No. U-II-25/2011-12-Prov-(CoBRA)
Government of India/भारत सरकार
Ministry of Home Affairs/गृह मंत्रालय
Police Modernization Division/पुलिस आधुनिकीकरण प्रभाग
Prov.I Desk/संभरण-I डेस्क

26, Mansingh Road, Jaisalmer House,
New Delhi, the 11th February, 2013

DsG : AR/BSF/CISF/CRPF/ITBP/NSG/SSB & BPR&D

Subject : QRs/Specification of 14 various Clothing items.

The QRs/Specification of following 14 items as per annexures have been approved by the Competent authority in MHA:

i. Socks woollen heavy (Annex. B).
ii. Hand Gloves Knitted (Annex. C)
iii. Cotton Terry Towel (Sky Blue Color)/Hand Towel (Annex. D)
iv. Scoured and bleached rib knitted round neck sleeveless and short sleeve vests/Vest Cotton (Annex. E)
v. Water Bottle(Annex. F)
vi. Trouser BD Serge Cloth/Cloth Trouser BD (Annex. G)
vii. Shirt Angola Cloth./Shirt Angola (Annex. H)
viii. Cap Comforter Woollen(Annex. I)
ix. Under Pant Thermal/ Under Pant Woollen (Annex. J)
x. Vest Thermal/Vest Woollen (Annex. K)
xi. Coat Parka (Annex. L)
xii. Beret Cap (Annex. M)
xiii. Rain Cape(Annex. O)
xiv. Blanket Air Force Blue (Annex. S)

2. Henceforth, all CAPFs should procure the above items required by them, strictly as per the laid down QRs/Specifications.

wdsme 5/12
13/2/2013

Yours faithfully,

(Tilak Raj)
Under Secretary to the Govt. of India
O/C

Encl : As above.

Copy to :

1. SO, IT Cell, MHA – with the request to host the above QRs/Specification on the official website of MHA (under the page of Organizational set up, Police Modernization Division) and confirm to this Division. Softcopy is being sent separately.
2. Director(Procurement), MHA

Copy for information to PS to JS(PM).

11446/149

Annexure -F

CENTRAL RESERVE POLICE FORCE STANDARD

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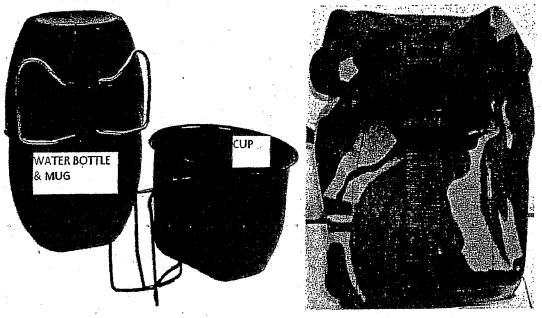

DIG (Prov)
पु.उ. महा (संभरण).....
Dy. Comdt. (Prov)
सप्त कमाण्डेन्ट (प्रभार).....
AD (Prov)
सहायक.....
OS (Prov)
कार्यालय अधीक्षक.....
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Date of receipt
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SPECIFICATION FOR "WATER BOTTLE"

Submitted to :

Office of the Directorte General of Police,
CRPF, Ministry of Home Affairs,
Block No-1, CGO Complex, Lodhi Road,
New Delhi-03

Prepared by :

NORTHERN INDIA TEXTILE RESEARCH ASSOCIATION
Sector-23, Raj Nagar, Ghaziabad (U.P.)
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SPECIFICATION FOR "WATER BOTTLE"

RECORD OF AMENDMENTS

Amendment No. and Date	Amendment pertains to Sl.No./Para No./Column No.	Authority	Amended by Name and Appointment (in block letter)	Signature and Date

PREAMBLE

The Inspector General of Police, CRPF, has asked NITRA to prepare technical specifications for "Water bottle". The specification describes the bottle and complete assembly particulars and properties –design & dimensions, material composition, , mass, , wall thickness, potability, mass, capacity, Drop impact, leakage, pH, yarn count, ends/dm, picks/dm, dimensional change, color fastness to various agencies such as bleeding, water, light etc.

Bureau of Indian Standards (BIS) and American Association of Textile Chemists and Colorists (AATCC) test methods are considered to draw the specification.

This report contains 38 pages which describe the technical specifications of "Water bottle" for CRPF.

Whenever a reference to any other standard occurs in this specification, it shall be taken as reference to the latest version of that standard existing at the time of finalization of a contract.

This technical specification will enable the CRPF to prepare tender documents (technical details) at the time of placing orders for "Water bottle" and final inspection as well.

SPECIFICATION FOR "WATER BOTTLE"

CONTENTS

0.0 FORWARD

0.0 This specification has been prepared by Office of the Directorate General of Police, CRPF on the authority of The Director General of Police, CRPF.

0.1 This specification is for use by the CRPF.

0.2 This specification would be used for manufacture, quality assurance and procurement of the item.

0.3 Quality assurance authority for the item covered in this specification is Office of the Directorate General of Police, CRPF, New Delhi. All enquiries regarding this specification, including those relating to any contractual conditions contained therein shall be addressed to the Quality Assurance authority at the following address:

Office of the Directorte General of Police,
CRPF, Ministry of Home Affairs
Block No-1, CGO Complex, Lodhi Road,
New Delhi-03

0.4 Copies of the specification can be obtained from:

Office of the Directorte General of Police,
CRPF, Ministry of Home Affairs
Block No-1, CGO Complex, Lodhi Road,
New Delhi-03

0.5 This specification holds good only for the supply order for which it is issued.

0.6 The Quality Assurance Authority reserves the right to amend or modify this specification as and when required.

0.7 The Quality Assurance Authority is the competent authority to grant concessions, if any, in respect of any clause contained in this specification.

0.8 For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS:2-1960 (Reaffirmed 2006). The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

1.0 SCOPE

1.1 This specification covers the requirement for "Water Bottle" against CRPF requirements.

1.2 This specification does not specify general appearance, feel etc of the "Water Bottle".

2.0 BOTTLE ASSEMBLY

The complete water bottle assembly shall have following items:

2.1 Bottle: The bottle (Black in colour) shall be made by injection blow moulding process from High Density Polythene (HDPE) material. The material shall be food grade.

2.2 Cap: The bottle shall be provided with a screw cap (Black in colour) which shall be made out of High Density Polythene (HDPE). The material shall be food grade.

2.3 Mug: The bottle shall also provide with a plastic mug with handles (High Density Polythene -Black in colour) of (500±10) ml capacity.

2.4 Cooker: The bottle shall also be provided with Cooker (Black in colour) for boiling water or cooking food items etc using solid or gel fuel. It shall be made of AISI-304 grade stainless steel. The cooker shall be coated with Polytetrafluoroethylene (PTFE) finish.

2.5 Cup: It shall be made of AISI-304 grade stainless steel (Black in colour). It shall be coated with Polytetrafluoroethylene (PTFE) finish. It shall have handles.

2.6 Water Bottle carry bag: To carry bottle, a bag shall be provided, which is made of Nylon fabric, printed in disruptive pattern print.

3.0 WATER BOTTLE

3.1 The shape and dimensions of the Water Bottle assembly are shown in Fig. 1 to 12.

3.2 The tolerances (where ever not given) on various dimensions of "Water Bottle" shall be as follows:

Up to and including 100 mm	:±0.5mm
Over 100 mm and up to and Including 200mm	: ±1.0mm
Over 200 mm	: ±1.5mm

3.3 For more details of design and shape of "Water Bottle" with complete assembly, sample held in the custody of CRPF may be referred.

4.0 WATER BOTTLE CARRY BAG (herein referred as BAG)

The fabric used for manufacture of bag shall be printed in disruptive pattern. The printed pattern shall meet the color fastness properties as given in Table 3. Dyes used for dyeing and printing shall be free from banned amines (Test method IS 15570: 2005). For guidance the disruptive pattern may be obtained by repeats of the design of 25.25 inch ± 5% in warp direction and 23.25 inch ± 5% weft direction. The colours to be used in the disruptive pattern print are shown in Fig. 3. The face side of the base fabric shall be water repellent and back side of the base fabric shall be uniformly coated with polyurethane. The coating shall be smooth and it should firmly adhere to the fabric. The coated fabric shall be pliable and free from tackiness, stain, pinholes, surface irregularities,

wrinkles, patches and all other coating defects. The coating should be free from any objectionable odor.

The back side of the bag shall be made of double layers of base fabric, sandwiched with a sheet of rubber.

Bag shall be provided with two pockets-one shall be in the flap and the other in the inside of the bag. For more details Fig. 2B may be referred.

The details pertaining to Nylon tapes, elastic tape, Hook & Loop fasteners and pockets may be seen in the sample held in the custody of CRPF.

The shape and dimension of the bag are shown in the Fig . 2, 9 and 10. Following are the components used in the manufacture of bag:

Table1: Components used in manufacture of bag

Component No.	Name of the component	Description
1	Base fabric	1. Nylon 6 6 multifilament texturised yarn shall be used. 2.For guidance i) warp count: 1000 Denier, ii) weft count: 1000 Denier 3. PU Coated - Back side 4. Weave: plain 1 up 1 down 5. The fabric shall be 'Heat set' and fully shrunk. 6. Disruptive printed and finished with water repellent finish on face side and PU Coated-back side
2	Binding or Piping cloth 20±1 mm wide	1. Nylon multifilament yarn shall be used. 2. For guidance multifilament Nylon yarn of approximately 225 Denier may be used in warp and weft direction. 3. Weave: Plain1 up 1 down, Needle loom shall be used for the manufacture of piping. 4. Colour: Visual match with green colour of disruptive print of base fabric

3	Nylon Tape 25 ± 1 mm wide	1. Nylon multifilament yarn shall be used. 2.For guidance i) Warp count: 850 Denier ii) Binding yarn (Warp): 850 Denier, iii) Weft count 450 Denier 3. Total ends(full width): 203 (175 warp ends + 28 binding warp ends), Picks per dm: 340 4. Weave: Refer Fig. 12. Needle loom shall be used for the manufacture 5. Green Colour
4	Nylon Tape 20 ± 1 mm wide	1. Nylon multifilament yarn shall be used. 2. For guidance i) Warp count: 850 Denier ii) binding yarn (Warp): 500 Denier, iii) Weft count 850 Denier 3. Total ends: 110 (88 warp ends + 22 binding warp ends), Picks per dm: 320 4. Weave: Refer Fig. 12 5. Green Colour
5	Hook fastener 20 ± 1 mm wide (for opening and closing pocket)	1. Comply with the acceptance criteria specified in IS 8156: 1994 RA 2004 2. Green Colour (NOTE: 10 meter hook fastener, which is used in the beg, shall be provided for testing purpose)
6	Loop fastener 20 ± 1 mm wide (for opening and closing pocket)	1.Comply with the acceptance criteria specified in IS 8156: 1994 RA 2004 2. Green Colour (NOTE: 10 meter loop fastener, which is used in the beg, shall be provided for testing purpose)
7	Side release (Quick release) buckle (SRB)-male	1. Made out of Polypropylene 2. For dimension refer Fig. 11. 3. Black Colour

8	Side release (Quick release) buckle (SRB)-female	1. Made out of Polypropylene 2. For dimension refer Fig. 11. 3. Black Colour
9	Plastic D-ring	1. Made out of Polypropylene 2. For dimension refer Fig. 11. 3. Black Colour
10	Elastic Tape 25±1 mm wide (Inner side of the bag)	1. Comply with the acceptance criteria specified in IS: 1986:1980 2. green Colour (NOTE: 10 meter Elastic tape, which is used in the beg, shall be provided for testing purpose)
11	Eyelet	1. Internal diameter: 10±1 mm, Outer diameter 15±1 mm 2. Black Colour
12	Rubber sheet	1. Material: Rubber 2. Thickness: 3.0 mm (IS 7702 at 2 KPa pressure) 3. Colour : White

4.1 Lock stitch and Backtack shall be employed to assemble components of bag. Location and types of stitch can be seen in the bag sample held in the custody of CRPF. In the case of Lock stitch, four stitches per cm shall be employed wherever stitching has to be carried out. The stitching shall be done with even tension and all loose ends shall be securely fastened off.

4.2 Nylon sewing threads (Green colour)) conforming variety no. H_1 of IS: 4229 shall be used.

5.0 WORKMANSHIP

The "Water Bottle" shall be manufactured in accordance with good manufacturing practices and shall be free from undesirable odour. The "Water Bottle shall be free from any flash and scratches.

The bag shall be visually examined. It shall be evenly stitched, free from missed stitches, holes, cuts, puckering and other defects. The colour of the sewing thread used for stitching shall not bleed or stains. The bag shall be free from dyeing & printing defects. The bag shall be free from any other defect which may significantly mark the appearance or serviceability.

6 SAMPLING

The method of drawing representative sample from the a lot and the determination of criteria of conformity of a lot to requirements of this specification shall be as under:

6.1 Scale of Sampling

In any consignment all the bottles with complete assembly of the same material, nominal capacity and drawn from a single batch of manufacture shall be grouped together to constitute a lot.

For ascertaining the conformity of the lot to the requirements of the standard, test shall be carried out for each lot separately. The number of bottles with complete assembly to be sampled from a lot shall be in accordance with Table 2.

The bottles with complete assembly shall be selected at random from the lot. To ensure the randomness of selection, methods given in IS 4905 may be followed.

Table 2: Scale of Sampling and Acceptance number of "Water Bottle" with complete assembly

Lot size	Visual inspection for workmanship and finish		For chemical test		For Physical test	
	Sample size	Acceptance number	Sample size	Acceptance number	Sample size	Acceptance number
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Up to 50	8	1	3	0	3	0
51 – 90	13	1	3	0	5	0
91-150	20	2	3	0	5	0
151 – 280	32	3	5	0	8	1
281-500	50	5	5	0	8	1
501-1200	80	7	5	0	13	1
1201-3200	125	10	8	1	13	1
3201 -10000	200	14	8	1	20	2

Note 1: The rejection number will always be one more than the acceptance number

Note 2: Test methods may be taken as guidance wherever specimen size is not sufficient as per standard.

6.2 Criteria for Conformity:

6.2.1 Visual Examination:

The sample bottles selected as per column 2 of the Table-2 shall be examined for manufacturing conditions. Any bottles failing in one or more of the requirements shall be termed as defective. The lot shall be accepted under this head if the number of defective bottles in sample does not exceed the acceptance number given in column 3 of Table 2.

6.2.2 Chemical Tests:

The number of sample bottles to be drawn shall be in accordance with column 4 of Table 2. Each of the sample bottles shall be subjected to test colour fastness to bleeding, colour fastness to water, Potability and material composition, while the bag shall be tested for dimensional change, pH value, mass, colour fastness to various agencies etc. The number of failure shall not exceed the acceptance number given in column 5 of Table 2.

6.2.3 Physical Tests:

The sample bottles selected as per column 6 of the Table-2 shall be subjected to tests for capacity, Closure Leakage and Vibration Leakage Drop Impact Test, Wall Thickness and mass. The bag shall be subjected to test dimensions and nos. of ends & picks. The lot shall be accepted under this head if the number of defective bottles in sample does not exceed the acceptance number given in column 7 of Table 2.

7.0 REQUIREMENTS FOR BOTTLE

7.1 The bottle shall be of 950±10 ml capacity when determined by filling the bottle with water up to the specified depth measured from the top sealing surface.

7.2 The wall thickness of the bottle measured at any point according to the method given in 4.5 of IS 2798 shall be in between 2.4 mm to 5.0 mm. The wall thickness of the mug measured at any point according to the method given in 4.5 of IS 2798 shall be in between 3.4 mm to 3.6 mm.

7.3 The mass of the bottle with cap shall be 220±15 gram. The mass of the mug shall be 140±10 gram.

7.4 Leakage Test:

7.4.1 Closure Leakage Test (as per method 6.1 of IS 2798).The bottle shall be filled to its nominal capacity with coloured water. After filling, the bottle shall be closed tightly as in the final form. The outer surface of the bottle wiped with cotton cloth to remove any drop of coloured water. The closed bottle shall then be kept upside down over a white blotting paper for 30 Minutes. After 30 minutes, the bottle shall be examined for any leakage which would be evident from any visible stains on the blotting paper.

7.4.2 Vibration Leakage Test

The bottle filled with coloured water at ambient temperature and closed tightly with the cap when subjected to vibration on a vibration table according to method given in 6.2 of IS 2798 (without superimposed load) shall not show any leakage through the closure after one hour of testing.

7.5 Drop Impact Test

7.5.1 The bottle with the cap when subjected to drop test according to method 8 of IS 2798 shall not show any sign of cracking.

7.6 Potability

7.6.1 The bottle before being subjected to potability test, shall be washed with detergent maintained at 50±2 °C followed by rinsing with running tap water, then warm water at 50 to 60 °C and then filled with fresh water and kept for 24 hours.

The bottle shall than be made empty and filled to the nominal capacity with clear and fresh tap water free from any suspended impurities. The bottles shall be store in an

atmosphere maintained at a temperature of 27±2 °C for 72 hours. The stored water shall not acquire any unpleasant odour or taste.

7.7 Colour fastness to bleeding:

The test pieces taken from bottle and Mug separately shall pass the test prescribed in method 12 of IS 2530.

7.8 Colour fastness to water:

The test pieces taken from bottle and Mug separately shall pass the test prescribed in method 13 of IS 2530.

7.9 The material composition of cup and cooker shall meet the requirement of AISI-304 grade stainless Steel when tested for Carbon, Silicon, Manganese, Sulphur, Phosphorus, Nickel and Chromium as per latest version of IS: 228.

7.10 The mass of the cup shall be 270±15 gram. The mass of the cooker shall be 170±15 gram.

7.11 The wall thickness of the cup and cooker measured at any point according to the method given in 4.5 of IS 2798 shall be in between 0.4 mm to 0.6 mm.

8.0 REQUIREMENTS FOR BAG

8.1 The Fabric used in manufacture of bag shall conform to the requirements as given in Table 3. Specification for colour used in base fabric shall be as given in Table 4A to 4D.

8.2 Side release (Quick release) buckle (SRB)-male & female and D-ring of bag shall confirm to the requirements as given in Table 5.

8.3 Binding or Piping cloth, Nylon tapes used in the manufacture of bag shall conform the requirement as given in the Table-1.

Table 3 : Requirements of fabric for Bag

Sl. No.	Characteristics	Requirements	Test Method
1	Nature of fibre/filament	Nylon 66	AATCC 20: 2010
2	Nature of coating	Polyurethane	See Annexure-1
3	Weave	Plain-1 up 1 down	Visual
4	End/dm	146±2	IS 1963:1981
5	Picks/dm	114±2	IS 1963:1981
6	Mass, g/m^2	390±20	IS 1964 : 1970
7	Tearing Strength, Newton (Minimum) - Warp-wise - Weft-wise	 350 350	IS 6489: 1993
8	Abrasion Resistance (Martindale) -After 50,000 cycles	No thread breakage	IS: 12673 : 1989
9	Colour fastness to washing - Change in colour - Staining on adjacent fabric	 4 or better 4 or better	IS/ISO: 105: C10-C(3)
10	Colour fastness to perspiration - Change in colour - Staining on adjacent fabric	 4 or better 4 or better	IS 971:1983
11	Colour fastness to rubbing - Dry - Wet	 4 or better 4 or better	IS 766:1988
12	Colour fastness to light	5 or better	IS 2454:1985
13	Dimensional Change due to relaxation, both directions, percentage, maximum	2.0	IS 2977: 1989
14	Water proofness (Hydrostatic Pressure head test at 30 cm water column height for 60 min.)	No Percolation of water through the fabric or wetting of the outer surface.	IS:7016 Pt VII (A-2)
15	Water repellency (uncoated face)	Spray rating Min. 80	IS 390: 1975
16	Separation of PU firm	On fraying threads in warp and weft directions up to 5 mm after cutting the fabric from any portion, there shall not be a continuous PU film on the areas where from where the threads have been removed.	
17	Resistance to accelerated ageing at 70°C ± 1°C for 168 hrs in hot air circulating oven	There shall not be any softening, stiffening, tackiness, discoloration and objectionable odour	IS: 7016 Pt. VIII: :1975
18	Resistance to damage by flexing after 1,00,000 cycles	There shall not be any wrinkling, cracking and flaking	IS: 7016 Pt. IV: :1987
19	pH value of aqueous extract	6.0-8.0	IS1390:1983(Cold method)

Table-4A: Specification of colour of Bag (Disruptive pattern printed - Green)

(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

Colour	:	**Green**
System	:	**CIE LCH**
Illuminant Observer	:	**D 65**
Standard Observer	:	**10 Degree**

Tristimulus Values :

X	Y	Z
6.144	6.980	4.737

L C H :

L	C	H
31.761	12.707	113.271

CMC (l:c)	:	**2:1**
Colour difference, ΔE_{cmc}	:	**≤ 3.0**

Interpretation of Results :

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note-1 : Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2 : Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.

Table 4B: Specification of colour of Bag (Disruptive pattern printed - Khaki)

(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

Colour	:	**Khaki**
System	:	**CIE LCH**
Illuminant Observer	:	**D 65**
Standard Observer	:	**10 Degree**

Tristimulus Values :

X	Y	Z
16.881	16.957	9.983

L C H :

L	C	H
48.206	20.605	77.166

CMC (l:c)	:	**2:1**
Colour difference, ΔE_{cmc}	:	**≤ 3.0**

Interpretation of Results :

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note-1 : Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2 : Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.

Table-4C: Specification of colour of Bag (Disruptive pattern printed- Brown)

(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

Colour	:	**Brown**
System	:	**CIE LCH**
Illuminant Observer	:	**D 65**
Standard Observer	:	**10 Degree**

Tristimulus Values :

X	Y	Z
5.971	5.859	4.466

L C H :

L	C	H
29.054	9.635	60.426

CMC (l:c)	:	**2:1**
Colour difference, ΔE_{cmc}	:	**≤ 3.0**

Interpretation of Results :

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note-1 : Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2 : Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.

Table-4D: Specification of colour of Bag (Disruptive pattern printed - Black)

(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

Colour	:	**Black**
System	:	**CIE LCH**
Illuminant Observer	:	**D 65**
Standard Observer	:	**10 Degree**

Tristimulus Values :

X	Y	Z
2.294	2.393	2.994

L C H :

L	C	H
17.428	3.064	280.297

CMC (l:c)	:	**2:1**
Colour difference, ΔE_{cmc}	:	**≤ 3.0**

Interpretation of Results :

i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3, then sample is unacceptable.

Note-1 : Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

Note-2 : Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.