

**Laboratory**                      **The Synthetic and Art Silk Mills Research Association (SASMIRA),  
Sasmira Marg, Worli, Mumbai, Maharashtra**

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

**Certificate Number**        **TC-6500 (in lieu of T-0762, T-0763 & T-2123)**    **Page 1 of 11**

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**BIOLOGICAL TESTING**

I.	<b>RESISTANCE TO MICROBIAL ATTACK</b>			
I.	<b>Textile</b>	Antibacterial Activity Assessment of Textile Materials: Parallel Streak Method	AATCC 147- 2016	Present/ Absent
		Antifungal Activity, Assessment of textile material : (Part 3)	AATCC 30 - 2013	Rating from 0 to 4
		Antibacterial Finishes on Textile Materials: Assessment of	AATCC 100 - 2012	0 to 100 %
		Standard test method for determining the anti-microbial activity of immobilized antimicrobial agents under dynamic contact conditions	ASTM E 2149-13a	0 to 100%
		Testing for antibacterial activity and efficacy on textile products	JIS 1902-2015	Log value to the base 10 0.1 to 5.0
		Determination of Antibacterial Activity of Antibacterial finished products	ISO 20743-2013	Log value to the base 10 0.1 to 5.0
		Textile fabrics – Determination of Antibacterial activity – Agar diffusion plate test.	ISO 20645 – 2004-12 (E)	Good effect to Insufficient effect

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		Antimicrobial Activity Assessment of New Carpets	AATCC 174-2016	0 to 100%
		Antifungal Activity, Assessment of textile material : (Part 2)	AATCC 30 - 2013	No growth Microscopic Growth Macroscopic Growth
2.	Plastic	Antibacterial Products -- Test For Antibacterial Activity And Efficacy	JIS Z 2801-Amd. 1 : 2012	Log Reduction: 0.1-5.0
		Measurement Of Antibacterial Activity On Plastics And Other Non-Porous Surfaces	ISO 22196:2011	Log Reduction: 0.1 to 5.0
		Standard Test Method For Determining The Activity Of Incorporated Antimicrobial Agent(S) In Polymeric Or Hydrophobic Materials	ASTM E 2180: 2007	Percentage Reduction: 0 to 100%
II.	WATER			
1.	Drinking Water / Water for Processed Food Industry	Total plate count	IS 1622-1981; Ed.2.4/Reaffirmed 2014	≥ 1 CFU/ml
		Enumeration of coliforms by MPN	IS 1622-1981; Ed.2.4/Reaffirmed 2014	2 MPN to 1600 MPN /100 ml
		Enumeration of Escherichia coli by MPN	IS 1622-1981; Ed.2.4/Reaffirmed 2014	2 MPN to 1600 MPN /100 ml
		Faecal Streptococci	IS 1622-1981; Ed.2.4/Reaffirmed 2014	2 MPN to 1600 MPN /100 ml

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**CHEMICAL TESTING**

I.	<b>TEXTILE (WOVEN &amp; NON WOVEN)</b>			
1.	<b>Fibre/ Yarn /Fabric</b>	Identification of textile fibers.	IS:667– 1981 Reaff. 2013 AATCC 20 – 2013	Qualitative
		Percentage composition of binary mixture of protein fibre with certain other non-protein fibres	IS:2006 – 1988 Reaff. 2013 AATCC:20 A–2014 ISO:1833 Parts 4– 2006	3 to 100
		Percentage composition of binary mixture of regenerated cellulose and cotton	IS:1889 – 1979, Part IV, Sulphuric acid method Reaff. 2016 AATCC:20 A – 2014	3 to 100
		Percentage composition of binary mixture of polyester fibre with cotton and regenerated cellulose	IS:3416 – Part1, Reaff. 2013 AATCC:20 A – 2014 ISO:1833Part 11 – 2006	3 to 100
		pH value of aqueous extract of textile materials	IS:1390 – 1983 Reaff. 2013 AATCC:81 – 2012 ISO:3071 – 2006	1 to 14
		Colorfastness of textile materials to artificial light (xenon lamp)	IS:2454 – 1985 Reaff. 2013 ISO:105 BO2 – 2014 AATCC:16:3 – 2014	Blue Wool Rating 1 to 8 Grey scale rating 1 to 5
		Colorfastness of textile materials to perspiration (Acidic & Alkaline)	IS/ISO 105 E 04 – 2014 ISO:105E04–2013 AATCC:15 – 2013	Rating 1 to 5

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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
		Determination of color fastness of textile materials to dry-heat (using Fix-o-test instrument) (Staining on adjacent fabric)	IS:4636 – 1988 Reaff. 2016	Rating 1 to 5
		Moisture Content	ASTM D:2495 – 2007 Reapproved 2012	0.1 % to 20%
<b>2.</b>	<b>Yarn /Fabric</b>	Colorfastness of textile materials to washing	AATCC:612013-(1A) IS/ISO 105: C10 – 2006	Rating 1 to 5
		Identification of Class of Dyes on Textiles Material Cotton and other Cellulosic Fibers	IS:4472 Part 1 – 1967Reaff. 2016	Qualitative test
		Identification of Class of Dyes on Textiles Material Wool , Silk and other Protein Fibers	IS:4472PART 2 – 1968 Reaff. 2016	Qualitative test
		Identification of Class of Dyes on Textiles Material Man Made Fibers	IS:4472 Part 3 – 1973Reaff. 2016	Qualitative test
		Estimation of % Moisture, Total Size or Finish, Ash and Fatty Matters on Grey and Finished Cotton Textiles Materials	IS 199:1989 Reaff. 2016	0.5% to 20% 0.1% to 20% 0.1% to 10% 0.1% to 10%
		Color Fastness to Saliva	DIN:53160-1 – 2010	Rating 1to 5
		Color Fastness to Rubbing with Organic Solvent	IS:3426–1982 Reaff. 2016	Rating 1to 5

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3.	Fabric	Water repellency of fabrics by cone test	IS:7941 – 1976 Reaff. 2016	i) Amount of water penetrated /water collected in ml 1 to 400 ml ii) Amount of wetting of the outer surface visual observation using AATCC 22-2005 standard photograph as guidelines
		Water repellency of fabrics by water spray test	IS:390 – 1975 Reaff. 2013 AATCC:22 – 2014	Rating 0 to 100
		Rubbing / crocking fastness of textile materials (Dry and Wet)	IS/ISO:105 X-12 – 2001 ISO:105 X-12 – 2016 AATCC:8 – 2013	Rating 1 to 5
		Colorfastness to water	IS/ISO:105E01 – 2001 ISO:105E01 – 2013 AATCC:107– 2013	Rating 1 to 5
		Colorfastness to Sea water	IS/ISO:105E02 – 2013 ISO:105E02 –1994 Reaff. 2013 AATCC:106 – 2013	Rating 1 to 5
		Colorfastness to organic solvent	IS:688– 1988 Reaff. 2013 ISO:105 –X05 – 1994	Rating 1 to 5
		Dimensional changes on soaking in water	IS:2977 – 1989 Reaff. 2016	-20% to 20 % (warp) - 20 % to 20 % (weft)
		Flammability	ASTM D:1230 – 2010	1 to 60 seconds
		Whiteness of Textiles	AATCC:110 – 2015	80 to 200
		Dimensional changes in washing and drying	ISO:5077 – 2007 ISO:6330 – 2012 ISO:3759 – 2011	-20% to 20 %
		Color fastness to Dry-cleaning	ISO:105 D 01 – 2010	Rating 1 to 5

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		Water Repellency of Fabric by Bundasman Rain Shower Test.	ISO:9865 – 1991	Amount of water collected 0 to 200 ml % absorption of water 0 to 100 %
		Soil Release : Oily stain Release method	AATCC:130– 2015	Grading 1 to 5
		Flammability by Oxygen Index	IS:13501– 1992 Reaff. 2013	6 % to 70 %
		Flammability and Flame resistance of Textiles fabric	IS:11871 – 1986 RA 2004, method A ASTM D:6413 – 2015	a)After flame time 1 – 300 sec b) Char length 0 – 300 cm
		Flammability and Flame resistance	IS:11871 – 1986 Reaff. 2013 Method B	1 to 60 seconds
		Burning Behavior –Ease of ignition of vertically oriented specimen	ISO:6940– 2004  IS:15589 – 2005	Ignition time 1 to 20 seconds
		Burning Behavior – Flame spread time of vertically oriented specimen	ISO:6941 – 2003 IS:15590 – 2005	a) surface ignition 1 to 20 seconds b) bottom edge ignition 1 to 20 seconds
		Determination of colour fastness of textile material to hot pressing	ISO:105X11 – 1994 IS:689 – 1988 Reaff. 2013	Rating 1 to 5
		Determination of colour fastness of textile material to dry cleaning	IS:4802 – 1988 Reaff. 2016	Rating 1 to 5
		Determination of colour fastness of textile material to domestic and commercial laundering	ISO:105C06 – 2010  IS/ISO:105C06– 1994	Rating 1 to 5  Rating 1 to 5
		Determination of colour fastness of textile material to washing	ISO:105C10– 2006	Rating 1 to 5

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		Determination of scouring loss in grey and finished cotton textile material	IS:1383 – 1997 Reaff. 2013	0 to 10 %
		Determination of water soluble matter of textile material	IS:3456 – 1966 Reaff. 2016	0 to 5 %
		Determination of water absorption and penetration of fabrics using Bundesmann type apparatus	IS:392 – 1989 Reaff. 2016	0 to 100 %

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**MECHANICAL TESTING**

I.	TEXTILE MATERIALS			
1.	Fibers	Staple Length for manmade fibres	IS 10014 -1984 Part 1 RA 2014 Method A	10 mm to 300 mm
		Staple length of fiber in mm	ASTM D 5103-2012	10 mm to 300 mm
		Linear density of single fibres	ASTM D 1577 –2012 Option C	0.27 D to 9 D
		Tensile strength of single fibre	ASTM D 3822/D3822M-14 ISO 5079 – 96	1 g to 500 g
		Tensile strength of fiber	IS 235-1989 RA 2014	1 g to 500 g
		Crimp frequency of staple fibre	ASTM D 3937-2012 Option 1	Upto 5crimps/cm.
2.	Yarn	Linear density of yarns	IS 1315-1977 RA 2014 IS 7703-1990 PART 1 RA2017 ASTM D 1907/D1907M-12 ISO 2060-1995	20D to 1000D (5 Ne to 250 Ne)
		Count of yarn removed from fabrics	IS 3442-1980 RA 2014 ASTM D 1059 -01/ASTM ISO 7211 Part 5-1984	5 Ne to 150 Ne  20 D to 1000 D
		Crimp of yarn removed from fabrics	IS 3442-1980 RA 2014 ISO 7211 Part 3-1984	0.5% to 100%
		Twist in yarn	IS 832-2011 PART 1and PART 2 RA 2017 ASTM D 1423 -16	50 to 4000 TPM 10 to 100 TPI
		Twist of yarn removed from the fabric	ASTM D 1422/D1422M -13 ISO 7211 Part 4-1984	50 to 4000 TPM 10 to 100 TPI



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		Single yarn- Breaking load and elongation at break	IS 1670-1991 RA 2017 ASTM D 2256 / D2256M-15 ISO 2062:2009	1 N to 100N  1% to 100%
		Breaking strength of filament yarn (Single Yarn)	IS 7703-1990 PART 2 RA 2017	0.5 N to 100N ( 5g to 10000g)
		Lea strength of yarns spun on cotton system (CSP)	IS 1671-1977 RA 2014	200N to 1800N (45 lbf to 400 lbf)
<b>3.</b>	<b>Fabrics</b>	Breaking load and elongation of woven textile fabrics	IS 1969-2009 PART 1 RA 2014 ASTM D 5035 - 15 ISO 13934 Part 1-2013	0.1 KN to 50 KN  5% to 100%
		Pilling resistance of fabrics	IS 10971-2011 PART 1 RA 2017 ISO 12945-1:2000	Grade 1 - 5
		Length and width of woven fabrics	IS 1954-1990 RA 2017 ASTM D 3774 -2016 ISO 22198-2006(E)	1 cm to 500 cm
		Bursting strength and bursting distension of fabrics: Diaphragm method	IS 1966 Part1-2009 RA 2014 ASTM D 3786 /3786M-13 ISO 13938 -1:1999	5 to 60 kg/sq.cm
<b>4.</b>	<b>Fabric</b>	Puncture Resistance Index	ASTM D 4833-13	10 N to 10 kN
		CBR	ASTM D 6241-14Method B ISO 12236 - 06	
		Thickness of woven and knitted fabrics	IS 7702-2012 RA 2017 ASTM D1777-RA 2015	0.1 mm to 4 mm.
		Mass per unit length and mass per unit area in woven fabrics	IS 1964-2001 RA 2017 Method A ASTM D 3776 -D3776M-2013 Option C ISO 7211-6-1984 Method A	20 gsm to 2000 gsm

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		Threads per unit length in woven fabrics	IS 1963-1981 RA 2014 ASTM D 3775 - 12 ISO 7211 –2-1984	10 to 250 per cm (25 - 635 per inch)
		Recovery from creasing of textile fabrics by measuring the angle of recovery	IS 4681-1981 RA 2014	20-160 <sup>0</sup>
		Stiffness Cantilever test (Bending Length)	ASTM D 1388 – 14Option A IS 6490-1971 RA 2014	0.1 cm to 8 cm
		Grab Strength	ASTM D 5034-2013 ISO 13934 – 2:2014	10 N to 2000 N
		Tear strength – Single Rip (woven) (Nonwoven)	ASTM D 2261–13 ISO 13937 – 2: 2000 ASTM D 5733 - 1995	10N to 1000 N
		Failure in sewn seams of woven fabrics	ASTM D 1683/1683M-2017	10N to 1000 N
		Seam slippage and Seam strength	ISO 13936-1:2004(E) ISO 13935-2:2014	10N to 1000 N
		Drape coefficient	IS 8357-1977 RA 2014	Up to 100%
5.	<b>Nonwovens</b>	Tensile strength(Grab Method)	ISO 9073-18-2007	10 N to 1000 N
6.	<b>Fabric / Technical Textile</b>	Tensile strength (Grab Method) Elongation	ASTM D 4632 – 2015	10 N to 2000 N
		GSM of Geotextile	ASTM D 5261-10	20 gsm to 2000 gsm
		Abrasion Resistance (Martindale)	ASTM D 4966 - 16 ISO 12947 Part 1 ,3, 4 :1998 ISO 12947 Part 2 :2016 IS 12673 Part 1 to 4-2014	Upto1,00,000 Cycles
		Taber Abrasion Resistance	ASTM D 3884 –13	Grade 1 to 5 Cycles 50 to 9999
		Apparent Opening Size	ASTM D 4751 - 16	75 μ to 850 μ

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		Thermal resistance	ASTM D 1518 – 14 Option A	0.1Tog to 12 Tog
		Breaking strength by Wide width method %Elongation	ASTM D 4595 - 17 ISO 10319:2015	100 N to 1500 N 10% to 100%
		Trapezoid tear strength	ASTM D 4533 - 2015	10 N to 1000 N
7.	<b>Coated and treated fabrics</b>	Breaking strength and Elongation of coated fabric in Newtons (N) (Strip Test)	IS 7016 Part 2-2003 RA2015	10N to 5000N 1 % to 100 %
		Tearing strength (Tongue Tear) of coated fabric in Newtons (N)	IS 7016 Part 3-1981RA2013 Method A1	10N to 2500N
		Tearing strength (Single Rip) of coated fabric in Newtons (N)	IS 7016 Part 3-1981 RA2013 Method A2	10N to 2500N
		Resistance to flexing	IS 7016 Part 4-2003RA2013 (Method B)	Grading Scale 0 to 3
8.	<b>Fabric/ Wovens</b>	Air Permeability	ASTM D 737 - 2016 ISO 9237 :1995 IS 11056-2013	50 to 1500 lit/dm <sup>2</sup> /min
9.	<b>Fabirc / non woven</b>	Air permeability	ISO 9073 – 15: 2007	
10.	<b>Rope</b>	Breaking strength of rope in N 4 mm dia	IS 7071 Part 4-1986 RA 2014 (Method A & B)	50N to 50 KN (5 Kg to 5000 Kg)