

Laboratory **Central Institute of Plastics Engineering & Technology (CIPET), City Centre, P.O. Debhog, Haldia, Medinipur (E), West Bengal**

Accreditation Standard **ISO/IEC 17025: 2005**

Certificate Number **TC-6733 (in lieu of T-0686 & T-0685)**

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Validity **17.12.2017 to 16.12.2019**

Last Amended on **12.01.2018**

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
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**CHEMICAL TESTING**

I.	PLASTIC AND RESINS			
1.	UPVC Pipes	Sulphated Ash Content	IS 4985 (Annex B)	0.1 % to 50 %
		Resistance to H <sub>2</sub> SO <sub>4</sub>	IS 12235 (Part-7)	0.1 mg to 10 mg
2.	Plastics Material Sheet & Finished Product	Melting Point	IS 5762 ASTM D3418	50 °C to 350 °C
		Moisture Content	ASTM D789 IS 12823	Up to 30 %
		Solution Viscosity	IS 4669	9 to 500
		Filler content (Ignition Loss of Cured Reinforced Resins)	ASTM D2584	up to 100 %
		Identification of Plastics	CIPET/HAL/WI/303/SOP/64 (Issue No. 03 Dated 28-11-2011)	Qualitative
3.	Raw Material & Plastic Products	Heat Aging	ASTM D1870	Ambient to 150 °C
		Carbon Black Content	IS 2530, IS 7328 ASTM D1603 IS 12786, IS 13488 IS 14482, IS 15450 IS 15351, IS 7903 IS 14611 IS 14255	0.1 % to 5 %
4.	Reinforced Plastics Material	Loss on Ignition	ASTM D2584	Up to 100 %
5.	Plastics Material & Products	Overall Migration	IS 9845 IS 10151 IS 15410 IS 10840 IS 12709 IS 12701	0.1 mg/l to 100 mg/l 0.1 mg/dm <sup>2</sup> to 20 mg/dm <sup>2</sup>

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		Water Absorption	ASTM D570 IS 12823	Up to 50 %
		Melt Flow Index	IS 2530 ASTM D1238	(0.15 g to 100 g)/10 min
		Heat Distortion Temperature	ASTM D648	40 °C to 250 °C
		Vicat Softening Point	IS 12235 (Part -2) IS 2530 ASTM D1525	40 °C to 250 °C
		Environmental stress Cracking Resistance	IS 14482 IS 12786 IS 13488 IS 14482	Qualitative
		Carbon Black Dispersion	IS 2530 IS 7328 ASTM D1603 IS 12786 IS 13488 IS 14482 IS 15450 IS 15351 IS 7903 IS 14611 IS 14255	Qualitative
6.	Plastics Material	pH of Water Extract	JSS 1010 JSS 1097 Appendix- G JSS 9330-03 Appendix A & B IND/ME/951 (PROV) Appendix. S IS 2530 IS 12709	1 to 14
		Water Soluble chlorides	JSS 1010 IS 2530	Up to 1%

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		Water Soluble Sulphates	JSS 1010 IS 2530	Up to 1%
		Water Soluble matter (By Mass)	JSS 9330 (Part-3) Appendix A & B IND/ME/951 (PROV)	Up to 1%
7.	<b>Phenolic Moulding Material</b>	Ash Content	JSS 1010	Up to 50 %
		Water Absorption	IS 867, JSS 1097	Up to 50 %
		Free Phenol Content	IS 867	0.1 % to 0.5 %
		Binder Content	IND/ME/951, (PROV) Appendix 'B'	0.1 % to 40 %
		Moisture Content	IND/ME/951, (PROV) Appendix. 'A'	0 to 50 %
8.	<b>UPVC Pipe (SWR)</b>	Resistance to Dichloromethane	IS 12235 (Part -11)	Qualitative
9.	<b>PVC Resin</b>	K- Value	IS 4669, IS 15328	64 to 223
10.	<b>Solvent Cement for PVC Joining</b>	Vinyl Chloride Polymer Content	IS 14182	10.0 % to 30 %
		Viscosity	IS 14182	80 to 5000 mPa.s
11.	<b>High Density Polyethylene (HDPE) Crates for Milk Satchets</b>	Resistance to Stress	IS 11584	Qualitative
12.	<b>Polyethylene Pouches, Plastic Container</b>	Ink Adhesion Test (Printing Requirement)	IS 11805 IS 10840(Annexure-A)	Qualitative
13.	<b>CPVC Pipes for Potable Water Supply</b>	Vicat Softening Point	IS 12235 (Part -2)	50 °C to 150 °C
14.	<b>UPVC Pipes, Fittings &amp; Solvent Cement for Portable Water Supply</b>	Effect on Water	IS 12235 (Part-4,10) IS 4985 IS 12818 IS 14182 IS 7834 (Part-1,2,3,4,5,6,7,8)	Up to 0.001%

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
15.	Containers for Packaging of Natural Mineral Water and Packaged Drinking Water	Water Potability	IS 15410	Qualitative

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**MECHANICAL TESTING**

I.	PLASTIC & POLYMER			
1.	HDPE & UPVC Pipes & Fittings	Outside Diameter	IS 4984 IS 12235 (Part -1) IS 12786 IS 12818 IS 13592 IS 14333 IS 14151(Part-1) IS 14151 (Part -2) IS 15328	10 mm to 1000 mm
		Wall Thickness	IS 4984 IS 12235 (Part-1) IS 12786 IS 13592 IS 14333 IS 14151(Part-1) IS 14151 (Part-2) IS 15328	0.10 mm to 75 mm
		Vicat Softening Point	IS 12235 (Part-2) IS 15328 IS 12818	50 °C to 150 °C
		Reversion	IS 12235 (Part-5) IS 15328 IS 12818	(-) 0.5 % to (+)0.5 %
		Hydrostatic Pressure Test	IS 4984 (Annexure- B) IS 12235 (Part-8, Sec-1) IS 14151 (Part-1) IS 14151 (Part-2) (Annexure-A) IS 14333 (Annexure- B) IS 15328	Qualitative

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2.	UPVC Pipes	Diameter at Point	IS 12235 (Part-1) IS 13592	10.0 mm to 1000 mm
		Effective & Segmental Length	IS 12818 IS 4985	500 to 7000 mm
		Resistance to External Blow at 0°C	IS 12818 IS 4985 (Annexure-C) IS 12235 (Part-9) IS 15328	Qualitative
		Internal Diameter	IS 12818	Mandrel Length : 100 mm, Outside Dia: 33-390 mm
		Water Tightness of Joint	IS 13592 IS 15328	Qualitative
		Stress Relief	IS 12235 (Part-6)	Qualitative
		Axial Shrinkage	IS 13592	Up to 2 %
		Density	IS 12235 (Part-14) IS 13360 (Part-3, Sec-1)	0.70 g/cm <sup>3</sup> to 2.5 g/cm <sup>3</sup>
		3.	Rotational Moulded Tank	Gross Capacity
Net Capacity	200 L to 20000 L			
Overall Diameter	650 mm to 3150 mm			
Overall Height	490 mm to 5000 mm			
Internal Dia of man/hand hole	265 mm to 450 mm			
Thickness	0.20 mm to 20 mm			
Weight of Tank	5 kg to 566 kg			
Resistance to Impact	Qualitative			
Top Load Resistance	Qualitative			
4.	Irrigation Equipment - Sprinkler Pipe	Fusion Compatibility	IS 14151 (Part-1)(Annex-A)	Qualitative
		Leakage	IS 14151 (Part-2)	Qualitative
		Hydraulic Proof		Qualitative
		Weld ability		Qualitative
5.	Rubber Product	Shore A Hardness	ASTM D 2240 IS 3400 (Part-23)	10 Shore A to 95 Shore A
6.	UPVC Fittings	Mean Socket Internal Diameter	IS 10124 (Part-1) IS 10124	10 mm to 1000 mm

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		Wall Thickness	(Part-2,3,4,5,6,7,8,9,10,11, 12,13)	0.1 mm to 75 mm
		Socket Length	IS 7834 (Part-1) IS 12235 (Part-1,2,3,4,5,6,7,8)	10 mm to 400 mm
		Short Term Hydraulic Test	IS 10124 (Part-1) (Annexure B) IS 7834 (Part-1)	Qualitative
7.	<b>UPVC Pipes &amp; Fittings</b>	Opacity (Light Transmission)	IS 12235 (Part-3) IS 10124 (Part-1) Appendix A IS 7834 (Part-1) Appendix B	Up to 100 %
8.	<b>Woven Sacks (PP, HDPE)</b>	Dimension – Length & Width	IS 11652 (Annexure A) IS 14887 IS 1954 IS 14252 (Annexure C)	0.10 cm to 1000 cm
		Mass	IS 11652 IS 14887	20 g to 6000 g
		End & Picks	IS 1964 IS 14252	10 to 100 per dm
		Average Breaking Strength of Fabric	IS 1969	10 N to 85 kN
		Average Breaking Strength of Top & Bottom Seam	IS 9030	10 N to 85 kN
		Elongation at Break of Fabric	IS 1969	5 to 50 %
		UV Resistance	IS 14887, IS 14252 IS 9755	Qualitative
9.	<b>Phenolic Moulding Material</b>	Cross Breaking Strength	IS 867	10MPa to 250 MPa
		Density		0.70 g/ml to 15 g/ml
10.	<b>Plastics Containers</b>	Capacity	IS 2798 IS 10840	0.1 ml to 20000 ml

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		Wall Thickness	IS 10840 (Annex A, B & C)	0.1 mm to 75 mm
		Leakage Test		Qualitative
		Drop Test		Qualitative
		Mass	IS 10840	5 g to 6000 g
		Product Resistance of Printed Containers duct	IS 10840 (Annexure F)	Qualitative
		Transparency Test (Light Transmission)	IS15410 (Annexure A)	10 % to 100 %
11.	<b>Plastics Containers for Packaged Natural Mineral Water and Packaged Drinking Water</b>	Material Identification	IS 13360 (Part-6, Sec-10) ISO 3451 (Part 1) Method A	Qualitative
		Manufacture, Workmanship, Finish & Appearance	IS 15410	Qualitative
		Brimful Capacity	IS 2798	250 ml to 20000 ml
		Wall Thickness	IS 2798	0.05 mm to 30 mm
		Leakage Test	IS 2798	Qualitative
		Transparency Test	IS 15410	0 to 100 %
		Drop Test	IS 2798	Qualitative
12.	<b>Polyethylene Pouches for Packaging Liquid Milk</b>	Dimension (Thickness)	IS 11805	Up to 1000 µm
		Tensile Strength	IS 2508	Up to 10 kN
		Elongation at break	IS 2508	0 to 700%
		Dart Impact Resistance	IS 2508	Qualitative
		Slip	IS 2508	0.1 to 0.6
		leak test	IS 11805	Qualitative
		Drop test	IS 11805	Qualitative (-) 40 °C to 100 °C
13.	<b>RPVC Pipes for Use as underground Cable Conduits in Concrete/ Sand Encasement DOT Specification G/CDS-03/02 Oct. 94</b>	Dimension- Outside Diameter	IS 4985	Up to 110 mm
		Wall Thickness		0.10 mm to 75 mm
		Load Deformation	ASTM D2412	Qualitative
		Impact Resistance	IS 12235 (Part-9)	Qualitative
		Reversion Test	IS 12235 (Part-5)	Up to 200 mm



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14.	<b>Injection Molded PVC Fitting with Solvent Cement Joints for Water Supplies</b>	Dimension	IS 7834 (Part-1,2,3,4,5,6,7,8)	Up to 315 mm 0.10 mm to 75 mm 0 to 2 % Qualitative		
		Outside Diameter				
		Wall Thickness				
		Opacity				
		Short Term Hydraulic Test		Qualitative		
		Stress Relief		Qualitative		
15.	<b>Low Density Polyethylene Films (Black &amp; Natural)</b>	Density	IS 2508	Up to 2.0 g/cm <sup>3</sup>		
		Thickness	IS 2508	Up to 1000 µm		
		Tensile Strength	IS 2508	Up to 10 kN		
		Elongation at Break	IS 2508	0 to 800 %		
		Transparency	IS 2508	0 to 100 %		
		Impact Strength	IS 2508	Qualitative		
		Slip	IS 2508	0.1 to 0.6		
		Tear Strength	IS 2508	50 N/mm to 130 N/mm		
16.	<b>Moulded Meter Box</b>	Dimension Length, Width & Height	IS 14772	10 mm to 1000 mm		
		Heat Deflection	ASTM D648	40 °C to 250 °C		
		Self Extinguishing	UL-94	Qualitative		
		Dielectric Strength	ASTM D149	(10 kV to 50kV)/mm		
		Identification	CIPET/HAL/WI/303/SOP/64 (Issue No: 03 dated 28-11-2011)	Qualitative		
		Water Absorption	IS 13411	Up to 50%		
17.	<b>CPVC Pipes for Potable Water Supply</b>	Dimension	IS 15778	15 mm to 150 mm 0.10 to 75 mm		
		Outside Diameter				
		Wall Thickness				
				Effective Length	IS 15778	Up to 6000 mm
				Visual Appearance	IS 15778	Qualitative
				Opacity	IS 15778 IS 12235 (Part-3)	0 to 0.1 %
		Hydrostatic Pressure Test	IS 15778 IS 12235 (Part-8, Sec-1)	Qualitative		
		Tensile Strength	IS 12235( Part-13)	Up to 7050 MPa		

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		Resistance to External Blow	IS 4985	Qualitative
18.	UPVC Pipes	Dimension Outside Diameter	ASTM D1785	3 mm to 305 mm
		Workmanship, Finish, and Appearance	ASTM D1785	Qualitative
		Accelerated Regression Test	ASTM D1598	Qualitative
		Burst Pressure	ASTM D1599	Qualitative
		Flattening Test	ASTM D1785	(40 % of the outside diameter)
19.	Plastics Material & Products	Density	IS 7328 IS 12235 (Part-14) ASTM D792 IS 13360 (Part-3)	0.70 g/cm <sup>3</sup> to 2.5 g/cm <sup>3</sup>
		Tensile Strength Young Modulus Elongation	IS 2530 ASTM D638 IS 14151(Part-1) IS 8543 (Part-4, Sec-1) IS 12786, IS 2508 IS 12235 (Part-13) IS 12786	1 MPa to 500 MPa 1 % to 1000 %
		Co-efficient of friction of film	IS 2508 ASTM D1894	0.01 to 2.0
		Flexural Strength & Modulus	IS 13360 (Part-5, Sec-7) ASTM D790	1 MPa to 1200 MPa
		Compressive Strength	ASTM D695 IS 13360 (Part-5, Sec-8)	1 MPa to 1200 MPa
		Abrasion Resistance	ASTM D1044	1 mg to 100 mg
		Dart Impact for Film	ASTM D1709 IS 2508	Qualitative
		Shore D Hardness	ASTM D2240	10 to 95
		Apparent Density	ASTM D1895 ASTM D1622	0.001 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>

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		Physical Examination/ Visual Inspection/Finish	IS 15410 IS 10124 (Part-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13) IS 7834 (Part-1, 2, 3, 4, 5, 6, 7, 8)	Qualitative
		Volume Resistivity & Surface & Surface Resistivity	ASTM D 257 IS 867	1 MΩ to 2x10 <sup>8</sup> MΩ
20.	HDPE Material for Moulding and Extrusion	Density Melt Flow Index	IS 2530 IS 2530	934.4 kg/m <sup>3</sup> to 958.4 kg/m <sup>3</sup> (0.10 to 50 g)/10 min
21.	HDPE/ PP Woven Sacks for Packing Fertilizers	Dimensions (Length & Width) Mass of the Fabric Breaking load Elongation at Break	IS 9755 IS 9755 IS 9755 IS 9755	Up to 1000 mm Up to 200 g Up to 10 kN Up to 1000 mm
22.	Unplasticized non-Pressure Polyvinylchloride (PVC-U) Pipes for use in Underground Drainage and Sewerage Systems	Dimension (Outside Diameter) Visual Appearance Thickness Reversion Ring Stiffness Hydraulic Characteristics	IS 15328 IS 15328 IS 15328 IS 15328 IS 15328	Up to 630 mm Qualitative Up to 25 mm Up to 10% Up to 100 kN Up to 2.45 N/mm <sup>2</sup>
23.	Aerial Bunched Cables for working voltages upto and including 1100V	Dimension (Outer Diameter ) Resistance to Aging Mechanical Strength	IS 14255 IS 14255 IS 14255	Up to 50 mm Ambient to 150 °C Up to 10 kN
24.	Conduit for Electrical Installations	Dimensions Outside Diameter Wall Thickness Compression Test	IS 9537 (Part-1) IS 9537 (Part-3) IS 9537 (Part-1)	Up to 630 mm 0.10 to 75 mm 1 N to 100 kN

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25.	<b>Blow Moulded HDPE Containers for Vanaspathi</b>	Warpage	IS 11246	18 mm to 150 mm
		Crazing	IS 11246	Qualitative
		Scrub Testing	IS 11246	Up to 40000 cycles
		Impact Test	IS 11246	Qualitative
26.	<b>Multilayered Cross Laminated Sheets &amp; Tarpaulins / Covers</b>	Sealing band distance	IS 14611	Up to 300 mm
		Length & Width of the sheet	IS 14611	Up to 300 mm
		workmanship	IS 14611	Qualitative
		Total mass per unit area	IS 14611	Up to 200 g
		Tensile strength	IS 14611	Up to 10 kN
		Elongation at break	IS 14611	Up to 10 kN
		Tear Strength	IS 14611	Up to 10 kN
		Water Proofness	IS 14611	Qualitative
		Strength of Joints/ seams	IS 14611	Up to 10 kN
		Flex Test	IS 14611	Up to 10 kN
27.	<b>Tarpaulins made from HDPE Woven Fabric</b>	Dart Impact Strength	IS 14611	Qualitative
		Mass	IS 1964	Minimum 200 g/m <sup>2</sup>
		Breaking strength	IS 1969	Minimum 981 N
		Elongation	IS 1969	Minimum 20%
		Puncture strength	IS 7903	Minimum 200 N
		Tongue Tear strength	IS 14293	Minimum 120 N
		Welded seam strength	IS 1969	Minimum 981 N
		Eyelets	IS 7903	Qualitative
		Line/Cord Beading	IS 7903	Qualitative
		Construction/ Dimensions & Visual Appearance	IS 7903	Qualitative
		Bonding Overlap thickness	IS 7903	Up to 300 mm
28.	<b>Laminated HDPE Woven Fabric</b>	Thickness	IS 15351	Up to 25 mm
		Mass	IS 15351	Up to 1000 g/m <sup>2</sup>

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	<b>(Geo-membrane) for Water Proof Lining</b>	Breaking load before UV exposure	IS 15351	Up to 10 kN
		Breaking load after UV exposure	IS 15351	Up to 10kN
		Impact failure load	IS 15351	Qualitative
		Tear resistance	IS 15351	Up to 10 kN
		Puncture resistance	IS 15351	Up to 10 kN
		Bursting strength (ball burst)	IS 15351	Qualitative (Up to 16 kg/cm <sup>2</sup> )
		Seam Strength before UV exposure	IS 15351	Up to 10 kN
		Hydrostatic resistance	IS 15351	Qualitative (Up to 2.45 N/mm <sup>2</sup> )
29.	<b>UPVC Pipes</b>	Reversion	IS 12235 (Part-5)	(-) 0.5 % to (+)0.5 %
30.	<b>RPVC Pipes for Use as Underground Cable Conduits In Concrete, Sand Encasement</b>	Stress Relief	IS12235 (Part-6)	Qualitative