



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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Specification for UV Visible spectrophotometer

1. Scope & Application:

The specification covers minimum requirements for the procurement of UV-visible spectrophotometer used for generating the spectra, absorption/transmission measurements inorganic and organic compounds of aerosol and BrC etc. in aerosol extracted in water/organic solvents (but not limited to these applications).

2. Technical Specifications

- 2.1 The equipment should have spectral range from Wavelength 190 nm – 1300 nm.
- 2.2 Absorption measurement (complete light absorption spectra) from 200 to 1300 nm wavelength range is required.
- 2.3 The system should be capable to control / maintain temperature (preferably from -10 to 80 °c)
- 2.4 System should be capable to perform large number of samples at a time. Should have multicell/ multicuvette holder options (minimum 8).
- 2.5 System should have digital display and should be able to transfer data in excel or csv format

3. Essential Requirements:

Scan Modes	<ul style="list-style-type: none">• Absorbance, % Transmittance, % Reflectance, Concentration• Should hold multiple, 10 mm standard rectangular cells / Micro Multi-cell holder (minimum 8) with similar/constant optical path length, Constant Temperature type• Scanning• Quantitative analysis• Kinetics experiment• Double beam
Ambient Temperature :	15 Deg.C – 35 Deg.C
Ambient Humidity :	35-80% (no condensation, less than 70% at temp. above 30°C)
Temperature controller	Use in samples and reference position Measure multi-cell kinetics Auto software recognition, alignment Temperature range: -10 to 80°C

Wavelength Range	190–1300 nm
Wavelength measurement range	200-1300 nm
Spectral Bandwidth	Variable 0.5, 1, 2,3,5, 8, 10 nm
Light Source	Xenon/halogen lamp with typical lifetime up to 5years warranty
Detector	Silicon Photodiodes/ Photomultiplier etc
Wavelength Accuracy	± 0.1-0.2 nm
Wavelength Repeatability	±0.05 nm (SD of 10 measurements)
Scanning Speed	Between 8000 - 15000 nm/min
Data Scanning intervals	10, 5, 2, 1, 0.5, 0.2, 0.1, 0.05 nm
Photometric Display Range	>±6 abs
Photometric Accuracy	± 0.002 Abs (0.5 Abs) ± 0.004 Abs (1 Abs) ± 0.008 Abs (2 Abs)
Stray Light	<1% T @190 nm 0.00005% @340 nm 0.00007% @ 220 nm Double monochromator grating
Performance verification	Should be inbuilt performance verification programme with limits mentioned as a standard feature in software
Connectivity	System should be PC controlled (with USB ports), to support flash memory for method and data storage. Option to export data to PC
Software	Should have instrument control software including: wavelength scanning, single and multiple fixed wavelength, wavelength ratios, quantitative analysis and for running customized method scripts; Kinetics with time scan
Warranty	Minimum 3 yrs on complete instrument.
PC	Bidder should provide the configuration with compatible OS and MS office.
UPS	Bidder should provide UPS and battery bank for 3hrs back-up
Cuvettes	Vendor should provide additional set of Cuvettes along with the spectrophotometer. (at least 4 additional pairs)

4. General Features

- 4.1 The system shall be complete in all respect and ready for operation as per specification.
- 4.2 The system shall be new and of latest model.
- 4.3 The installation requirement and environment required for installation and operation of UV-visible spectrophotometer should be clearly specified by the bidder/supplier.
- 4.4 The system should be compact and rugged.
- 4.5 Complete set of operational and technical manuals should be provided.
- 4.6 The vendors must demonstrate the quoted system for of our samples at our facility within stipulated time frame during technical evaluation of the bids. This is an essential requirement of the tender.

- 4.7 Equipment operational training to be provided to minimum 2 persons at the laboratory where the systems will be installed.
- 4.8 Minimum three years warranty is required on all the parts of machine.
- 4.9 Instrument must have electrical compatibility with the Indian power outlet in terms of voltage, phase and current.
- 4.10 Vender must provide the two letters of satisfaction from the reputed government national institutes or research organization where quoted machine is installed and running smoothly or provide two peer-reviewed research articles in that research work quoted machine has been used.

5. Environmental Operation Conditions

Operating Temperature: 15 °C to 35 °C

Relative Humidity: Up to 80% without condensation.

6. Essential Accessories

The bidder should quote all the essential accessories required to make it a self sufficient, independent unit and to meet all the functionality of the equipment.

7. Spare Parts

The vendor should provide all the essential spare parts required for smooth functioning of the equipment at least for three years. The vendor should also clearly mention spare part number, its description.