

LIST OF EQUIPMENT/ MACHINERIES – TESTING

Name of Centre: CIPET: CSTS, Dehradun

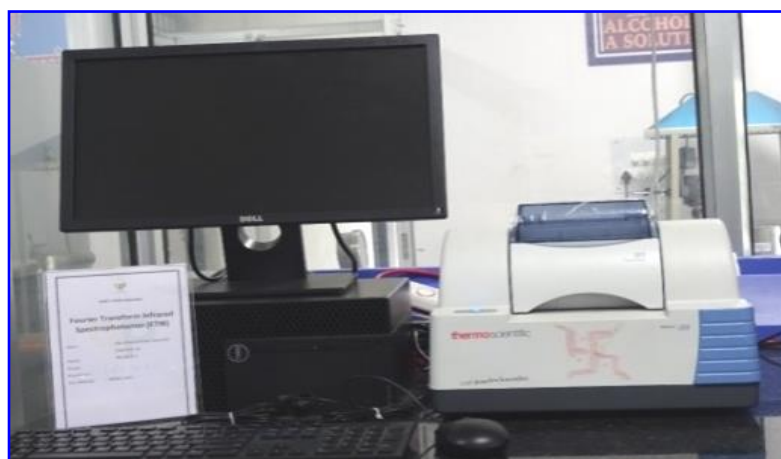
Sl. No.	Equipment/Machine	Make & Model	Specification	Application
1.	Differential Scanning Calorimeter (DSC)	<p>Make: M/s S. G. Instruments Pvt. Ltd.,</p> <p>Model: Chip-DSC 10</p>	<p>Range: -70 °C to + 700° C</p> <p>Accuracy / Least Count: ±0.2° K</p>	To determine melting point, Thermal characteristics of plastic / polymer samples



2.	Thermogravimetric Analyzer (TGA)	<p>Make: TA Instruments</p> <p>Model: TGA55</p>	<p>Range: Ambient to 1000 °C</p> <p>0.1°C/min to 100°C/min,</p> <p>Accuracy / Least Count: ±0.1°C</p>	To determine thermal properties of plastics
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
3.	Fourier Transform Infrared Spectrophotometer (FTIR)	Make: M/s Thermo Fisher Scientific India Pvt. Ltd., Model: Nicolet iS 5	Range: 20,000 - 550cm ⁻¹	To identify functional groups of plastics/Polymers



4.	Atomic Absorption Spectrophotometer (AAS)	Make: M/s Thermo Fisher Scientific India Pvt. Ltd., Model: ICE 3500	-	For Elemental analysis in PVC pipes and other samples
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
5.	Gas Permeability Analyser (GPA)	<p>Make: M/s Guangzhou Bioji Packaging Equipment Co. Ltd</p> <p>Model: N530G</p>	<p>Range 0.02-50000 cm³/(m²*24 Hr*0.1MPa & Temp Range: 15-60° C,</p> <p>Accuracy/ Least Count: 0.001 cm³ /(m²*24 Hr * 0.1 Mpa) & Temp ± 0.1°C</p>	To determine the permeability to gases of plastic films



6.	Water Vapour Transmission Rate Apparatus (WVTR)	<p>Make: M/s Guangzhou Bioji Packaging Equipment Co. Ltd,</p> <p>Model: W405</p>	<p>Range: 0.005-500g/m².24hr, 15-45 °C (Temp.)</p> <p>Accuracy/ Least Count: 0.001g/m².24H, ±0.1° C</p>	To determine the permeability to water vapour of plastic films
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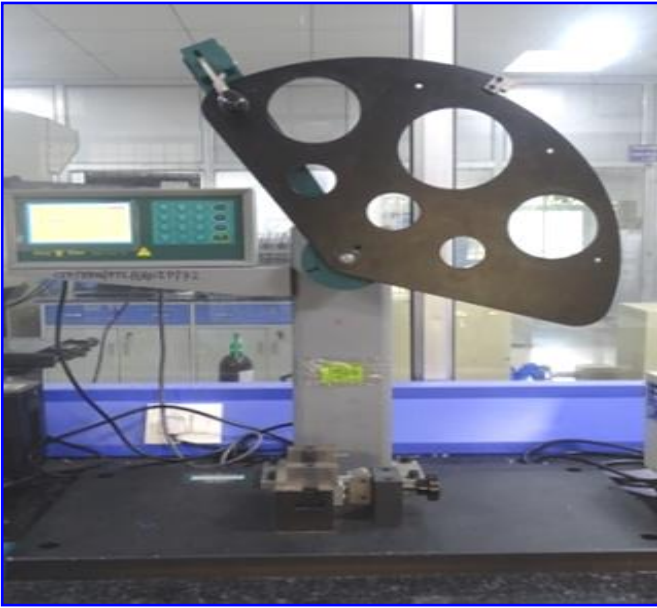
Sl. No.	Equipment / Machine	Make & Model	Specification	Application
7.	Universal Testing Machine (UTM) upto 25 KN	Make: M/s Tinius Olsen Limited Model: 25 ST	Range: Load Cell upto 25 KN & Speed 0.001-1000 mm/min Accuracy / Least Count: Load cell 0.2% & Speed 0.005 %	For determining Tensile strength, Flexural Test, Shear and Compression Test etc.



8.	Universal Testing Machine (UTM) upto 50 KN	Make: M/s Dak System Inc, Model: UTB 9502 Hitech	Range: 0-50 kN (Load capacity) Accuracy / Least Count: 0.1N	For determining Tensile strength, Flexural Test, Shear and Compression Test etc.
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
9.	Izod & Charpy Impact Tester	Make: M/s Tinius Olsen Limited, Model: 'IT 504'	Range: '2.82J to 25J'	To determine Impact Properties of Plastic samples



10.	Xenon Test Chamber	Make: Q-Lab Model: Q-Sun Xe-3, Gen 4 "E"	-	To Expose samples for UV Radiation by Xenon Light Source
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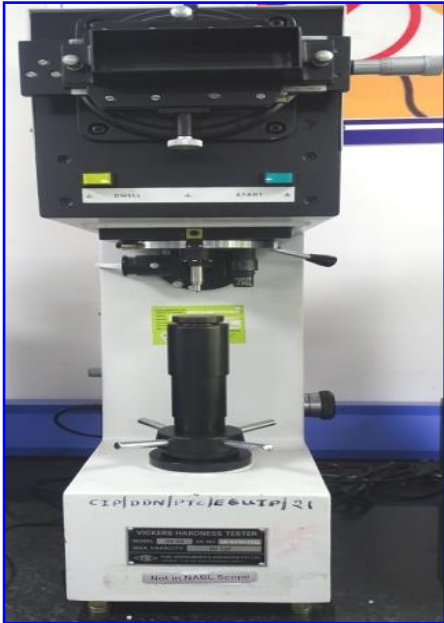
Sl. No.	Equipment / Machine	Make & Model	Specification	Application
11.	UV Weather-o-Meter with UV B-lamp	Make: Q-Lab Model: QUV Gen 4 Solar Eye	-	To expose samples for UV radiation by Fluorescent Lamp Source



12.	Rockwell Hardness Tester (R, M L E, K Scale)	Make: HDNS KELLY Instruments, Model: MRD-600TS	Range: Scales A, B, C, D, E, F, G, H, K, L, R, S & V	To determine Hardness properties of plastics
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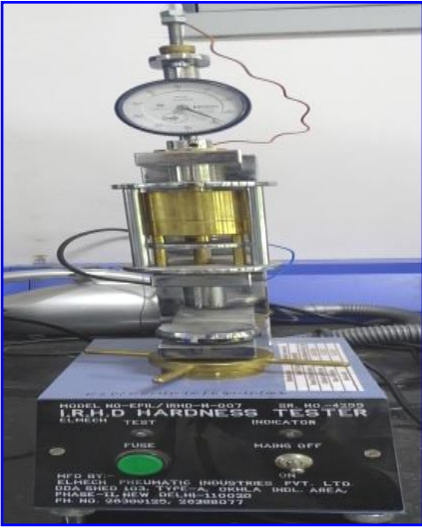
Sl. No.	Equipment / Machine	Make & Model	Specification	Application
13.	Vickers Hardness Number (VHN) Testing Machine	<p>Make: M/s Fine Instruments Engineering (FIE)</p> <p>Model: VM-50</p>	<p>Range: 0.1 - 1.0 mm (Optical Measuring Range)</p> <p>Accuracy / Least Count: 0.001 mm</p>	To determine Hardness properties of plastics



14.	Shore A, Shore D & Tester	<p>Make: ADIS,</p> <p>Model: PRT-5 & PRT-6</p>	<p>Range: 0-100 Durometer Scale</p> <p>Accuracy / Least Count: 1 Durometer Scale</p>	To determine Hardness properties of plastics
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
15.	IRHD Hardness Tester	Make: M/s Elmech Pneumatic Industries Pvt. Ltd., Model: EPIL/IRHD-N-007	Range: Inserts: 1mm, 2.5mm, & 5mm, Durometer A, Accuracy / Least Count: - 0.1 IRHD	To determine Hardness properties of Rubber, Elastomers



16.	Impact Tester for Films	Make: M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: Height Max. 2050 mm, Accuracy / Least Count: Height ± 10 mm	To test Impact properties of films
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
17.	Impact Tester for Pipes	Make: M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: Height Max. 2050 mm, Max. Pipe Size 630 mm, Mass of Strickers 0.25, 0.5, 1.0, 1.25, 1.6, 2.0, 2.5, 3.2, 4.0, 5.0, 6.3 kg, Accuracy/ Least Count: - Height \pm 10 mm	To test Impact properties of Pipes



18.	Vibration Leakage Tester	Make: Dinesh Scientific, Ambala, Model: DS-1430	Range: 3 to 6 HZ	To determine leakage in plastic containers
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
19.	Co-efficient of Friction Tester Horizontal	Make: M/s Labthink Instruments. Co. Model: MXD-02	Range: 200g-1000 g Max	To determine kinetic and static friction properties of plastic films



20.	Co-efficient of Friction Tester Vertical	Make: M/s DSH Equipments Model: DSH-COF	Range: Approx. 2 N	To determine kinetic and static friction properties of plastic films
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
21.	HDT/VSP Apparatus	Make: M/s P.S.I. Sales Private Limited, Model: PLC-13	Range: Ambient to 300 °C, Accuracy / Least Count: ± 0.1 °C	To determine HDT and VSP of plastics



22.	Melt Flow Index Tester (MFI)- Manual	Make: - M/s Shenzhen Wance Testing Machines Co. Ltd., Model: - MFI 452	Range: Ambient to 400° C Accuracy / Least Count: ± 0.1 °C	To determine Melt Flow Index and grades of plastic materials
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
23.	Limiting Oxygen Index Tester	<p>Make: M/s San Engineering Company,</p> <p>Model: SSI-515-LOIPMD</p>	<p>Range: Oxygen Readout 0-100% & Temp Ambient to 400°,</p> <p>Accuracy Least Count: Oxygen Readout LC 0.1 % & Temp LC 0.1° C</p>	To determine the burning behavior of textile, plastic, rubber and other materials



24.	Burst Strength Tester	<p>Make: M/s Universal Engineering Corporation,</p> <p>Model: UEC-1010</p>	<p>Range: Upto 50 kg/cm²</p> <p>Accuracy / Least Count: 0.01 kg/cm²</p>	To determine the burst strength of various products like paper, paper boards, corrugated boxes, etc
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
25.	Tear Tester	Make: M/s Labthink Instruments. Co Ltd, Model: SLY-S1	Range: 0-6400 gram, Accuracy / Least Count: 1.0 % of Pendulum Range:	To determine tearing properties of plastic film, paper and textile samples.



26.	Comparative Tracking Index Tester	Make: M/s Arcom Enterprises, Model: AECTI-0.6	Range: 100-600 Volt AC, Accuracy / Least Count: 1 Volt	To check tracking behavior of Plastics
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
27.	Dry Arc Resistance Tester	Make: Arcom Enterprises, Model: AE-ART	-	To determine high voltage, low current dry arc resistance testing



28.	Dielectric Breakdown Tester	Make: - M/s Arcom Enterprises, Model: -DBT-100	Range: Upto 100 KV, Accuracy / Least Count: 0.1KV	To determine Dielectric breakdown of Plastics materials
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
29.	Environmental Stress Cracking Resistance Apparatus (ESCR)	Make: M/s P.S.I. Sales Private Limited, Model: PLC-30	Range: Ambient to 100° C Accuracy / Least Count: ± 0.10° C	For determining the susceptibility of ethylene plastics, to environmental stress cracking when subject to certain conditions



30.	Hydrostatic Pressure Testing Equipment	Make: -M/s Elmech Pneumatic Industries Pvt. Ltd	Range: 0-10 Mpa, Accuracy/ Least Count: - 0.001MPa	To test Hydrostatic Pressure Test on PVC, HDPE Pipes
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
31.	Carbon Black Content Apparatus	Make: M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: Ambient to 1000 °C, Accuracy / Least Count: ± 1 °C	To test Carbon Black content in plastic samples



32.	Flammability Tester	Make: M/s P.S.I. Sales Private Limited, Model: PLC-23A	Range: 0-999 sec, Accuracy/ Least Count: 0.5 sec	To determine the relative rate of burning of self-supporting plastics.
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
33.	Opacity Meter	Make: - M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: 0-100 % Accuracy / Least Count: 0.01%	To determine optical characteristic of plastics



34.	Gloss meter	Make: M/s Rhopoint, Model: Novogloss 20/60 & Novogloss lite 45	Range: 0-2000 GU Accuracy / Least Count: 0.2 GU for 0-99.9 GU & 0.2% for 100-2000 GU	To measure the specular reflection of a surface (gloss)
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
35.	Compound Microscope with Hot Plate	Make: M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: Upto 250 °C, Accuracy / Least Count: - ± 1 °C	To determine Carbon Black Dispersion in plastic samples



36.	Climatic Chamber	Make: M/s Arcade Scientific Instruments Pvt. Ltd, Model: ARC-5280-ECH	Range: Temp - 40 to 180° C & Humidity 10-99 % Accuracy / Least Count: - Temp $\pm 0.1-0.5$ ° C & Humidity 1 %	For conditioning of samples
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
37.	Deep Freezer	Make: M/s Arcade Scientific Instruments Pvt. Ltd, Model: ARC-310 DF	Range: Ambient to -20 C, Accuracy / Least Count: - 0.1 C	For conditioning of samples



38.	Muffle Furnace	Make: - M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: Up to 1000° C, Accuracy / Least Count: - 1° C	To determine ash content of plastics samples, heat-treating applications
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
39.	Hot Oil Bath	Make: M/s Elmech Pneumatic Industries Pvt. Ltd. Model: EPI/OB-C	Range: Temp. Max. 200° C & Timer Upto 999 min, Accuracy / Least Count: 1° C (Temp.) & 1 sec (Timer)	To determine reversion characteristics of uPVC pipe and shrinkage properties of plastics



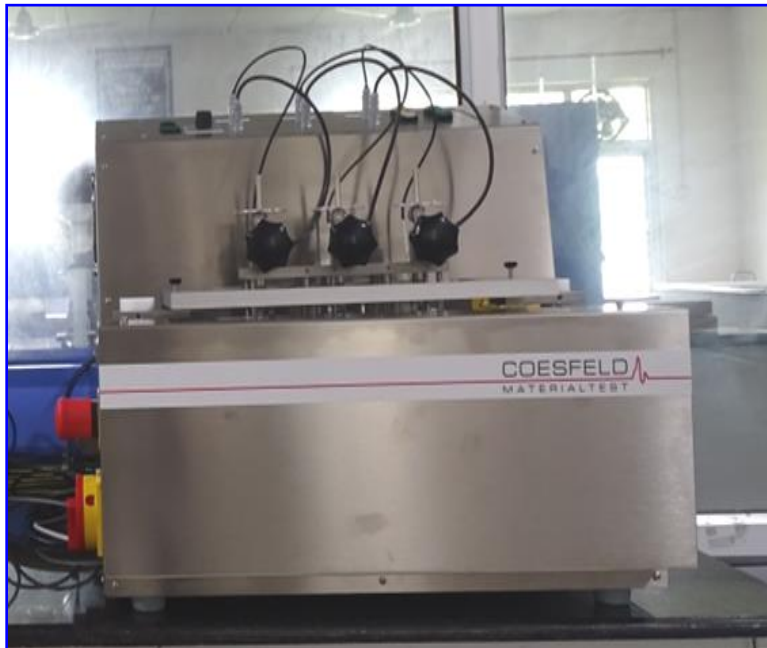
40.	Flex Tester	Make: M/s Elmech Pneumatic Industries Pvt. Ltd., Model: EPI/FTS	Stroke-80mm	To test the resistance to folding of flexible materials, such as rubber, leather, synthetic fabrics, films, etc.
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
41.	Karl Fisher Apparatus	Make: M/s Systonic	Range: 10 ppm to 100% of moisture	To determine water content in Plastic granules and finished products



42.	Automatic HDT/VSP Apparatus	Make: Coesfeld, Model: -40-190-100	Range: Up to 300° C, Accuracy/Least Count: - 0.1° C	To determine HDT and VSP of Plastics
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
43.	Hot and Cold Water bath	Make: Arcade Scientific Instruments Pvt.Ltd., Model: ARC-11590WB	Range: 10 to 80° C, Accuracy / Least Count: '0.1° C	For Hydrostatic testing at Low and High Temperatures



44.	Automatic MFI Tester	Make: - Hem Techsys Pvt. Ltd., Model: - HT-MFI ABACWLPC	Range: Ambient to 400° C	To determine Melt flow Index of Plastics
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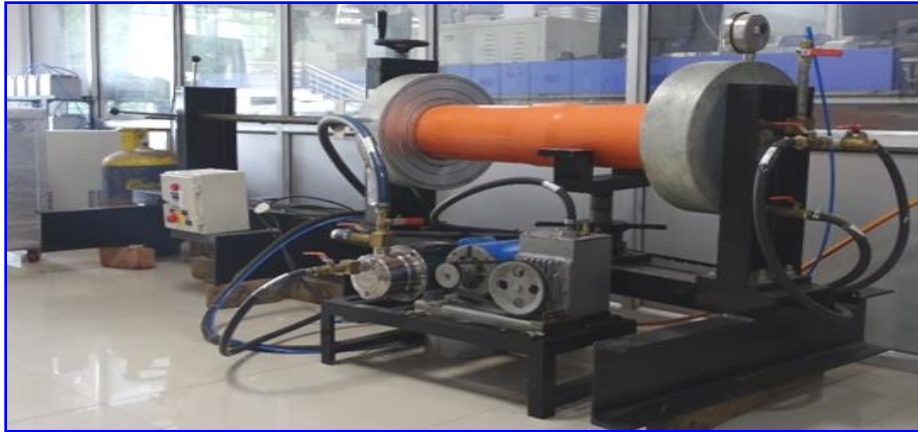
Sl. No.	Equipment / Machine	Make & Model	Specification	Application
45.	Notch Cutter (Izod Impact)	Make: - International Equipments	-	To make notch for Impact Samples



46.	Water Proofness Test Apparatus	Make: - CIPET	-	To determine water proofness of Tarpaulins etc.
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
47.	Positive Negative Hydrostatic Pressure Tester	Make: - M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: 0.1 to 50 kg/cm ² , Accuracy/ Least Count: - 0.5 kg/cm ²	To determine Hydrostatic characteristics of PVC Pipes



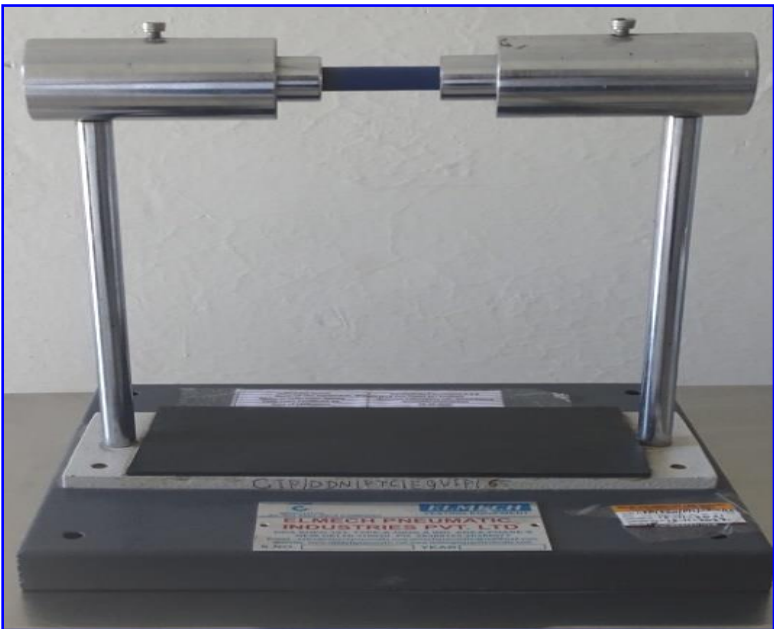
48.	Machine For Resistance to Tension at Elevated Temperature	Make: -M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: 0 to 100 °C, Accuracy/ Least Count:- ± 1 °C	To determine resistance characteristics of Emitting pipe to tension
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
49.	Pull Out Tester for Emitting Pipe	Make: - M/s Elmech Pneumatic Industries Pvt. Ltd.	-	To check load bearing characteristics of Emitting pipe



50.	Pull Out Tester for Emitter	Make: - M/s Elmech Pneumatic Industries Pvt. Ltd.	-	To check load bearing characteristics of Emitters
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
51.	Dichloromethane Bath	Make: - M/s Elmech Pneumatic Industries Pvt. Ltd.	Range: Ambient to 10 °C, Accuracy/Least Count:- 0.01 °C	To perform Resistance to Dichloromethane Test in UPVC Pipes



52.	ABBE Refractometer	Make: - Lasany, Model: - LI-R501	Range: 1.3 to 1.7 Accuracy/Least Count: ± 0.0002	To determine refractive Index of liquid and solid samples
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Sl. No.	Equipment / Machine	Make & Model	Specification	Application
53.	Glow Wire test	Make: M/s Elmech Pneumatic Industries Pvt. Ltd., Model: EPI/GWT-01	Range: Ambient to 950 °C, Accuracy/Least Count: ± 5 °C	To test the stability of electronic and electrical products at work

