

ITEM SPECIFICATION ITM CD :2101614069

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ITM CODE	DETAILED SPECIFICATION
2101614069	WEFT KNITTED SINGLE JERSY 100% POLYESTER 225-240 GSM Pantone shade 18-4043-TCX (Palace blue)-160CM WIDTH As per Appendix "E" of IAFS01060:(T.Shirt with Collar)2025 (OCT)
37	KILOGRAM



APPENDIX E
(Refers to Clause 6.2)

RAW MATERIAL (FABRIC , SEWING THREAD) & BROAD STITCHING/HEMMING/BAR TACKING REQUIREMENTS FOR T-SHIRT WITH COLLAR

PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
		GOV STD c.	STD NO d.
REQUIREMENTS FOR THE BASE FABRIC (To be used in both the sleeves and the main body of the ‘T Shirt’)			
Blend Composition of the Fabric	100% Polyester	IS	667:1981 RA 2022 3416 (Part-1): 1988 RA 2022 (Dry Weight Basis) or AATCC 20 : 2011, AATCC 20 A : 2012
Type of yarns to be used while knitting of the fabric 1. Course wise 2. Wales wise	1. Course wise. - Polyester, continuous multifilament yarn - Single yarn should have a Breaking Strength of 380 gf (minimum) - Single yarn Tenacity should be 7.5 gf/d (minimum) - Can be made either from virgin or recycled polyester - Can be made from Recycled polyester (with IPA content not more than 2.2 %)		IS 17261 : 2022 (Also refer Sl. No. 3064 dated 17 Jul 2023 of The Gazette of India , published by the Ministry of Chemicals & Fertilizers; Deptt of Chemicals & petrochemicals; S.O. 3193 (E)) Note :



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	OR Virgin polyester (with IPA content as NIL %) as per Table 4 of IS 17261 : 2022 - Which can be Dope dyed (DD), Easy Dyeable (ED) or Easy Dyeable Cationing (EDCD) or Cationic Dyeable (CD) or Disperse dyeable { i.e conventionally dyed (COD)/ Stock Dyed (STD) / Easy Dyeable (ED)} 2. Warp wise. Same as that of the Warp yarn (mentioned above)		The values of the breaking strength of the single yarn, the tenacity of the single yarn as well as the IPA content must be reported in the Lab testing report
Approximate value of 'Nominal Count (and Filament) ' of Yarns (i.e Yarn size to be used in knitting of the fabric):- 1. Course direction of the fabric 2. Wales direction of the fabric <i>{To be checked from the yarn; taken out from the finished garment i.e T-Shirt with collar + The roll of the yarn which is to be provided by the manufacturer firm}</i>	1. Course wise. 50 D ^{+5D} / 110 (min.) F (i.e 50 to 55 Denier with minimum of 110 Filaments) 2. Wales wise. 50 D ^{+5D} / 110 (min.) F (i.e 50 to 55 Denier with each yarn having a minimum of 110 Filaments)	IS	IS 3442: 2023 Amdt No.1 (RA 2018) Note : 1. Number of filaments per yarn is to be checked & reported by the Lab, post testing as per the SOP given below at the end of this Table 2. The firm is to provide a roll of the yarn used for manufacturing of the fabric also



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Approximate value of 'Twist' of the yarns (to be used in knitting) of fabric: - 1. Course direction of the fabric 2. Wales direction of the fabric <i>{Note: Though, the Lab testing values of this parameter are also mandatory to be submitted along with Technical Bids, however, this will not be considered for evaluation}</i>	1. Course wise. 70 twists/m (in 'Z' direction for 'Single' Yarn) * 2. Wales wise. 70 twists/m (in 'Z' direction for 'Single' Yarn) *	IS/ ISO	IS 832: 2021 (Part-1) / ISO 2061 : 2015 (Note: * These values are for guidance only, and need not be same)
Type of knit (to be used while knitting of fabric) 1. Main classification (Warp or Weft Knit) 2. Sub classification	1. Main classification : Weft Knit (Circular) 2. Sub classification: Single Jersey Dot knit (Double knit) giving appearance of a textured extremely fine pin hole on the right side (i.e Outer surface) and without any pin hole texture on the wrong side(i.e inner surface) EXACTLY in CONFORMITY with what has been DEPICTED in photographs given in Appendix 'D' of this IAFS	Visual	SP 45:1988 (Handbook on glossary of terms issued by BIS). - To be checked visually by the NABL Lab as well as by the O/o CQA Inspection at the BPC as well as at the BPI Stage. (The visual texture of the knitted fabric should be in EXACT CONFORMITY



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
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			with what has been as DEPICTED in photographs given in Appendix D of this IAFS) - This will also be checked visually at the TEC stage.
Size of each float (i.e Loop or Stitch length) in the knitted fabric { <u>Note</u> : Though, the Lab testing values / Manufacturer's authenticated values of this parameter are also mandatory to be submitted along with Technical Bids, however, this will not be considered for evaluation}	1.92 mm (Maximum) *	Visual	By the NABL Lab (<u>Note</u> : * This value is for guidance only, and need not be same.) However, the visual texture of the knitted fabric should be in EXACT CONFORMITY with what has been as DEPICTED in photographs given in Appendix 'D' of this IAFS)
Type of stitch (used while knitting the fabric)	Plain single jersey	Visual	By the NABL Lab (The visual texture of the knitted fabric should be in EXACT



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			CONFORMITY with what has been as DEPICTED in photographs given in Appendix 'D' of this IAFS)
Thread count (Knit Stitch density of the loops) of the fabric per dm 1. Course direction (Courses / dm) 2. Wales direction (Wales/dm)	1. Courses / dm : 495 (Min.) 2. Wales /dm : 285 (Min.)	IS	IS1963 : 1981 (RA 2023)
Mass of the fabric per unit area (i.e. in GSM or g/m ²)	225 g/m² - 240 g/m²	IS	IS 1964: 2001 (RA 2017)
Bursting Strength of the Fabric	1400 kN/m² (Min.) i.e 1400 kPa (Min.)	ISO / ASTM	ISO : 2960 / ASTM D 3786 / ASTM
Abrasion resistance of the fabric (at 9kPa pressure and with Woollen Abrader)	- No thread break should be observed after 35000 cycles - Colour change during abrasion should be 4 or better (as per Grey Scale)	IS	12673 (Part 2): 2022



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
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Pilling resistance / Pilling rate of the fabric (<i>tumble pilling for 2 hours</i>) using <i>tumble type pilling tester</i>	Average rating of 4-5 or better	IS	IS 10971: 2011 (RA 2022)
Fuzziness rating of the fabric	4 or better	IS	OR ASTM D 3512 / ASTM D 3512M :2022 (2 hrs)
Pilling resistance / Pilling rate of the fabric (<i>after 7000 revolutions of test</i>) using <i>Martindale tester</i>	Average rating of 4-5 or better after 7000 rubs	ISO	ISO 12945-2:2020
Fuzziness rating of the fabric	Average rating of 4 or better after 7000 rubs	IS	IS 10971: 2011 (RA 2022)
Seam (Yarn) Slippage in fabric (<i>i.e slippage of interlocked loops of Course & Wale yarns; of the stitched fabric under load, to i.e check of the resilience of the fabric to yarn slipping or opening along the seams.</i> <i>Note: It is a fabric property and should not be confused with seam strength, which obviously would be much more than the force at which seam slippage commences / ends)</i>	When two fabric pieces are sewn together with a standardised seam in Course as well as Wale directions (<u>with the type of needle, type of stitches, type of thread and stitch density actually used by the firm in stitching of the finished product</u>) to form test specimens for Course & Wale directions and then pulled apart with an equal and opposite force, the observed seam slippage should not exceed 6 mm upto application of 1. 250 N in Course direction (minimum)		ISO 13936-1: 2004 Note : Qty: 05 Sewn Test specimen samples each stitched in Course as well as Wale directions (Course & Wale to be marked on the test specimens also) are to be provided by the firm at the time of seeking



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
		GOV STD c.	STD NO d.
1. In Course direction 2. In Wales direction	2. 250 N in Wales Direction (minimum) (Note: NO symptoms of slippage of yarns should be visible after application of 70 N force either in Course or Wales direction)		<i>BPC as well as at the time of BP Lot Inspection. All 10 specimens are to be made using the same type of needle, same type of stitches, same type of thread and same stitch density, which has been actually used by the firm in manufacturing of the BPC sample / Bulk production lot)</i>
Fabric's Colour fastness to light (Blue Wool rating)	5 BW or better	IS/ISO	IS 2454 : 1985 IS/ISO 105 B 02 : 2014
Fabric's Colour fastness to washing (after 5 repeated washing / drying cycles at 38 °C to 44 °C)	1. Change in Shade : 4-5 or better 2. Staining on 2.1.Acetate : 4-5 2.2.Cotton : 4-5 or better 2.3.Nylon : 4-5 or better 2.4.Polyester : 4-5 or better 2.5.Acrylic: 4-5 or better 2.6.Wool : 4-5 or better	IS/ ISO	IS/ISO 105 C 10 : 2006 Test A1 (RA 2021)



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
		GOV STD c.	STD NO d.
Fabric's Colour fastness to perspiration (to be checked both in acidic and alkaline simulated conditions)	ACIDIC 1. Change in Shade : 4-5 or better 2. Staining on 2.1.Acetate : 4-5 or better 2.2.Cotton : 4-5 or better 2.3. Nylon : 4-5 or better 2.4. Polyester : 4-5 or better 2.5.Acrylic: 4-5 or better 2.6.Wool : 4-5 or better ALKALINE 1.Change in Shade : 4-5 or better 2.Staining on 2.1. Acetate : 4-5 or better 2.2. Cotton : 4-5 or better 2.3.Nylon : 4-5 or better 2.4.Polyester : 4-5 or better 2.5.Acrylic: 4-5 or better 2.6. Wool : 4-5 or better	ISO	ISO 105 E 04 : 2008 (RA 2019) (Note : This standard has replaced IS 971 : 1983)
Fabric's Colour fastness to perspiration & light (both to be checked simultaneously; after 40 AFUs)	Acid : 3 or better Alkaline : 3 or better	ISO	ISO 105 B 07 : 2009 (After 40 AFU i.e. Accelerated Fading Units)
Fabric's Colour fastness to rubbing	1. Dry : 4-5 or better 2.Wet :4-5 or better	IS/ ISO	IS 766 : 1988 / ISO 105 X12 : 2016



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		GOV STD c.	STD NO d.
Fabric's Colour fastness to hot pressing at 110° C ± 2°C, maintaining a pressure of 4 ± 1 kPa	IMMEDIATELY 1. Immediately after Dry pressing for 15 s : 4-5 or better 2. Immediately after Damp pressing for 15 s : 4-5 or better 3. Immediately after Wet pressing for 15 s : 4-5 or better AFTER CONDITIONING 4. After conditioning of all three test specimens for 4 hours: 4-5 or better 5. Staining on the cotton (adjacent) fabric: 4-5 or better	IS/ ISO	(RA 2009) / ISO 105 X11: 1994 <i>(Note: This standard has replaced IS 689: 1988)</i>
	1. In case checked with the garmented T-Shirt (in which the fabric has been pre-treated / washed before garmenting to cater for the dimensional variation) 1.1. Length wise : ± 0.5 % (i.e Max. Range is 0.5 % inclusive of Shrinkage + Expansion) 1.2. Width wise : ± 0.5 % (i.e Max. Range is		IS 2977 :1989 (RA 2020)
Fabric's Dimensional Change / stability (i.e Relaxation residual shrinkage / expansion) upon SOAKING in water (along with Wetting agent) for 3 hours and flat drying; as per the procedure mentioned in the specified test method; in 1. Lengthwise / Width wise direction			



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
		GOV STD c.	STD NO d.
2. Course wise / Wales wise direction <i>(Note: This is to be checked after single soaking & drying cycle only)</i>	0.5 % inclusive of Shrinkage + Expansion) 2. In case checked with the fabric used in the garmented T-Shirt 2.1. Course : ± 1.0 % (i.e Max. Range is 1.0% inclusive of Shrinkage + Expansion) 2.2. Wales : ± 1.0 % (i.e Max. Range is 1.0 % inclusive of Shrinkage + Expansion)		
Fabric's Dimensional Change / stability (i.e Relaxation residual shrinkage / expansion) to repeated <u>Domestic LAUNDRY</u> i.e repeated washing & drying ; in 1. Lengthwise / Width wise direction 2. Course wise / Wales wise direction <i>(Note: This is to be checked after five repeated home laundering cycles i.e washing & drying)</i>	1. In case checked with the garmented T-Shirt (in which the fabric has been pre-treated / washed before garmenting to cater for the dimensional variation) 1.1. Length wise : ± 2.0 % (i.e Max. Range is 2% inclusive of Shrinkage + Expansion) 1.2. Width wise : ± 1.0 % (i.e Max. Range is 1 % inclusive of Shrinkage + Expansion) 2. In case checked with the fabric used in the garmented T-Shirt	IS	IS 15370 : 2020 (at 41 ± 3°C, using Type B washer) for domestic washing & drying (i.e domestic laundry to be checked after 5 laundry cycles) and IS 2977 :1989 (RA 2020) for calculation of the percentage shrinkage /expansion



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
		GOV STD c.	STD NO d.
	2.1. Course : $\pm 3\%$ (i.e Max. Range is 3% inclusive of Shrinkage + Expansion) 2.2. Wales : $\pm 2\%$ (i.e Max. Range is 2% inclusive of Shrinkage + Expansion)		OR AATCC 150
Initial Bowness and skewness in the woven fabric (in the initial , original unlaundered state) <i>(Note: The manufacturer is to provide 2 m X 1.6 m i.e two metres of running length of the fabric , from the fabric roll, for this test along with a stitched garment, during stitching of which the fabric from the roll was not washed / treated to)</i>	Fabric Skewness in unwashed state: 0.5% (max.)	ASTM	ASTM D 3882:2008 (2020) , in case the fabric roll is used for testing OR ASTM D7811-13 (2017) using Bow Skew Tool with open slots (in case the garmented fabric is to be used for testing)
Dimensional stability w.r.t Spirality i.e change in skewness from the initial skew (due to skew movement / torqueing in the garment) after home laundering (after 03 laundering cycles) of the T-shirt as per ISO 6330-5A at 40 ° C followed by flat drying	Fabric skewness (Spirality) after 3rd laundering cycle : 1.0 % (max.)	AATCC C	AATCC-179:2004) OR IS/ISO 16322-1: 2005 (washing as per ISO 6330-5A at 40 ° C followed by flat dry) AATCC TM 179 - 2023



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Stretch and recovery	1. 25 % stretch (minimum) after 10 seconds in EITHER direction 2. 93% recovery (minimum) after 60 minutes in EITHER direction	ASTM	ASTM D 2594 : 2021 (knitted fabric)
Fabric's Dimensional stability to Dry Heat, when tested for contact with heated plane metal plate at 120° ± 2° C , 30 sec 1. Course direction 2. Wales direction	1. Course : ± 2.5 % (i.e Max. Range is 2.5 % inclusive of Shrinkage + Expansion) 2. Wales : ± 2.5 % (i.e Max. Range is 2.5 % inclusive of Shrinkage + Expansion)	IS	IS 12170 : 1987 (RA 2020), Temp 120° ± 2° C , 30 sec
pH value of the aqueous extract of the Fabric (using Hot method)	5.0 – 8.0	IS/ ISO	IS 1390 : 1983 (RA 2009) / ISO 3071: 2020
Percentage (by mass) of Water soluble matter in the fabric	1% by mass (Max)	IS	IS 3456 : 2022
Air permeability of the fabric	75 cc/sec/cm² (Min.)	IS	IS 11056 :2013
Moisture vapour transmission of fabric (Water vapour permeability)	2100 g/m²/day (Min.)	ASTM	ASTM E-96 (Water method), RH: 50 ± 2% and Temp. : 32 ± 3° C
Glaze and Fading property (property to withstand frequent abrasive laundering at 100° F ± 5° F) after 05	4-5 GS or better (After 05 th wash)	AATC C / ISO	AATCC 61- Method 2A (as per ASTM F 1506) / ISO 105 -



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
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washing cycles – Accelerated laundering test			C06:2010
Initial - Anti bacterial (microbial) activity Value after incubation period of 18 - 24 hrs (To tested with absorption method. The washing is to be carried out as per procedure 5 A and reference detergent specified in 4.1.2 of IS 15370:2005 and followed by drying as per 8.5 of IS 15370) 1. Staphylococcus aureus Strain no. ATCC 6358 (Gram Positive Bacteria) 2. Klebsiella pneumoniae aureus Strain no. ATCC 4352 (Gram Negative Bacteria)	<u>Initial</u> 1. Staphylococcus aureus Strain no. ATCC 6358 (Gram Positive Bacteria) - <u>2.75 (minimum)</u> 2. Klebsiella pneumoniae aureus Strain no. ATCC 4352 (Gram Negative Bacteria) - <u>2.75 (minimum)</u>	ISO	20743 : 2021
After 30 washes - Anti bacterial (microbial) activity Value after incubation period of 18 - 24 hrs (To tested with absorption method. The washing is to be carried out as per procedure 5 A and reference detergent specified in 4.1.2 of IS 15370:2005 and followed by drying as per 8.5 of IS 15370) 1. Staphylococcus aureus Strain no. ATCC 6358 (Gram Positive	<u>After 30 washes</u> 1. Staphylococcus aureus Strain no. ATCC 6358 (Gram Positive Bacteria) - <u>2.0 (minimum)</u> 2. Klebsiella pneumoniae aureus Strain no. ATCC 4352 (Gram Negative Bacteria) – <u>2.0 (minimum)</u>	ISO	20743 : 2021 & Washing as per IS 15370:2020, Temp 40 Degree Celsius, after 30 repeated Laundry and Tumble drying



PROPERTY / PARAMETER a.	REQUIRED VALUE b.	TEST METHOD	
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Bacteria) 2. Klebsiella pneumoniase aureus Strain no. ATCC 4352 (Gram Negative Bacteria)			
Oily soil stain release efficiency after home laundering (after creating the stain on the fabric by using Maize corn oil as per IS 4055 , under weight of 2.26 kg for 55s-65s seconds, and washing thereafter as per procedure 5A and reference detergent specified in 4.1.2of is15370 and followed by drying as per 8.5 of IS 15370)	1. Initial (after staining the fabric with corn oil) : 3.5 or better 2. After 10 washings : 3.5 or better	AATC C /IS	AATCC TM 130-2018t 130 (by comparison with standard replicas) IS 4055 (for Maize Corn Oil) & Washing as per IS 15370:2020, Temp 40 Degree Celsius, after 10 repeated Laundry and Tumble drying
Absorbency 1. Initial (in original fabric without laundering) 2. After 5 washes	1. Initial : Not more than 10 seconds 2. After 5 washes : Not more than 20 seconds	AATC C	AATCC TM 79



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Vertical wicking 1. Lengthwise direction 1.1. Initial (in original fabric without laundering) 1.2. After 05 washes 2. Width wise direction 2.1. Initial (in original fabric without laundering) 2.2. After 05 washes	1. Lengthwise direction. 1.1. Initial (in original fabric without laundering) : Must wick 14 cm in 30 minutes 1.2. After 05 washes : Must wick 6.5 cm in 30 minutes 2. Width wise direction 2.1. Initial (in original fabric without laundering) : Must wick 13 cm in 30 minutes 2.2. After 05 washes : Must wick 6 cm in 30 minutes	AATC C	AATCC TM 197: 2018
Horizontal wicking 1. Initial (in original fabric without laundering) 2. After 05 washes	1. Initial : 19 mm² / sec (min.) 2. After 05 washes : 9 mm² / sec (min.)	AATC C	AATCC TM 198 : 2018
Antistatic properties 1. Electric surface resistivity	1. Electric surface resistivity: 0.24 X 10¹² Ohm	AATC C	AATCC TM 76 : 2018 & AATCC TM 115



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Type of Dye (Filament Dope/ Yarn/ Fabric) *	Dope (Solution) dyeing at the time of FILAMENT extrusion stage OR Disperse dyeing of the YARN/ FABRIC , provided the defined colour and ALL COLOUR FASTNESS as well as OTHER RELATED PROPERTIES as enumerated in this Appendix 'E' are achieved within SPECIFIED LIMITS .	---	* Note : The 'quality of the dye' and the 'process quality control' during dyeing will be evaluated by checking the compliance with the achievement of permissible values of Delta E and all colour fastness related properties' enumerated below in this Appendix E)
Nature of Dye	DOPE (SOLUTION) dyeing at the time of filament extrusion stage OR DISPERSE DYEING of the Yarn/Fabric provided the defined colour and ALL COLOUR FASTNESS as well as OTHER RELATED PROPERTIES as enumerated in this Appendix 'E' are achieved within SPECIFIED LIMITS .	---	IS 4472-Part I, II & III : 2021 * Note : The 'quality of the dye' and the 'process quality control' during dyeing will be evaluated by checking the compliance with the achievement of permissible values of Delta E



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			and all colour fastness related properties' enumerated below in this Appendix E
Nearest matching Pantone Colour Shade of the fabric	As per PANTONE Shade Card No. 18-4043 TCX (Palace Blue) { Note : 1. This has been provided ONLY to facilitate the manufacturer, in meeting the required Tristimulus co-ordinates (including the permissible variation); in least number of iterations. However, at the time of submitting the Technical Bids (i.e at TEC stage), MATCHING of the Colour with this Pantone Shade would be MANDATORY, which will be checked with the lab remnants (whole T Shirt with Collar) by the Office of C Eng O (QAS). 2. Matching of the colour at TEC Stage, The variation in Colour i.e Delta E cmc at BPC / BPI Lot evaluation	Visual	By the Office of C Eng O (QAS) at TEC Stage Note: The variation in Colour i.e Delta E cmc at BPC / BPI Lot evaluation stage will be checked by comparing the LCH values observed in the Lab (during testing of the fabric sample submitted by the firm) with the reference values given below. This will be verified by the O/o CQA (Insp) at BPC as well as at the BPI



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	<i>stage will be checked by comparing the LCH values observed in the Lab (during testing of the fabric sample submitted by the firm) with the reference values given below. }</i>		<i>stages, through Lab testing.</i>
CIE Lab L C h° coordinates	L: 44.99	AATC C	AATCC 173 : 2009 (Test Method for Calculation of Small Colour Differences for Acceptability) and AATCC EP6-2016e (Evaluation Procedure for Instrumental Colour measurement) (1. For measuring of the L C h° , X Y Z and L a b values , only single layer of the fabric against black background (of the instrument
	C: 33.44		
	h°: 262.54		
Tristimulus Values X Y Z	X: 13.106		
	Y: 14.532		
	Z: 35.486		
CIE Lab (Star) L a b coordinates	L: 44.99		
	a: - 4.35		
	b: - 33.16		
Tolerance	2:1		
Illuminant	D 65		
Standard Observer	10 Degree		



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			cover for the aperture) are to be used. The values obtained thereafter are then to be used for calculation of the Delta E_{cmc} 2. The geometry of the spectrophotometer to be used during measurement should be diffuse / 0 type with Illuminant as D65 and Tolerance as 2:1, where the actual viewing angle is 8°. The measurement made on other geometrics will likely produce different spectral results. 3. At-least 10 readings shall be taken; spread



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			<i>across at-least 1m² area of the fabric sample. The final value will be treated as the average of the 10 readings. All 10 readings are to be reported in the lab report)</i>
Delta E_{cmc} (Permissible variation in colour of the Fabric) <i>(when compared with Colour Spectrum coordinate / tri-stimulus values obtained with actual fabric, with Illuminant as D65, Standard Observer as 10 Degrees and Tolerance as 2 :1.</i> (Note : Variation in Colour will be checked at BPC as well as Bulk Production inspection stages only and will not be applicable at Technical Evaluation Stage. However, at TEC stage, visual matching of the fabric colour with the Pantone Shade Card	Delta E_{cmc} ≤ 1.2 and as accepted by the O/o CQA (Insp) at BPC stage	AATC C	AATCC 173 : 2009 (Test Method for Calculation of Small Colour Differences for Acceptability) and AATCC EP6-2016e (Evaluation Procedure for Instrumental Colour measurement) + As accepted by the O/o CQA Inspection at BPC stage. (Note 1. For measuring



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mentioned above is mandatory)			of the $L C h^\circ$, $X Y Z$ and $L a b$ values, only single layer of the fabric against black background (of the instrument cover for the aperture) are to be used. The values obtained thereafter are then to be used for calculation of the Delta E_{cmc} 2. The geometry of the spectrophotometer to be used during measurement should be diffuse / 0 type with Illuminant as D65 and Tolerance as 2:1, where the actual viewing angle is 8°. The measurement made on other geometrics will



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			likely produce different spectral results. 3. At-least 10 readings shall be taken; spread across at-least 1m ² area of the fabric sample. The final value will be treated as the average of the 10 readings. All 10 readings are to be reported in the lab report)