QRs/ Specifications of "T-Shirt Half Sleeves Round Neck Disruptive Pattern"

1. **Applicability**- These specifications relate to the manufacturing details of the T-Shirt Half Sleeves Round Neck Disruptive Pattern (Regular & Green Pattern)
2. **Salient Features**:

   The salient features of the garment are: **Poly-Cotton T-Shirt**
3. **Materials**

   The materials used in the manufacture and packing of the T-Shirt shall conform to the following Standard Specifications:

   The T-Shirt shall be manufactured out of well and evenly single jersey knitted fabric. The constructional details of the fabric are as given under. The knitted fabric shall not be overloaded or pulled in length while calendaring.

S. No.	Specifications	Requirement	Test Method*
1.	Fibre Identification/ Composition **Except Neck** **For Neck** (On Dry mass basis)	 Cotton : 58±3% Polyester : Remainder Cotton : 56±3% Polyester : Remainder Elastane : 2% Min	AATCC 20:2011 and AATCC 20A:2012 IS: 667/AATC-20 AATCC-20-A/IS:3416
2.	Dimensional Stability	±3.5% (Both directions), Maximum	IS 2977-1989
3.	Fabric Weight	200 to 220 (g/m^2)	IS 1964 : 2001
4.	Colour Fastness to Rubbing	Dry: 3-4 or better Wet: 3-4 or better	IS 766-1988
5.	Colour Fastness to Light	4-5 or better (On blue wool)	IS 2454: 1985
6.	Colour Fastness to Washing	Change in Colour: 4 or better Staining on Cotton: 4 or better	IS/ISO 105 C 10 D (4): 2006
7	Colour Fastness to Perspiration	4 or better	IS 971:1983
8	Spirality after one Wash	**4% Maximum**	IS/ISO 16322-1: 2005 (Washing as per ISO 6330-5A at 40^{o}C followed by flat dry)
9	Banned Azo Colorants	30 mg per Kg, Maximum	IS 15570 : 2005
10	pH Value of aqueous extract (Cold method)	6.0 to 8.5	IS 1390 : 1983
11	Count per yarn, Ne	24's (for manufacturer's guidance)	IS:3442-1980
12	Wales per Inch Course per Inch	32 Minimum 48 Minimum	Visual
13	Type of Knit	Single Jersey (Plain Knit)	Visual

* **Latest version of tested Method will be used**.

4. **Design** : The T-Shirt shall be round neck disruptive pattern (Regular & Green Pattern)

Portion to be stitched	Type of stitch	Thread in the Needles	Thread in the loopers
Round Neck – (Crew Neck) T-Shirt and armholes	Overlock & Flat Lock Stitches	80/120	80/120
Note: Ticket No. 80/120 Spun Polyester are used in the needles and loopers.			

5. **Manufacture and Workmanship/ Operation**:

S.No.	Operation	Stitch Code	Needle Size	Thread Size	Machine Used
1.	Front & Back Shoulder Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
2.	Sleeve Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
3.	Side Seam Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
4.	Neck Rib Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
5.	Top Stitch on Neck Rib	406	11-Ball Point	80/120	Two Needles Flat Lock Machines with needle gauge 4mm
6.	Sleeve & Bottom Hemming	406	11-Ball Point	80/120	Two Needles Flat Lock Machines with needle gauge 8mm

Note: The number of stitches shall not be less than 12 stitches per inches.

6. **Shape and dimensions**

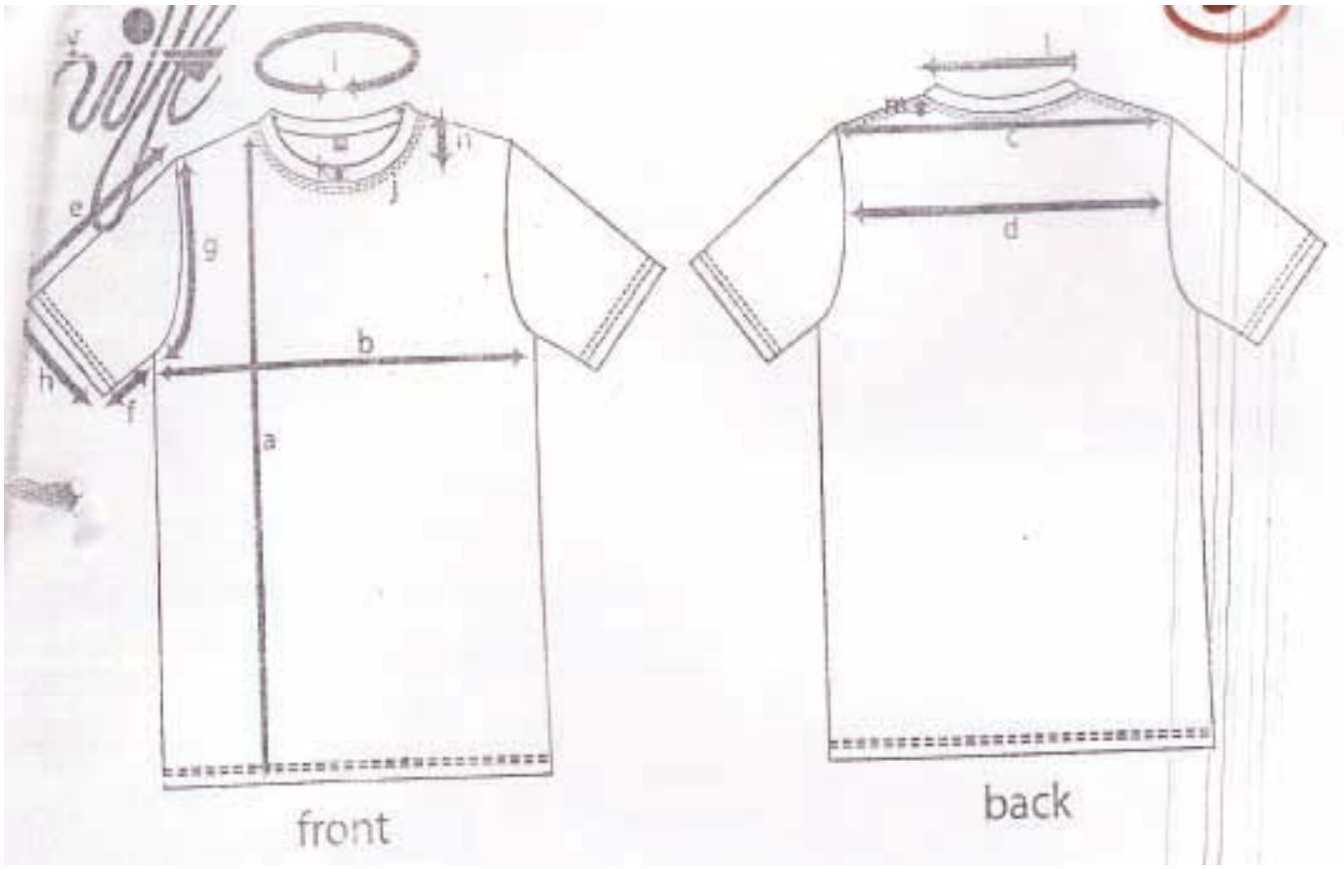
The T-Shirt shall confirm to the requirement given in (Annexure-A)

7. **Packaging**

S.No.	Materials	Dimension
1.	Re-Cycle Card-Board 300 gsm	26 cm x 22 cm
2.	Transparent Polybag (Printed on bag: Kindly dispose after used)	35 cm x 27 cm
3.	Plastic Packing Clip (U Shape)	4.0 cm x .7 cm x .3 cm
4.	Paper Strip/ Fabric Ribbon strip	If required
5.	Wash Care Label, Stamp-Ink on Center Back Neck	Standard Size 3 cm x 4 cm

Annexure-A

MENS T-SHIRT



Size Specification of T-Shirt (half sleeves round neck)							
Sl. No.	**Size**	**Size in inches**					**Tolerance**
		S	**M**	**L**	**XL**	**XXL**	
a	length from (HSP)	28.5	29	29.5	30	31	0.5
b	chest width round	40	42	44	46	48	1.0
c	shoulder seam to seam	17.5	18	18.5	19	19.5	0.25
d	across back 4" down from center back	16.5	17	17.5	18	18.5	0.25
e	sleeve length	8.5	9	9.5	10	10.5	0.25
f	inseam length	4	4.5	5	5.5	6	0.25
g	arm hole curve round	19	20	21	22	23	0.25

h	sleeve opening (round)	14	14	14.5	15	15.5	0.25
i	neck rib round	17.5	18	18.5	19	19.5	0.25
j	neck round on seam	23	23.5	24	24.5	25	0.25
k	neck rib height	1	1	1	1	1	-
l	neck width shoulder seam to shoulder seam	7.75	8	8.25	8.5	8.75	0.15
m	back neck drop	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	-
n	front neck drop	3	3	3	3	3	0.15

QRs/ Specifications of "T-Shirt Half Sleeves Round Neck Disruptive Pattern"

1. **Applicability**- These specifications relate to the manufacturing details of the T-Shirt Half Sleeves Round Neck Disruptive Pattern (Regular & Green Pattern)

2. **Salient Features**:

   The salient features of the garment are: **100% Cotton T-Shirt**

3. **Materials**

   The materials used in the manufacture and packing of the T-Shirt shall conform to the following Standard Specifications:

   The T-Shirt shall be manufactured out of well and evenly single jersey knitted fabric. The constructional details of the fabric are as given under. The knitted fabric shall not be overloaded or pulled in length while calendaring.

S. No.	Specifications	Requirement	Test Method*
1.	Fibre Identification/ Composition **Except Neck** **For Neck** (On Dry mass basis)	 Cotton : 100% Cotton : 97 % Max Elastane : Remainder (%)	AATCC 20:2011 and AATCC 20A:2012 IS: 667/AATC-20 AATCC-20-A/IS:3416
2.	Dimensional Stability	±3.5% (Both directions)	IS 2977-1989
3.	Fabric Weight	200 to 220 (g/m^2)	IS 1964 : 2001
4.	Colour Fastness to Rubbing	Dry: 3-4 or better Wet: 3-4 or better	IS 766-1988
5.	Colour Fastness to Light	4-5 or better	IS 2454: 1985
6.	Colour Fastness to Washing	Change in Colour: 4 or better	IS/ISO 105 C 10 D

		Staining on Cotton: 4 or better	(4): 2006
7	Colour Fastness to Perspiration	4 or better	IS 971:1983
8	Spirality after one Wash	±4% Maximum	IS/ISO 16322-1: 2005 (Washing as per ISO 6330-2A at 60°C followed by flat dry)
9	Banned Azo Colorants	30 mg per Kg, Maximum	IS 15570 : 2005
10	pH Value of aqueous extract (Cold method)	6.0 to 8.5	IS 1390 : 1983
11	Count per yarn, Ne	24's (for manufacturer's guidance)	IS:3442-1980
12	Wales per Inch, Course per Inch,	32 Minimum 48 Minimum	Visual
13	Type of Knit	Single Jersey (Plain Knit)	Visual

* **Latest version of tested Method will be used**.

4. **Design** : The T-Shirt shall be round neck disruptive pattern (Regular & Green Pattern)

Portion to be stitched	**Type of stitch**	**Thread in the Needles**	**Thread in the loopers**
Round Neck – (Crew Neck) T-Shirt and armholes	Overlock & Flat Lock Stitches	80/120	80/120
Note: Ticket No. 80/120 Spun Polyester are used in the needles and loopers.			

5. **Manufacture and Workmanship/ Operation**:

S.No.	Operation	Stitch Code	Needle Size	Thread Size	Machine Used
1.	Front & Back Shoulder Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
2.	Sleeve Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
3.	Side Seam Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
4.	Neck Rib Joining	514	11-Ball Point	80/120	Four Thread Overlock Machines
5.	Top Stitch on Neck Rib	406	11-Ball Point	80/120	Two Needles Flat Lock Machines with needle gauge 4mm
6.	Sleeve & Bottom Hemming	406	11-Ball Point	80/120	Two Needles Flat Lock Machines with needle gauge 8mm

Note: The number of stitches shall not be less than 12 Stitch per inches.

6. **Shape and dimensions**

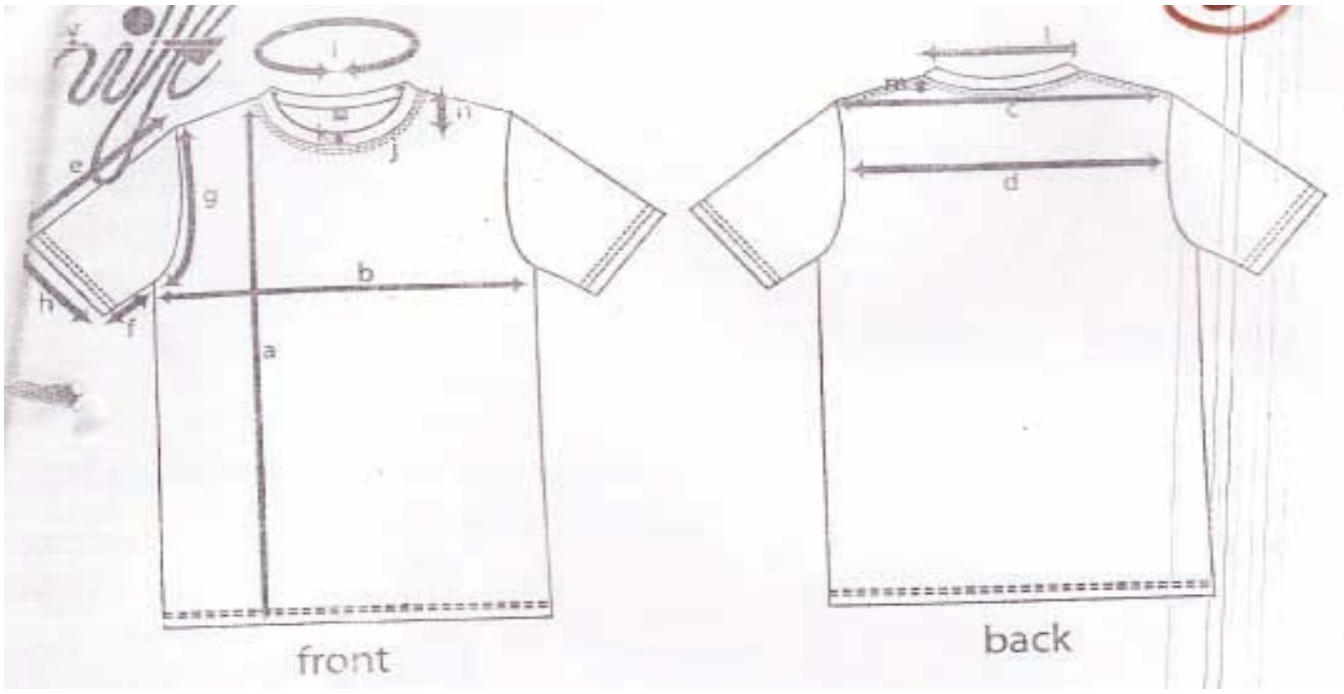
The T-Shirt shall conform to the requirement given in (Annexure-B)

7. **Packaging**

S.No.	Materials	Dimension
1.	Re-Cycle Card-Board 300 gsm	26cm x 22cm
2.	Transparent Polybag (Printed on bag: Kindly dispose after used)	35cm x 27cm
3.	Plastic Packing Clip (U Shape)	4.0 cm x .7 cm x .3 cm
4.	Paper Strip/ Fabric Ribbon strip	If required
5.	Wash Care Label, Stamp-Ink on Center Back Neck	Standard Size 3cm x 4cm

Annexure-B

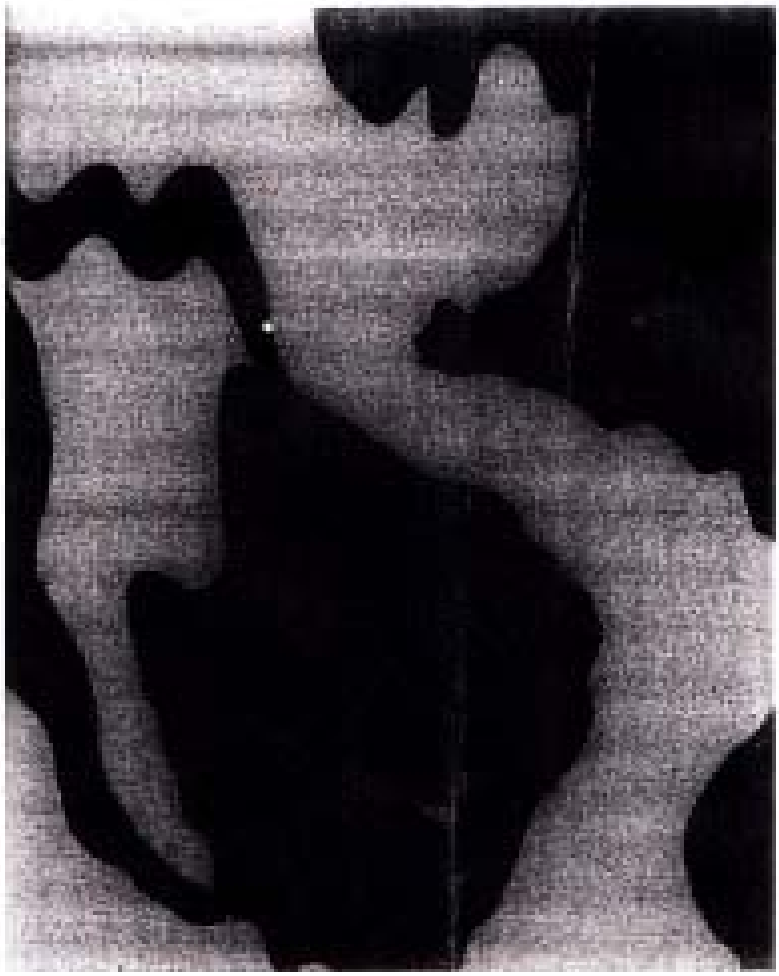
MENS T-SHIRT



Size Specification of T-Shirt (half sleeves round neck)							
Sl. No.	**Size**	**Size in inches**					**Tolerance**
		S	**M**	**L**	**XL**	**XXL**	
a	length from (HSP)	28.5	29	29.5	30	31	0.5

b	chest width round	40	42	44	46	48	1.0
c	shoulder seam to seam	17.5	18	18.5	19	19.5	0.25
d	across back 4" down from center back	16.5	17	17.5	18	18.5	0.25
e	sleeve length	8.5	9	9.5	10	10.5	0.25
f	inseam length	4	4.5	5	5.5	6	0.25
g	arm hole curve round	19	20	21	22	23	0.25
h	sleeve opening (round)	14	14	14.5	15	15.5	0.25
i	neck rib round	17.5	18	18.5	19	19.5	0.25
j	neck round on seam	23	23.5	24	24.5	25	0.25
k	neck rib height	1	1	1	1	1	-
l	neck width shoulder seam to shoulder seam	7.75	8	8.25	8.5	8.75	0.15
m	back neck drop	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	-
n	front neck drop	3	3	3	3	3	0.15

BORDER SECURITY FORCE (BSF) STANDARD



SPECIFICATION FOR COLOUR CODE
OF CLOTH DISRUPTIVE PATTERN

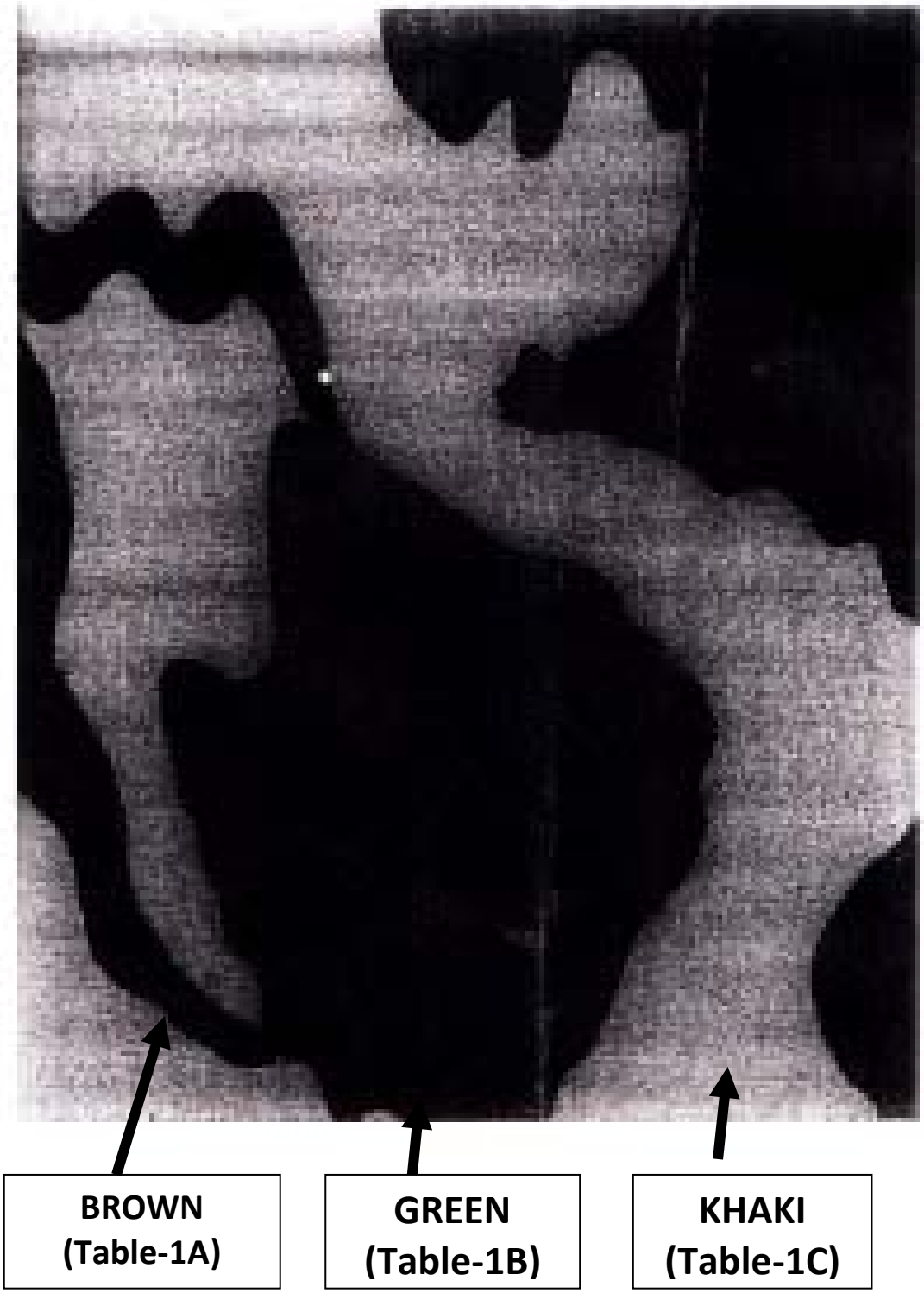


Fig. : SPECIFICATION FOR COLOUR CODE OF CLOTH DISRUPTIVE PATTERN

BSF

Table–1A : Colour Specification of Disruptive Pattern-(Brown)

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	BROWN
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
5.664	5.640	4.432

LCH :

L	C	H
28.485	8.448	63.758

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

BSF

Table–1B : Colour Specification of Disruptive Pattern -(Green)

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	GREEN
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
4.103	4.654	4.176

LCH :

L	C	H
25.725	5.988	135.782

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–1C : Colour Specification of Disruptive Pattern-(Khaki)

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	KHAKI
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
16.918	17.722	10.822

LCH :

L	C	H
49.157	19.275	87.970

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

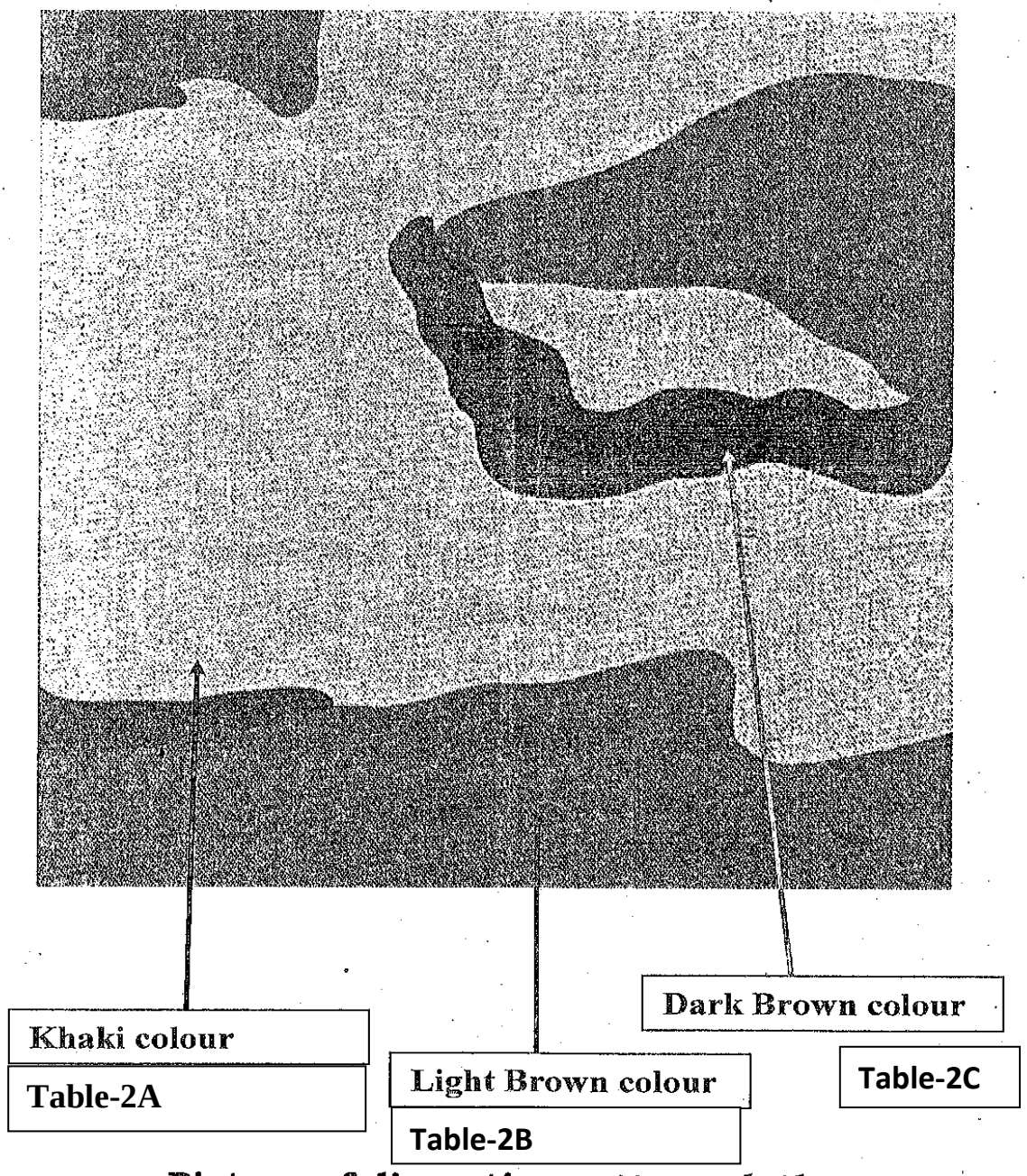
i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

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

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

CENTRAL INDUSTRIAL SECURITY FORCE (CISF)



Picture of disruptive pattern cloth

COLOUR SPECIFICATION OF Cloth Disruptive Pattern-CISF

Table–2A: **Colour Specification of Cloth Disruptive Pattern-Khaki**

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	KHAKI COLOUR
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
19.649	19.862	12.822

LCH :

L	C	H
51.681	18.678	76.999

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–2B : Colour Specification of Cloth Disruptive Pattern-Light Brown

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour : LIGHT BROWN COLOUR

System : CIE LCH

Illuminant Observer : D-65

Standard Observer : 10 Degree

Tristimulus Values :

X	Y	Z
7.187	7.007	3.972

LCH :

L	C	H
31.823	16.740	70.802

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–2C: Colour Specification of Disruptive Pattern-Dark Brown colour

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour : DARK BROWN COLOUR

System : CIE LCH

Illuminant Observer : D-65

Standard Observer : 10 Degree

Tristimulus Values :

X	Y	Z
4.924	4.651	2.999

LCH :

L	C	H
25.716	13.115	58.976

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/reflectance/transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

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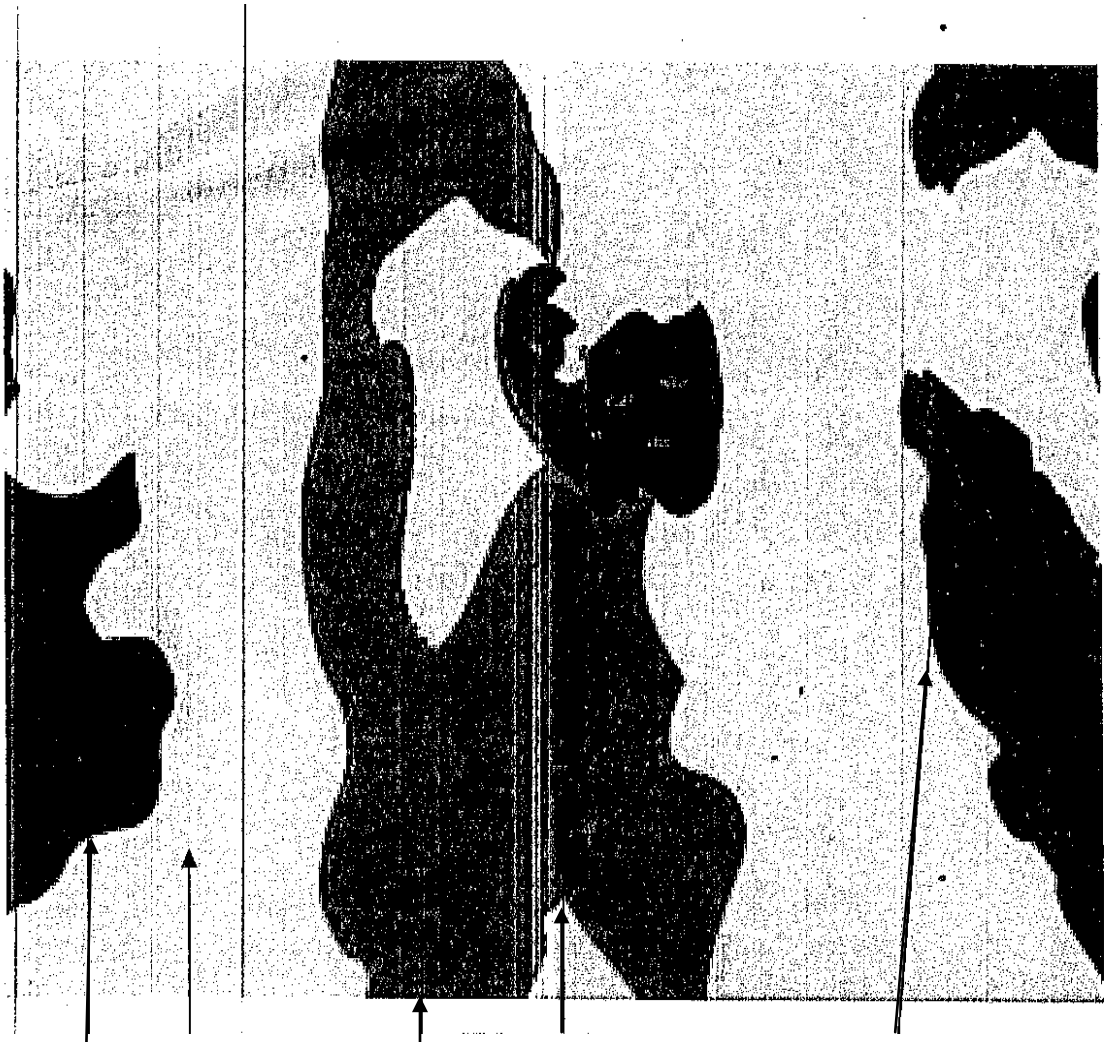

Table–3A: **Colour Specification of Cloth Disruptive (Regular Pattern)-Dark Brown**
(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
13.085	11.287	5.878

LCH :

L	C	H
40.060	26.656	50.968

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–3B : Colour Specification of Cloth Disruptive (Regular Pattern)-Light Brown

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	LIGHT BROWN
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
18.264	16.229	8.161

LCH :

L	C	H
47.274	29.191	56.583

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–3C: Colour Specification of Cloth Disruptive (Regular Pattern)-Dark Green

(Guideline of AATCC Test Method 173: 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	DARK GREEN
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
8.002	8.405	5.392

LCH :

L	C	H
34.812	13.823	88.617

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/reflectance/transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–3D : Colour Specification of Cloth Disruptive (Regular Pattern)-Light Green

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	LIGHT GREEN
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
12.159	12.854	8.200

LCH :

L	C	H
42.542	16.081	90.635

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/reflectance/transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–3E: Colour Specification of Cloth Disruptive (Regular Pattern)-Beige Colour

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	BEIGE COLOUR
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
50.337	51.005	44.003

LCH :

L	C	H
76.682	12.475	64.237

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/reflectance/transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

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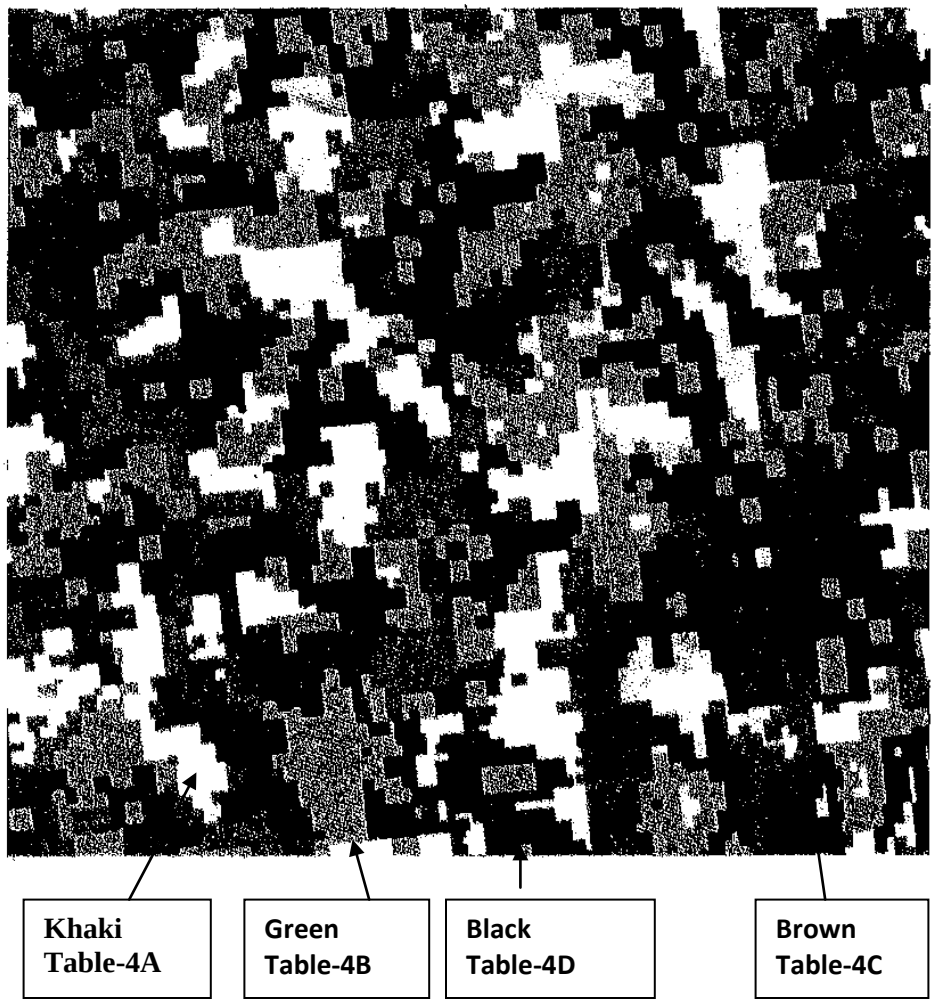


SPECIFICATION FOR COLOUR CODE OF

CLOTH DISRUPTIVE PATTERN (ANO)

Table–4A: **Colour Specification of Cloth Disruptive (ANO Pattern)-Khaki**
(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	KHAKI
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
22.115	23.558	15.980

LCH :

L	C	H
55.643	17.559	93.264

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–4B: **Colour Specification of Cloth Disruptive (ANO Pattern)-Green**
(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	GREEN
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
8.942	10.059	6.062

LCH :

L	C	H
37.948	17.013	106.828

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

ii) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–4C : **Colour Specification of Cloth Disruptive (ANO Pattern)-Brown Colour**
(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	BROWN
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
5.399	5.160	3.688

LCH :

L	C	H
27.186	11.318	56.538

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

iii) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.

iv) If ΔE_{cmc} is greater than 3.0, the sample is unacceptable.

Note-1 : Absorbance/reflectance/transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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 Defuse (sphere) geometry spectrophotometer.

Table–4D : Colour Specification of Cloth Disruptive (ANO Pattern)-Black Colour

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	BLACK
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
3.353	3.428	3.156

LCH :

L	C	H
21.682	3.670	62.153

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

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

iv) If ΔE_{cmc} is greater than 3, the sample is unacceptable.

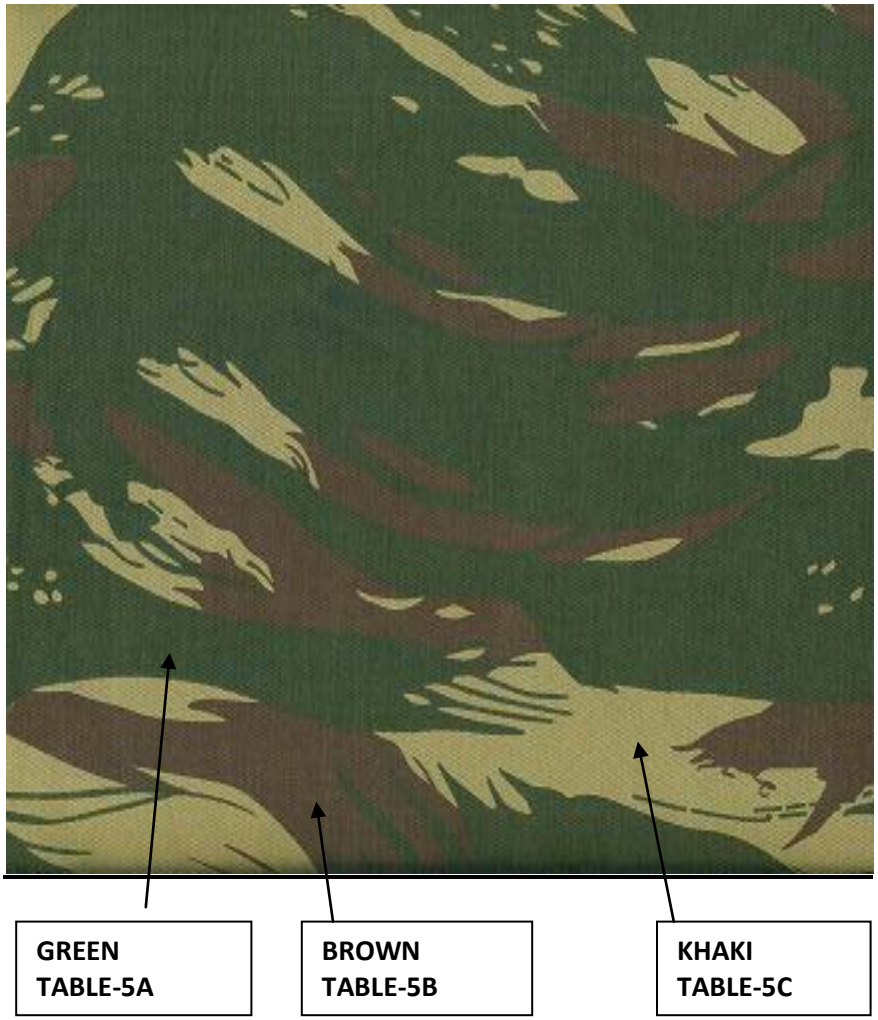
Note-1 : Absorbance/reflectance/transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample of same type i.e. identical fabric construction parameters and filament/fibre composition.

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

SASHASTRA SEEMA BAL (SSB)

COLOUR SPECIFICATION:
ACCORDING TO SSB CLOTH LFCD (REGULAR) PATTERN

CENTRAL RESERVE POLICE FORCE (CRPF)



Disruptive Print-Colour Specification for CRPF

Table–5A: Specification of colour Disruptive Pattern-Green

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
4.385	4.766	3.826

LCH :

L	C	H
26.057	6.933	104.977

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–5B: Specification of colour Disruptive Pattern-Brown

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
5.262	5.192	4.030

LCH :

L	C	H
27.275	8731	61.138

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–5C: Specification of colour Disruptive Pattern-Khaki

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
19.478	19.974	12.295

LCH :

L	C	H
51.808	19.983	81.959

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

CoBRA (CRPF)

Disruptive Print-Colour Specification for CoBRA, CRPF

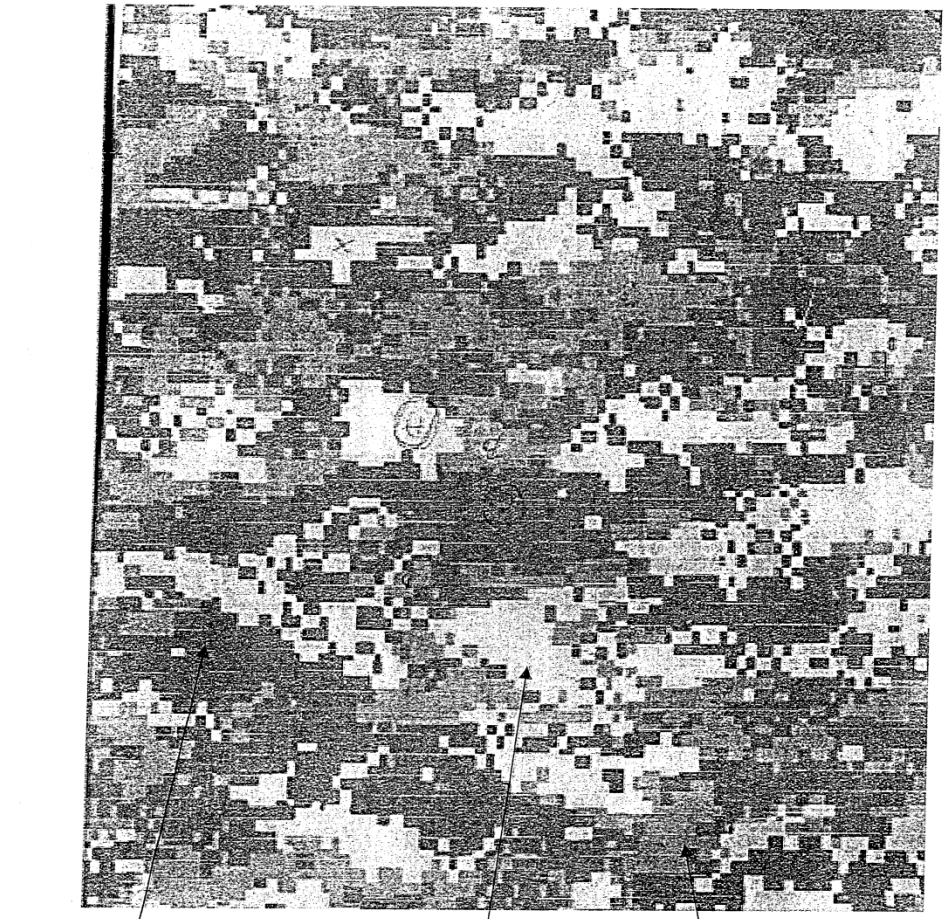


Fig. 2 : Disruptive Print –LIGHT COLOUR (For colour identification only)

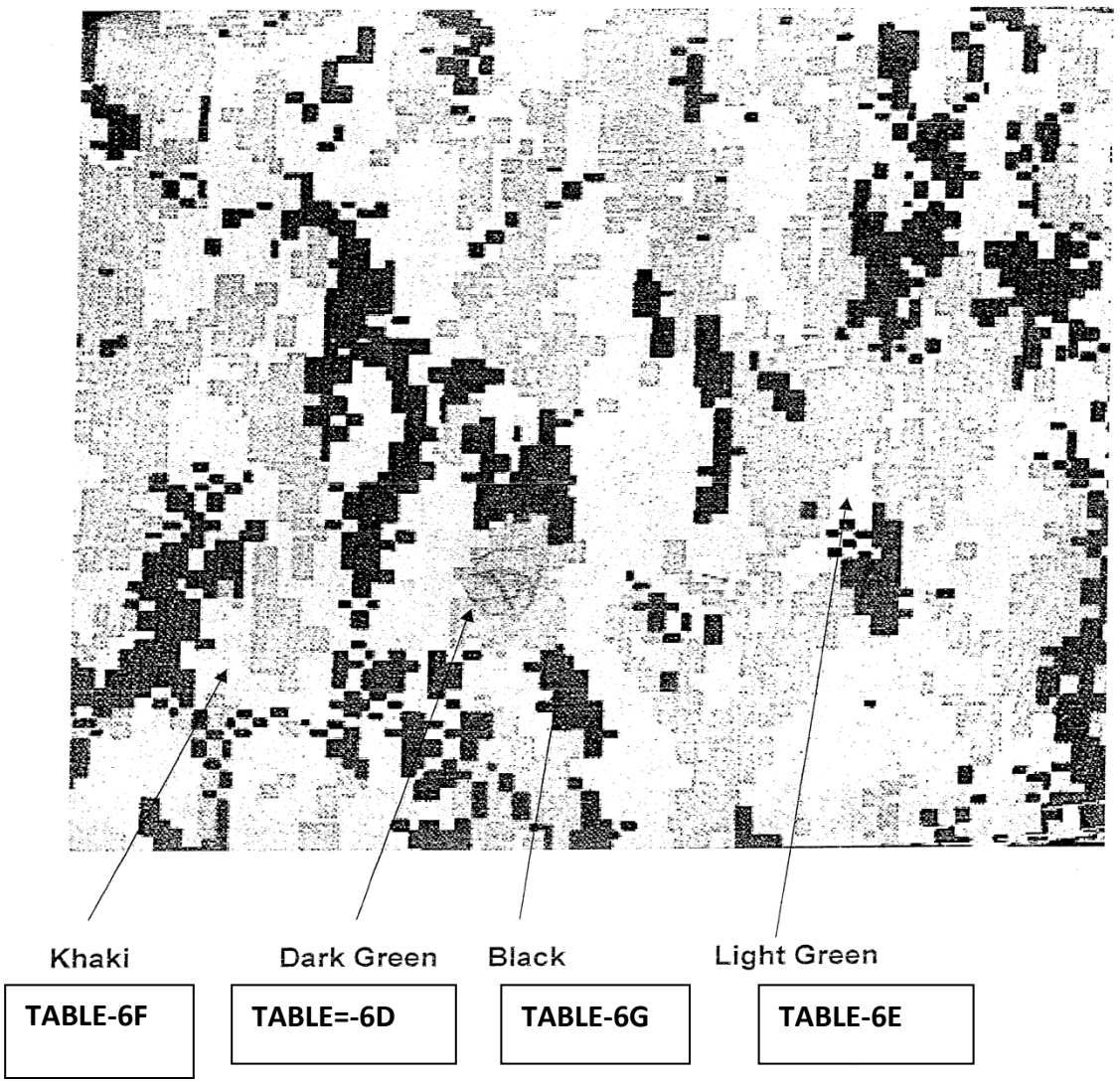


Fig. 3 Disruptive Print –DARK COLOUR (For colour identification only)

TABLE-6(A-C): DISRUPTIVE PRINT-LIGHT COLOUR

Table–6A: Specification of colour Disruptive Pattern –Dark Green

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
12.113	13.044	12.675

LCH :

L	C	H
42.829	3.739	117.481

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

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

iv) If ΔE_{cmc} is greater than 3, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–6B: **Specification of colour Disruptive Pattern (Light Colour)–Light Green**
(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour : Light Green

System : CIE LCH

Illuminant Observer : D-65

Standard Observer : 10 Degree

Tristimulus Values :

X	Y	Z
19.319	20.577	18.966

LCH :

L	C	H
52.783	5.930	99.085

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–6C: Specification of colour Disruptive Pattern (Light Colour)–Khaki

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
31.643	32.716	28.306

LCH :

L	C	H
63.930	9.848	76.272

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

TABLE-6(D-G): DISRUPTIVE PRINT-DARK COLOUR

Table–6D: Specification of colour Disruptive Pattern (Dark Colour)–DARK GREEN COLOUR

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
5.234	5.964	4.813

LCH :

L	C	H
29.321	8.650	124.923

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–6E: Specification of colour Disruptive Pattern (Dark Colour)–LIGHT GREEN COLOUR

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
13.838	14.418	11.139

LCH :

L	C	H
44.827	10.951	84.217

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–6F: Specification of colour Disruptive Pattern (Dark Colour)–KHAKI COLOUR

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
10.410	10.217	6.302

LCH :

L	C	H
38.229	16.771	70.096

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–6G: Specification of colour Disruptive Pattern (Dark Colour)–BLACK COLOUR

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

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

Tristimulus Values :

X	Y	Z
2.294	2.393	2.994

LCH :

L	C	H
17.428	3.064	280.297

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

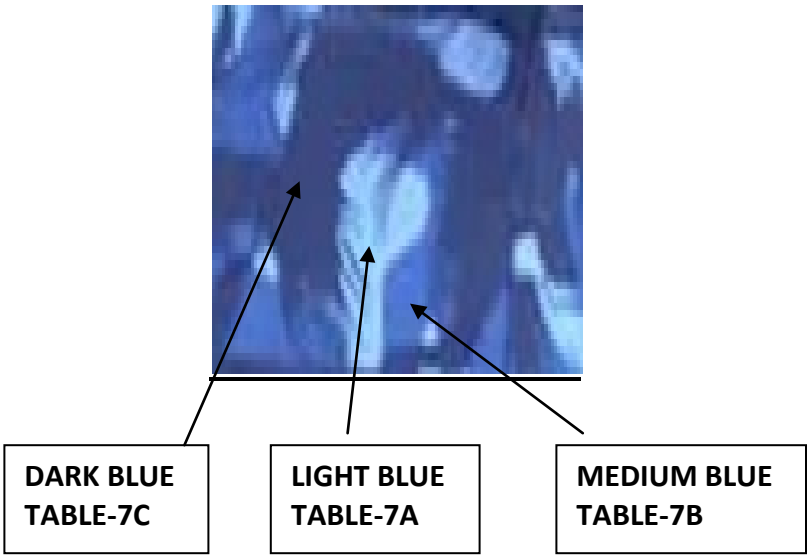
i) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.

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

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

RAPID ACTION FORCE(RAF), CRPF



COLOUR SPECIFICATION OF DISRUPTIVE PATTERN

RAF, CRPF

Table–7A: **Colour Specification of Cloth Disruptive Pattern-Light Blue**
(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	Light Blue
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
23.673	25.605	45.514

LCH :

L	C	H
57.660	23.383	263.32

CMC (l:c) : 2:1

Colour Difference, ΔE_{cmc} : ≤ 3.0

Interpretation of Results:

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

vi) If ΔE_{cmc} is greater than 3, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–7B: **Colour Specification of Cloth Disruptive Pattern-Medium Blue**
(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	Medium Blue
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
11.164	11.863	25.099

LCH :

L	C	H
40.998	24.040	268.623

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

Table–7C: Colour Specification of Cloth Disruptive Pattern-Dark Blue

(Guideline of AATCC Test Method 173 : 2009 & AATCC Evaluation Procedure-7:2009)

Colour	:	Dark Blue
System	:	CIE LCH
Illuminant Observer	:	D-65
Standard Observer	:	10 Degree

Tristimulus Values :

X	Y	Z
3.878	3.905	9.061

LCH :

L	C	H
23.355	20.051	277.651

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, the sample is unacceptable.

Note-1 : Absorbance/ reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between sample 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.

VIP Security, CRPF

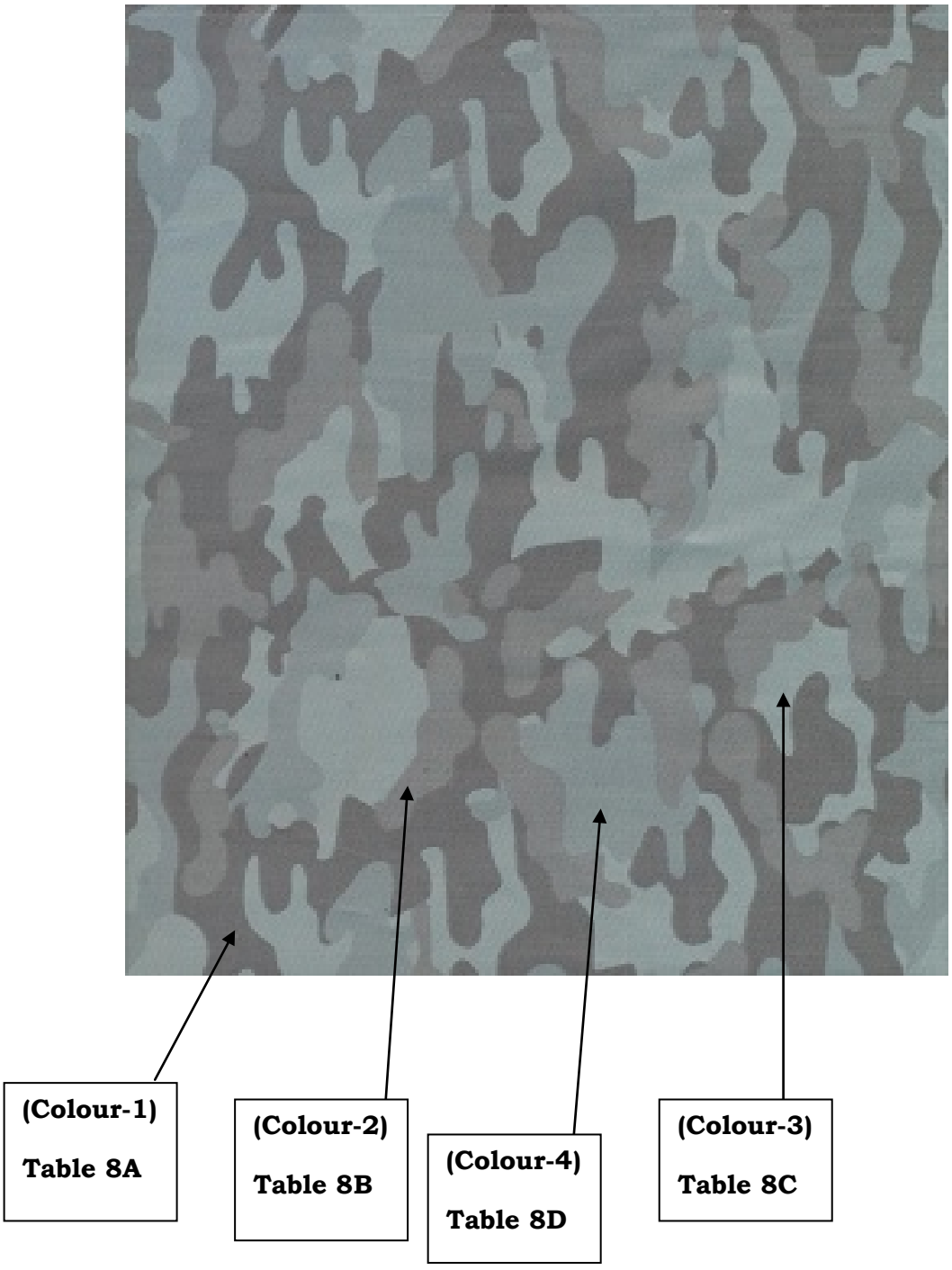
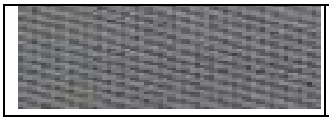


Fig. : Disruptive Print (For colour identification only)

COLOUR SPECIFICATION OF DISRUPTIVE PATTERN
VIP Security, CRPF

TABLE 8A (Fig.) Specification of colour of Cloth disruptive-Colour-1

(AATCC Test method 173 : 2009 & AATCC Evaluation Procedure 7 : 2009)

Colour	:	 **Colour-1**
System	:	**CIE LCH**
Illuminant Observer	:	**D 65**
Standard Observer	:	**10 Degree**

Tristimulus Values :

X	Y	Z
9.273	9.878	10.216

L C H :

L	C	H
37.623	1.364	122.874

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

Interpretation of Results:

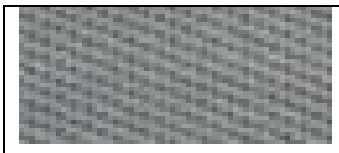
i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.
ii) If ΔE_{cmc} is greater than 3.0, then sample is unacceptable.

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.

TABLE 8B (Fig.) Specification of colour of Cloth disruptive-Colour-2

(AATCC Test method 173 : 2009 & AATCC Evaluation Procedure 7 : 2009)

Colour	:		**Colour-2**

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

Tristimulus Values :

X	**Y**	**Z**
13.127	**14.041**	**14.564**

L C H :

L	**C**	**H**
44.292	**1.679**	**134.946**

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

Interpretation of Results:

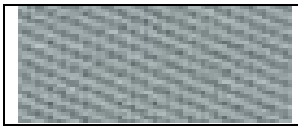
i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.
ii) If ΔE_{cmc} is greater than 3.0, then sample is unacceptable.

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.

TABLE 8C (Fig.) Specification of colour of Cloth disruptive-Colour-3

(AATCC Test method 173 : 2009 & AATCC Evaluation Procedure 7 : 2009)

Colour	:	 **Colour-3**
System	:	**CIE LCH**
Illuminant Observer	:	**D 65**
Standard Observer	:	**10 Degree**

Tristimulus Values	:	**X**	**Y**	**Z**
		19.156	**20.574**	**2.355**

L C H	:	**L**	**C**	**H**
		52.480	**1.810**	**195.074**

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

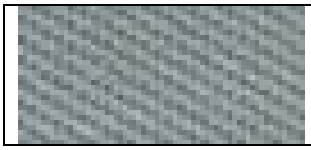
Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.
ii) If ΔE_{cmc} is greater than 3.0, 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.

TABLE 8 D (Fig.) Specification of colour of Cloth disruptive
(AATCC Test method 173 : 2009 & AATCC Evaluation Procedure 7 : 2009)

Colour	:		**Colour-4**
System	:	**CIE LCH**	
Illuminant Observer	:	**D 65**	
Standard Observer	:	**10 Degree**	

Tristimulus Values	:	**X**	**Y**	**Z**
		15.951	**17.234**	**18.920**

L C H	:	**L**	**C**	**H**
		48.554	**2.347**	**200.673**

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

Interpretation of Results:

i) If ΔE_{cmc} is less than or equal to 3.0, then sample is acceptable.
ii) If ΔE_{cmc} is greater than 3.0, 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.

Number of T-Shirts to be selected from a lot and permissible number of Non-conforming T-Shirts

No. of the T-Shirt in the lot	**Non-destructive Testing**		**Non-destructive Testing**	
	Number of the T-Shirt to be selected	Number of the T-Shirt to be selected	Number of T-Shirts to be selected	Permissible Number of Non-conforming T-Shirts
(1)	(2)	(3)	(4)	(5)
Up to 300	10	1	2	0
301-500	20	1	3	0
501-1000	30	2	5	0
1001-3000	50	3	8	0
3001 and above	80	5	13	1