints, copper tube, tube cutter, column connection fittings for 1/4, 1/8 inch dia packed and 0.530 μ capillary columns, gas leak detector, all required tools for routine maintenance etc.) should be supplied.

All necessary samples and columns required for the performance evaluation of the GC shall be supplied by the supplier.

The customer (FACT) will provide sturdy platform for GC, Carrier gas Nitrogen of purity 99.9990 %, fuel gas Hydrogen 99.995 % and dry Air and stable 230 VAC / 50 Hz power.

7. Warranty

Three year warranty shall be given for the whole GC system (GC, Software) and One year for PC and Printer from the date of installation and commissioning.

Should supply one set of operation and detailed service manual with part numbers (hard copy / soft copy), Software CD / USB flash drive, all software license etc along with the system.

8. Spares and Consumables

Some mandatory spares and consumables are listed in the bill of materials which is to quoted. It is at the discretion of FACT to procure the items after considering the requirement. This amount will not be considered for the evaluation of price bid.



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9.0 Annual Maintenance Contract.(AMC)

Should submit a separate offer for Non Comprehensive Annual Maintenance Contract (AMC), for a period of five years after expiring the warranty. The year wise break up of the AMC amount shall be submitted along with the bid.

The amount quoted for the AMC will be considered for evaluation of price bid.

The general AMC terms and conditions are

- a. The AMC shall include **two** Preventive Maintenance (PM) visit and **two** breaks down visits per year for the Gas Chromatograph and Computer.
- b. The break down call shall be attended with in 48 hrs after intimation over phone or e-mail.
- c. 50% payment of the AMC amount quoted for the year will be given after the First PM visit and balance 50% after completing the contract of each year.
- d. If additional break down visits are required 25% of the AMC Amount quoted for each year will be paid.
- e. The payment will be made after receiving the original invoice.



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10. Bill Of Materials

Sl. No	Item	Qty	Part No	Price
1	Gas Chromatograph with two PP inlets, two FID and Integration Software	1 No		
2	Computer and Printer	1 each		
3	Column as per given specification	3 no.s		
4	Pre column as per given specification	10 No.s		
Spares				
1	Electronic Pressure flow control module for Carrier gas	1 No		
2	Electronic Pressure flow control module for Fuel gases and Make-Up gas.	1 No		
3	Heater for injector	1 No		
4	Heater for FID Detector	1 No		
5	Heater for Oven	1 No		
6	Temp. Sensor for Oven	1 No		
7	Temp. Sensor for Injector	1 No		
8	Temp. Sensor for FID Detector	1 No		
9	FID Ignitor assy	1 No		
11	FID Jet for Packed column	1 No		
12	Septa	100 No.s		
13	Glass Liner insert	100 Nos		
14	Gas Leak Detector Solution, 200 ml minimum	1 bottle		
Annual Maintenance Contract				
5	Particulars	Period	Amount Quoted	
	Non comprehensive AMC for Five Years after the warranty period	1 st year		
		2 nd year		
		3 rd year		
		4 th year		
		5 th year		



11. Pre-Qualification Criteria (Technical)

11.1 The bidder shall be the Manufacturer of Gas Chromatograph (GC) or their authorized representative / agent. In case of authorized representative / agent, the authorization letter from the manufacturer to be furnished

11.2 The bidder should have supplied, installed and commissioned at least FIVE number of the offered model or its higher version of GC in India, in any government / public sector / medical / educational institutions laboratories during last 7 years, as on the date of enquiry.

TWO numbers of the above supplied GC's should be successfully working for at least TWO consecutive years during last 7 years as on the date of enquiry.

11.3 Documentary evidence in support for CLAUSE 11.2 from the client in the form of copies shall be furnished as follows:

- 1) Copies of supporting Purchase Orders (at least 5 numbers)
- 2) Copies of satisfactory commissioning reports of the supporting Purchase Orders Provided.
- 3) Copies of successful working of TWO numbers GC's from above mentioned purchase orders for at least TWO consecutive years during last 7 years as on the date of enquiry.

11.4 Details of reference units /industries (of mentioned Purchase Orders) including the contact person, contact number and email ID should be provided.

11.5 The bidder shall provide corporate guarantee from the manufacturer for service support and spare support for the offered model GC for at least 10 years from the date of commissioning of the instrument.

11.6 All relevant documents for satisfying the pre-qualification criteria shall be enclosed in the techno-commercial bid, without which the offer is liable to be rejected without seeking further clarifications. FACT shall have the liberty to verify the documents / data submitted by the vendor as proof for meeting the pre- qualification.

Purchase by buy back option of Chemito make model 1000 GC is preferred.