

SPECIFICATIONS		
1.	Application	Fourier Transform (FT) Near Infrared Spectrometer for rapid and non-destructive measurement of solids (Grains, seeds, powder, granular material, pellets, etc.) and liquid (free flowing and viscous) samples. System must be capable of analyzing composition or material identification of sample. The system should allow method development, minimize implementation time and ensure seamless method transferability.
	Parameters to analyses	<ul style="list-style-type: none"> • Seed oil • Seed Protein • Amino acids • Fatty acids • Mineral and nutrient contents • Oil iodine values • Moisture contents etc.
2.	Type of Interferometer	Robust Polarization / Michelson Interferometer permanently aligned/Dynamic Aligned/Dyna Scan insensitive to the mechanical disturbances even in rough environments, provides accurate and reliable results for multiple parameters simultaneously.
3.	Spectral Range	Dedicated NIR range at-least 12000 to 3800 cm^{-1} or better
4.	Type of Lamp	Halogen/ Tungsten NIR source
5.	Resolution:	2 cm^{-1} or better
6.	Wave number accuracy	$\pm 0.05 \text{ cm}^{-1}$ or better across the range
7.	Wavenumber Reproducibility	0.05 cm^{-1} or better
8.	Type of Dectector	InGaAs/Silicone/Lead Sulphide detector covering the entire NIR wavelength range
9.	Software	Software should be capable of spectral acquisition, method development, identification, qualitative and quantitative analysis. Chemometrics software should be included with proper part nos.
10.	Internal standard check	Instrument must have internal standard to automatically measure wavelength accuracy, signal to noise ratio and linearity check.
11.	Type of laser	HeNe/Solid state or equivalent

12.	Sampling mode	Instrument should have the facility to do analysis in transmission and diffuse reflectance mode and both the modes should be permanently fixed in the instrument. Manual swapping of accessories are not acceptable.
13.	Sample container	Sample cup spinner assembly for heterogeneous sample analysis and glass petri dish or high performance cup or glass vials for solid sample measurement in diffuse reflectance mode and suitable glass cuvette/tubes sample analysis in transmission mode must be supplied with the system.
14.	Spinner accessory	System should be offered with spinner accessory for measuring the large sized samples and should be offered with at least 3 sample cups of desired sizes
15.		It should have option of heating cuvette holder or tube holders upto 90°C in transmission mode. Transmission holder must be able to accommodate 1.0 to 10.00 mm pathlength cell/cuvette/tubes and system to be offered with at least 4 cuvettes of 5 mm pathlength or better with stoppers and at least 1000 nos. of tubes
16. 17.	Transflectance accessory	Transflectance accessory for analyzing viscous sample must be supplied with the system, must have different pathlength settings for analyzing sample with different absorbance values
18.	Computer and printer	<ul style="list-style-type: none"> • PC of standard make, Pre- loaded with legal Windows operating system (Windows 11 or latest) with legal MS office (latest version). • Processor: Intel Core i7 13 generation or higher • RAM: minimum 16GB RAM or higher • Storage: minimum 1TB SSD (NVMe) , • LED monitor (27 inch or more) • Optical mouse and key board • Laser printer (Duplex) to be provided to operate the instrument <p>Online UPS 5KVA with 30 minutes back up at least should be provided</p>
19.	Warranty	<ul style="list-style-type: none"> • The System must be quoted with minimum three years warranty. <p>The supplier should give an undertaking that all the spares required for system maintenance should be available for at least 7 years from the date of discontinuation of the model</p>
20.	Note	<ul style="list-style-type: none"> • All the modules of FT-NIR should be from same/single manufacturer. • Each item asked in tender must be quoted with proper part no.

		<ul style="list-style-type: none">• The system should be suited to Indian system of electrical inputs (230V/ 50Hz).• To be supplied with appropriate branded stabilizer, if required, (90-280V) with warranty.
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