



**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY**  
**MATERIALS MANAGEMENT DIVISION**  
**Powai, Mumbai 400076**

**Purchase Requisition No. 1000011548 (SRM/RFX No. 6100000223)**

**Technical specifications for Capillary Rheometer**

Type of Barrel : Double Bore

Temperature Range : At least 5 to 400°C with necessary chiller included

Temperature Control Accuracy :  $\pm 0.1$  °C or better throughout the barrel and die assembly

Temperature Cooling Rate : At least 20 K / min

Maximum Force Range : 20kN or more

Piston Speed Range: Equal to or wider than 0.003 to 600 mm/min

Speed Uncertainty: Less than 0.1%

Pressure Transducers : 2 nos:

    Around 20 bar

    Around 2000 bar

Pressure Transducer Accuracy : Better than 0.5%

Two Die Sets : Each set should consist of suitable dies for performing both Mooney and Bagley corrections.

Die Set 1: This should include

(i) zero length die of 1 mm diameter,

(ii) two dies with diameter 1 mm but different lengths

(iii) one die which has the same L/D ratio as one of the dies in part (ii) above

Die Set 2: This should include

(i) zero length die of 2 mm diameter,

(ii) two dies with diameter 2 mm but different lengths

(iii) one die which has the same L/D ratio as one of the dies in part (ii) above

Die: Tungsten Carbide

Barrel Material : Nitride Steel

Corrections : Software and hardware required for calculating the following corrections must be included:

Weißenberg-Rabinowitsch

Bagley-Correction

Mooney Correction

Hagenbach-Correction

Accessories : Essential accessories, standard operating tools and accessories must be quoted along with the instrument.

Software : All essential software for enabling constant shear test, extensional viscosity measurement, flow/no-flow test should be included.

Necessary tools for exporting data to Microsoft excel, etc. should be included.

Utilities : Computer with latest specifications and all software installed

Warranty : Three-year comprehensive warranty

- Low Temperature Option (up to -40 oC). (Liquid nitrogen Dewar is available on site)
- Accessory for elongational testing capable of linear or exponential acceleration with all necessary utilities.
- Option of running a stress controlled experiment with the necessary Force Transducer (Up to 20 kN with accuracy better than 0.5%).
- Thermocouple for measuring temperature of material in die.