

Technical Specification of Gas chromatography (GC)

Gas Chromatograph configured with capillary injector port, Flame ionization detector, automated liquid injector should be quote as per following specifications.

Instrument Performance	<ul style="list-style-type: none"> • Must be able to configurable at least 3 inlet, 4 detectors • Retention time repeatability should be < 0.0008 min and Peak area repeatability < 1 % RSD • Integrated leak check function allows you to easily check for leaks and extensive self-diagnosis function with safety features • Should perform automated baseline check and user defined system suitability test in a sequence.
Column Oven	<ul style="list-style-type: none"> • Provision to install two or more columns • Operating temp range of oven from near ambient to 450°C • Oven temperature ramp rate of oven should be 120°C or better • Possible to program 15 temp ramps or better • Oven cool down: 450 to 50 °C in 4 minutes or better • Should have selectable Column Cooling Rate options from fast to low
Injectors	<p>Capillary Split/Splitless Injector – 1 No.</p> <ul style="list-style-type: none"> • Must be able to install up to 3 independently temperature controlled injector units simultaneously • Maximum operating temperature upto 450°C • Automated flow control modules with Pressure set points adjustable in increments of 0.001 psi, settable upto 150psi • Split ratio upto 7000:1 and suitable for all capillary column from 50um to 530um. • Must consist of at least 3 pressure programming methods, constant pressure, Constant flow. • Number of flow programming steps up to 5 or better
Detector	<p>Flame Ionization Detector (FID) – 1 No.</p> <ul style="list-style-type: none"> • Minimum detection level should be around 1.2pgC/s for dodecane or equivalent compound • Temperature range of up to 450°C • Able to automatically control up to 3 channels of gas, i.e. H2, make-up and Zero grade Air • Must have an acquisition time of 2ms (500Hz) or better • Must provide fast flame out detection and efficient automatic re-ignition • Dynamic range should be up to 10⁷
Auto sampler & Auto liquid	<ul style="list-style-type: none"> • Auto sampler should support 15 vials or more for liquid injection • should able to inject sample volume 1 to 80% of syringe capacity

Injector	<ul style="list-style-type: none"> Standards should be provided.
Capillary Columns	<ul style="list-style-type: none"> 30m Column for Organic Compound analysis – 2 numbers Columns for Chiral Compound analysis – 6 numbers (30 – 50m; I.D. 25-35 mm or similar size, chiral stationary phase should be similar/equivalent to βDEXm, βDEXsm, βDEXse, βDEXsp, βDEXsa, βDEXcst). All the 6 chiral columns must have different chiral stationary phases.
Software	<ul style="list-style-type: none"> Suitable software for instrument control for all mentioned modules to be quoted Acquisition of sample data and qualitative & quantitative analysis of acquired data. Instrument acquisition, data analysis and reporting should have been built based on the Retention indices through automated features.
Accessories required	<ul style="list-style-type: none"> Gas cylinders for Carrier gas (N₂, He) and detector gas (H₂, Zero Air) should be provided Two stage Cylinder Regulator with Brass Chrome plated body with S.S. Diaphragm for Carrier gas and Detector gas, should be included Suitable Gas Purification & Control Panel with pressure Regulator for Carrier gas and Detector gas should be provided
Warranty	<ul style="list-style-type: none"> 3 year from the date of installation or supply
Training	<ul style="list-style-type: none"> Vendor shall depute his trained team to install and commission the hardware offered, complete in all respects. Should provide instrument operation and application training for 5 days

Vendor Eligibility Criteria:

- The same model of the instrument must have been supplied to other or same (IIT Madras) kind of National Institutions such as IITs, IISERs or CSIR Labs.
- AMC must be quoted as optional (after 3 years)
- 21CFR part 11 compliance ready, CE Certificate, or also database for the instrument software must be provided.
- Installation report and previous POs must be supplied.