

DIVISION: FNBP

**Item No. 56: Fluorescence Spectrophotometer (EFC)**

Technical specifications (Two-BID)

<b>Source</b>	Xenon lamp, 2000-hour service life
<b>Samples</b>	Liquids
<b>Monochromator</b>	Excitation 200 – 750 nm with zero order selectable. Emission: 200-750nm
<b>Wavelength Accuracy</b>	+/- 2.0 nm
<b>Wavelength Reproducibility</b>	+/- 2.0 nm
<b>Spectral band pass</b>	The excitation and emission slits should be 2.5-15 nm and 2.5 –20 nm respectively with 0.1 nm increments
<b>Scanning Speed</b>	10 – 1500 nm per minute
<b>Software operating system</b>	Windows environment. The excitation and the emission wavelength can be displayed in real time. Spectral and time drive data should be displayed in real time. Routine data analyzer
<b>Cuvette holder</b>	For quartz cuvettes of 0.5 ml, 1 ml, 3 ml
<b>Quartz cuvettes of capacity</b>	0.5 ml, 1 ml, 3 ml (2 each) to be included.
<b>Optional</b>	Cell Holder Unit for solids, or powders Ultra-Micro Cell Holder Unit
<b>Mention warranty / AMC for a total period of two years</b>	

**Item No. 60: Bomb Calorimeter (EFC)**

Technical specifications (Two-BID)

- Microprocessor based isoperibol bomb calorimeter for rapid determination of gross calorific value of food/ feed ingredients/samples
- The equipment should be compact, integrated and bench-top model with LCD display and compatible online UPS(Uninterrupted Power supply) backup support for one hour
- The calorimeter should have adequate memory storage facility (Approx. 1000 tests) and should be easy to operate
- Bomb & bucket : Removable type
- Repeatability / Reproducibility: As Per BIS 1350 (Part –2), 1970, ASTM D-5865/04 & other International Standards
- Oxygen Combustion Vessel (Bomb): Thick walled acid resistant having internal volume 250 to 350 ml made of high strength with proper insulation arrangement and capable of withstanding high pressure
- Measuring range: 1000 to 8,000 calor more per unit sample.
- Temperature Measurement: with inbuilt high precision electronic thermometer
- Temperature Measuring Resolution: 0.0001°C
- Operator time per test: 6-8 minutes or less.
- Range of Sample weight for energy estimation: 0.5 g – 1.5 g

- Measurement Precision-0.1% RSD
- Equipment Resolution-0.0001 Cal/g
- Corrections-Operator selected option for correcting for Acid, Nitrogen, and Fuse wire, Sulphur, Moisture, Ash and Hydrogen
- Gas filling arrangement-Suitable gas filling arrangements with regulator and gauges for line/vessel pressure and all necessary attachments.
- Pellet press/device and other accessories required to run the instrument
- Bomb has approval with PED (pressure equipment Directive)
- Safe life of bomb vessel should be minimum 4000 test continuously
- Additional software if any required being included for PC operation
- Sample Crucible: Metal crucibles with Ni-Cr Alloy. Minimum for 5000 test sample crucible should supply with main instrument. Power requirement: 230 VAC +/- 10 %, 50/60 HZ as per Indian condition.
- Inbuilt USB interface/Ethernet port for Balance, Printer and computer
- Analysis kit including fuse wire, standards, rings etc. required for 1000 analysis should be provided with the basic system.
- Up gradation: Calorimeter should have a facility to upgrade with different types of bombs by simply plug in without changing the main calorimeter configuration.
- Manufacturer should have international and or national approval for manufacturing pressure vessels. Pressure vessels must be tested as per ASTM or any international/national standards. Manufacturer should have CE certification
- Mention warranty period / AMC rates for a total period of 3 years.