

## Appendix-I

### (DETAILED SPECIFICATION)

#### NAME OF ITEM: ROLLING THIN FILM OVEN

##### Specifications:

The quote should include price of all items (do not provide them in optional item) required for successful functional of this instrument. We are looking for a complete set of this instrument and ready to use once it is being installed.

Sr.No.	Detailed Description of the Item	Qty.
1.	<b>Rolling Thin Film Oven (RTFO) confirming to ASTM D2872-12 / AASHTO T240 with the following specifications:</b>	<b>01 Unit</b>
	<b>Oven:</b> <ul style="list-style-type: none"><li>• Should be double-walled electrically heated convection-type oven. Its external frame and internal chamber should be of stainless steel with high density fiberglass insulation</li><li>• The oven shall have an air plenum covering the side walls and ceiling.</li><li>• The inside dimensions shall be 381 mm high, 483 mm wide (including the plenum) and <math>(445 \pm 13 \text{ mm})</math> deep (with the door closed).</li><li>• It shall be a bench top unit.</li><li>• The door shall contain a symmetrically located window. The window shall contain two sheets of heat- resistant glass separated by an air space. The window should permit an unobstructed view of interior oven.</li><li>• The oven shall be vented at the top and bottom for dissipation of expanded volatile from specimen.</li><li>• It shall be equipped with a proportional control thermostat capable of maintaining temperature <math>163 \pm 0.5^\circ\text{C}</math></li><li>• Shall provide with vertical circular carriage. This carriage shall provide suitable openings and clips for firmly holding eight containers in horizontal position. The carriage shall be mechanically driven through a shaft at a speed of <math>15 \pm 0.2</math> rotations /min.</li><li>• Equipped with an air jet positioned to blow heated air into each bottle at its lowest point of travel.</li><li>• The heating controls shall be capable of bring the full load oven back to test temperature within 10 min period after the insertion of the samples in the pre-heated oven.</li><li>• The oven should be equipped with thermal protection to prevent over-heating in the event of control failure.</li></ul>	

- Air pressure gauge - Range 0-100 psi
- Air flow adjustment - Needle valve
- Temperature range - Ambient to 200°C

**Flowmeter:**

- Digital type flow meter capable of accurately measuring the airflow at a rate of 4000 ± 200 ml/min

**Thermometer:**

- It should have mercury in glass thermometer confirm ASTM 13 C or can be any electronic temperature measurement system capable of measuring temperature 160 to 170 °C accuracy of 0.1°C.

**Power Supply**

- 208-240 V, 1 Phase, 50/60 Hz

**Container:**

- A set of 8 clear, transparent, heat-resistant glass containers to test the sample confirming to the dimensions mentioned in ASTM. Provide 20 additional/spare containers.

**Other Accessories**

- Suitable type bottle scrapper and stainless steel oven tongs for remove and install jars with appropriate gripping pads should be provided.

**Cooling Rack**

- A wire or sheet metal rack, constructed of stainless steel or aluminum, which allows the sample containers to cool in a horizontal position, with each container in the same horizontal plane. The rack shall be constructed in a way that allows air to flow freely around each container with at least 25 mm clearance between containers and any solid surface.

Also necessary components such as air compressor and air dryer system for dry air supply to be quoted.

**Installation, Demonstration and Training**

Installation and demonstration of supplied RTFO system should be made at the premises of IITRAM Ahmedabad and training to the users should be provided.