

## Fourier Transform Infrared Spectrometer - Technical Specifications Cum Compliance Matrix

**Equipment: Fourier Transform Infrared Spectrometer (FTIR)**

SI. No.	Parameter	Indent Specification	Compliance of party (Explicit description with relevant details is mandatory or if annexed separately reference shall be indicated here)
<b>I</b>	<b>Optical System</b>		
1	Type and its environment	1. Single beam 2. Extensively sealed and desiccated optical unit to protect the moisture sensitive components. 3. Optical bench should be capable of automatic accessory recognition.	
2	Beam Splitter	KBr	
3	Wavenumber Range (cm <sup>-1</sup> )	7800cm <sup>-1</sup> - 350cm <sup>-1</sup> or better	
4	Spectral Resolution (cm <sup>-1</sup> )	0.5cm <sup>-1</sup> or better	
5	Wavenumber accuracy (cm <sup>-1</sup> )	0.1cm <sup>-1</sup> or better	
6	Wavenumber precision (cm <sup>-1</sup> )	0.01cm <sup>-1</sup> or better	
7	Interferometer	Michelson Interferometer must be permanently aligned or should have automatic alignment features for better stability and scan repeatability.	
8	Peak to peak Signal to Noise ratio (S/N) for 1 minute scan	50000:1 or better	
9	Measurement modes	Transmittance, Absorbance and Reflectance	
10	Light Source	Long life source covering Mid IR region	
11	Laser	Helium-Neon/diod laser	
<b>II</b>	<b>Detector type</b>		
		Temperature-stabilized DTGS/DLaTGS detector	
<b>III</b>	<b>Sample types</b>		
		Should be able to analyse Liquid, Solid, Powder, Thin Films and Gaseous samples	

IV	<b>Upgradable</b>	Instrument should be upgradable for hyphenation studies to couple with TGA to work as TGA-IR and to upgrade IR MICROSCOPE in future. Quoted model instrument should be field upgradable with other high temperature accessories.	
V	<b>Accessories (must be included in the supply)</b>		
1	ATR accessory	<ol style="list-style-type: none"> <li>1. ATR with interchangeable crystal plates of Diamond and Germanium covering mid IR range.</li> <li>2. The system should be compatible with the basic equipment.</li> <li>3. The installation of this item and AMC, spares support in future will be taken care of by the FTIR equipment vendor.</li> <li>4. The performance of the accessory to be demonstrated along with the main equipment during installation.</li> </ol>	
2	Sampling accessories	<ol style="list-style-type: none"> <li>1. KBr cell, NaCl cell , AgBr cell, CsI cell.</li> <li>2. Sample accessory for quantitative measurements.</li> <li>3. Solid and Liquid sample holders.</li> <li>4. Gas cell.</li> <li>5. Bench top hydraulic press 15Ton for pellet/sample preparation</li> <li>6. Mortar and Pestle</li> <li>7. Dies-2 Nos for KBr pellet preparation, KBr powder and suitable pellet holder</li> <li>8. Dry box and replacement desiccant.</li> </ol>	

3	Instrument calibration	<ol style="list-style-type: none"> <li>1. In-built calibration using Validation kit</li> <li>2. NIST-traceable Polystyrene film standard with validity certificate to be provided.</li> </ol>	
4	FTIR spectrum Libraries	Licensed copy of FTIR spectrum libraries of polymers, inorganic and organic compounds to be provided.	
5	PC and printer	Display must be through PC. Latest high-end PC (Make: HP/DELL/LENOVO/ACER) with atleast 8GB RAM, i7 processor, windows 10, 21inch monitor and HP/Canon laser colour printer.	
<b>VI</b>	<b>Software</b>	<ol style="list-style-type: none"> <li>1. A single software platform incorporates for spectrum analysis, complete data processing, peak detection, spectral comparison, overlapping of spectra etc.</li> <li>2. Automatic accessory detection &amp; performance evaluation.</li> <li>3. Multicomponent analysis software for analysis of blend samples.</li> <li>4. Software key in hard disc (pendrive) to be provided.</li> <li>4. Extensive processing and interpretation tool for baseline correction, smoothening, deconvolution, peak picking, etc.</li> <li>5. Quantitative analysis package to compute peak area, peak height and peak ratio.</li> <li>6. Provision for extracting numerical data in .xls, .dat, .ASCII format should be there.</li> <li>7. Spectral search from commercial library should be possible.</li> <li>8. Customizable report template to be available.</li> </ol>	

<b>VII</b>	<b>Warranty</b>	Supplier shall provide warranty for the complete system for the period of minimum 3 years from the date of successful installation at VSSC.	
<b>VIII</b>	<b>Non-Comprehensive AMC</b>	The party should undertake Non-Comprehensive AMC for 5 years after warranty. AMC charges for each year after warranty to be quoted separately. But the AMC cost will not be considered while selecting the L1.	
<b>IX</b>	<b>Availability of Spares</b>	1. The party should confirm the availability of spares and consumables for 8 years from the date of installation. 2. Price List of essential spares shall be included in the quote. But the cost of spares will not be considered while selecting the L1.	
<b>X</b>	<b>Power Supply/ Spectrometer power</b>	230 V ± 10, 50 Hz	
<b>XI</b>	<b>Installation and Training</b>	Onsite installation and training to be provided	
<b>XII</b>	<b>Supplier specifications</b>	1. The supplier should be either the manufacturer or the authorized dealer. 2. The supplier should have a minimum of 5 installations of FTIR spectrometers in India for the last 5 years. 3. Party should have a strong service back-up in India with technically competent service engineers trained and certified by the factory.	

<p><b>XIII</b></p>	<p><b>Documents to be furnished</b></p>	<ol style="list-style-type: none"> <li>1. The vendor must furnish the list of users in India and detailed catalogues for the quoted model.</li> <li>2. The quoted model and details should be available in the official site of the vendor.</li> <li>3. Pre-installation requirements have to be specified.</li> <li>4. Year of introduction of the model should be given in the quote.</li> <li>5. Proof of min 5 installations in India for the last 5 years.</li> </ol>	
<p><b>XIV</b></p>	<p><b>Sample testing using the quoted model of the instrument</b></p>	<ol style="list-style-type: none"> <li>1. The bidder should be ready to demonstrate performance of the instrument free of cost using VSSC supplied samples during the time of tender evaluation using the quoted model of the instrument. The acceptance of the test data with indent specification is also mandatory for considering the offer as technically qualified one.</li> <li>2. The performance of the equipment to be demonstrated again after installation in VSSC facility for the same results.</li> </ol>	