

No. U-II-3(Spec)/2013-14-Prov (CoBRA) 90 //
भारत सरकार/Government of India
गृह मंत्रालय/Ministry of Home Affairs
पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division
संभरण-I डेस्क /Prov.I Desk

26, Jaisalmer House, Man Singh Road,
New Delhi, the 5th October, 2015

To,

The DsG: CRPF & BPR&D.

Subject: Revised QRs/Specifications of Cloth (NYCO) Disruptive Pattern for CoBRA.

Sir,

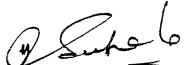
The undersigned is directed to refer to the subject mentioned above and to say that the revised QRs/Specifications in respect of Cloth (NYCO) Disruptive Pattern for CoBRA as per Annex-I have been approved by the competent authority in MHA.

2. Henceforth, CRPF should procure the above items, required by them strictly as per the laid down QRs/Specification.

3. CRPF will be accountable for correctness of the QRs/Specifications of Cloth (NYCO) Disruptive Pattern.

4. QRs/Specifications of Disruptive pattern Uniform Cloth made of Nylon and Cotton material for CoBRA troops issued earlier vide MHA letter No.U.II-3(Spec)/2013-14-Prov(CoBRA)/1337 dated 24.12.2013 is rescinded.

Yours faithfully,


(M. N. Sukote)

Under Secretary to the Govt. of India

15.10.2015

Encl: As above.

Copy forwarded for necessary action to:

SO (IT), MHA - with the request to host the revised QRs/Specifications of Cloth (NYCO) Disruptive Pattern for CoBRA on official website of MHA (under the page of Organizational Set up, Police Modernization Division, Clothing items) and remove earlier QRs/Specifications vide letter No.U.II-3(Spec)/2013-14-Prov(CoBRA)/1337 dated 24.12.2013 (http://www.mha.nic.in/sites/upload_files/mha/files/QRS-Nylon-Cobra-311213.pdf). Soft copy is being sent through email also.


(R. K. Soni)

Section officer (Prov-I)

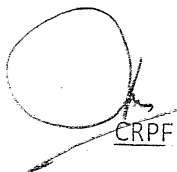
Copy to: Director (Procurement), MHA



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0.0 FORWARD

- 0.1. This specification has been prepared by Office of the Inspector General of Police, CoBRA sector, CRPF on the authority of The Inspector General of Police, CoBRA sector.
- 0.2. This specification is for use by the CRPF - CoBRA.
- 0.3. This specification would be used for manufacture, quality assurance and procurement of the item.
- 0.4. Quality assurance authority for the item covered in this specification is Office of the Inspector General of Police, CoBRA Sector, 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 Inspector General of Police, CoBRA Sector
CRPF, Sector -IV, PUSHP VIHAR,
New Delhi-110017
- 0.5. Copies of the specification can be obtained from:
- Office of the Inspector General of Police, CoBRA Sector
CRPF, Sector -IV, PUSHP VIHAR,
New Delhi-110017
- 0.6. This specification holds good only for the supply order for which it is issued.
- 0.7. The Quality Assurance Authority reserves the right to amend or modify this specification as and when required.
- 0.8. The Quality Assurance Authority is the competent authority to grant concessions, if any, in respect of any clause contained in this specification

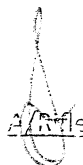

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15
98

0.9 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 The specification prescribes the requirement of Disruptive Pattern (Camouflage pattern) cloth (Dark & Light colour) for jungle operations made of Nylon and Cotton blended material, in general known as NYCO.

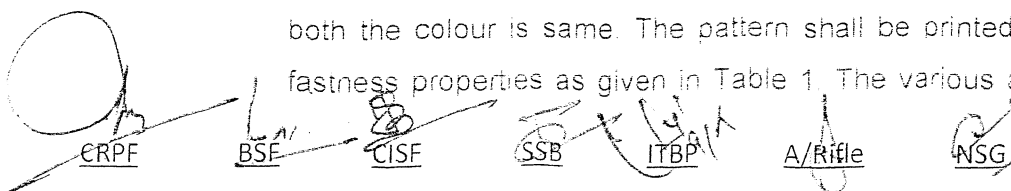
1.2 This specification does not specify the design/ pattern and stitching of uniform from the disruptive pattern cloth.

1.3 This specification does not specify general appearance, feel etc of the Disruptive Pattern cloth.

2.0 MANUFACTURE AND FINISH

2.1 The Disruptive Pattern cloth shall have Rip stop weave (IS 13510:2000). It shall be made from uniform blend of 50% Nylon fibres with 50% Cotton. The selvages shall be firm and straight. The cloth shall be well singed. The fabric shall be 'Heat set' and fully shrunk. The blend composition of the cloth shall conform to the requirements given in the Table 1

2.2 The disruptive pattern may be obtained by repeats of the design of 34.25 inch \pm 5% in warp direction and 33.25 inch \pm 5% weft direction (see Figure 1). Figure 2 and Figure 3 indicate various colours of the light and dark colour disruptive pattern cloths respectively. The repeat of the design in both the colour is same. The pattern shall be printed using dyes having fastness properties as given in Table 1. The various areas of the pattern


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8
99

shall be properly registered in relation to each other and shall present definite sharp demarcations with a minimum of feathering or spew. Each pattern shall show solid coverage. Dyes used in the dyeing and printing shall be free from banned amine (Test method IS 15570 : 2005)

2.3 The fabric should be supplied in the width of 150 cm and above . The length of each piece shall be 40 meters or as agreed between supplier and purchaser.

2.4 Freedom from Defect: The cloth shall be free from major flaws (defects) which shall not exceed 10 per 100 meters length (see Note). A list of major flaws (defects) is given in Appendix A of IS : 4125. The allowance for providing extra length of cloth in lieu of the flaws (defects) not exceeding the permissible limit may be agreed between the buyer and seller. It shall also be free from dyeing defects such as streaks, stains and uneven dyeing and improper printing in case of printed design etc. The finished cloth shall be free from sizing, filling and dressing materials and substance liable to cause subsequent tendering

The Disruptive Pattern cloth shall be free from any other defect which may significantly mark the appearance or serviceability.

Note- The number of defects shall be determined on all pieces under test and converted into number of defects per 100 meter length. (See 6.4)

2.5 The design and shape of the Disruptive Pattern Uniform shall be as per the buyer requirement. The type of stitch (see IS 11161: 2000 Reaffirmed 2007) and count of sewing thread for seams and stitches (see IS 10789: 2000, Reaffirmed 2007) at various portions of Disruptive Pattern Uniform may be as per the requirement of buyer. The uniform may be assembled throughout with lock stitches regulated at 35 to 40 stitches per 10 cm. The stitches shall be of even tension with all loose ends fastened. However selection of type of stitch and sewing thread shall be as agreed to between the buyer and seller. The disruptive pattern uniform shall be

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7
100

visually examined and shall be evenly sewn or stitched and shall be free from missed stitches, holes, cuts and free from puckering defects. The colour of the sewing thread used in the disruptive pattern uniform shall not bleed or stain.

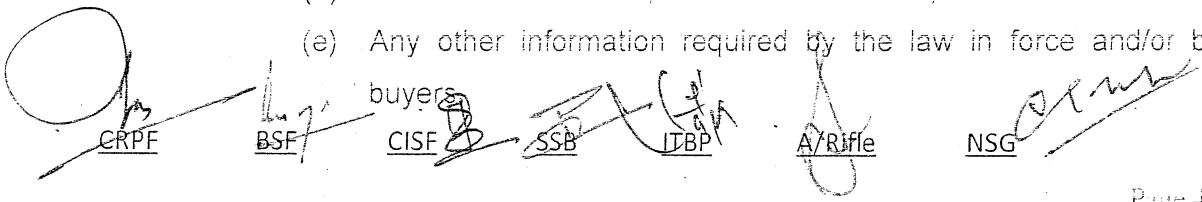
3.0 REQUIREMENTS

- 3.1 The Disruptive Pattern Uniform cloth shall conform to the requirements given in Table 1. Specification for colour used in printing shall be as given in Table 2A, 2B, and 2C for light colour disruptive printed cloth and Table 3A, 3B and 3C for dark colour disruptive printed cloth.
- 3.2 Sealed Sample: In order to illustrate or specify the indeterminable characteristics such as general appearance, luster, feel and print design of the Disruptive Pattern cloth, a sample has been agreed upon and sealed; the supply shall be conformity with the sample in such respects.
- 3.3 The custody of the sealed sample shall be a matter of prior agreement between the buyer and seller.

4.0 MARKING

Each piece of cloth shall be marked with the following :

- (a) Name of the material, namely disruptive pattern cloth-Nylon/cotton blended material;
- (b) Composition, namely, Nylon 50 percent and cotton 50 percent to be marked on every alternate meter of the cloth at a height not exceeding 2.5 cm from the selvedge;
- (c) Length and width;
- (d) Manufacturer's name, initials or trade-mark;
- (e) Any other information required by the law in force and/or by the buyers;


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8
101

5.0 PACKAGING & PACKING

The Disruptive Pattern Uniform cloth shall be packed in polyethylene or polypropylene bags and or in box, as required by the buyer (see IS 2194 and IS 2195).

6.0 SAMPLING AND CRITERIA FOR CONFORMITY

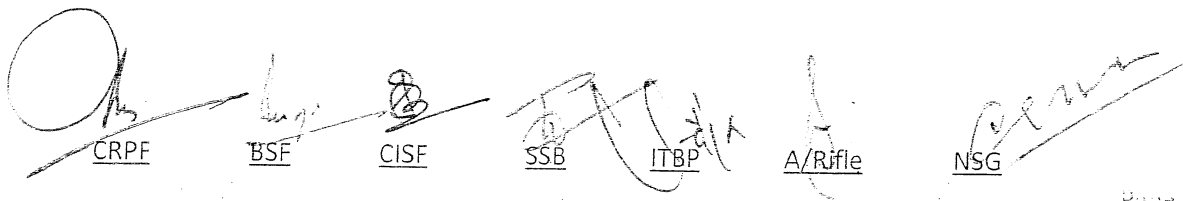
6.1 The number of pieces to be selected at random from a lot for inspection shall be according to col. 1 and 2 of Table 4. To ensure randomness of selection, procedure given in IS : 4905 shall be followed.

6.2 The sampling procedure detailed in 6.2 to 6.4 shall give desired protection to the buyer and the seller, provided that the lot submitted for inspection is homogeneous. To achieve this, the manufacturer shall maintain a system of process control at all stages of manufacturing ensuring the Disruptive Pattern cloth tendering by him for inspection to comply with the requirements of this standard in all respects.

NOTE: For effective process control the use of statistical quality control technique is recommended and helpful guidance may be obtained in this respect from IS 397 (Part I) : 2003 and IS 397 (Part II) : 2003.

6.3 Lot: The number of pieces of cloth of same composition and constructional particulars delivered to a buyer against a dispatch note shall constitute a lot.

6.3.1 The conformity of a lot to the requirements of this specification shall be determined on the basis of the tests carried out on the samples selected from the lot.


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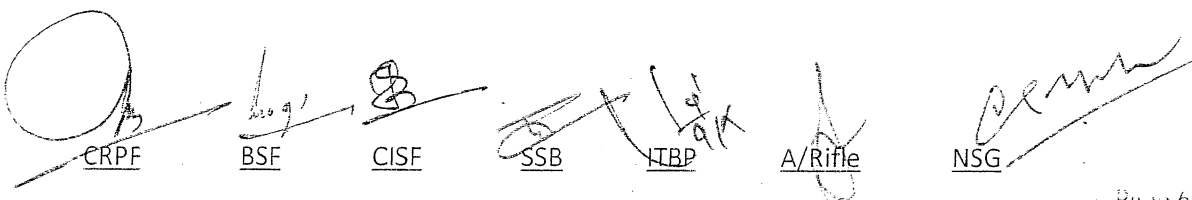
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102

6.4 The number of pieces to be tested at criterion for conformity for each of the characteristics shall be as follows:

Characteristics	No. of Samples	Criterion for conformity
i) Visual inspection for freedom from major flaws (defects)	According to col 2 of Table 4	All the pieces of cloth selected according to col 2 of Table 4 shall be visually examined for major flaws, meter by meter. The Total number of defects observed on sample piece shall be converted into number of defects per 100 meter length. Permissible number of non-conforming pieces not to exceed corresponding number given in col 3 of Table 4.
ii) Construction, Ends, picks, mass, length and width	According to col 4 of Table 4	All specimens shall satisfy the relevant requirements.
iii) Blend composition, shrinkage, breaking strength, tearing strength, colour fastness, pH etc.	According to col 5 of Table 4	All specimens shall satisfy the relevant requirements.

7.0 TERMINOLOGY

For the purpose of this specification the definitions given in IS 3596:1967 (RA 2004) shall apply.



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103

Table 1 : Requirements of Disruptive pattern cloth


Sl. No.	Characteristics	Requirements	Test Method
1	Approximate count of yarn (For guidance only). Ne - Warp - Weft	20s X 2 (2/40 ^s) 16s	IS 3442:1980
2	Composition, % - Nylon 6 6 - Cotton	50 ± 5 Remainder	AATCC Test method 20 and 20A
3	End/dm (minimum)	400	IS 1963:1981
4	Picks/dm (minimum)	180	IS 1963:1981
5	Width, cm	150 and above	IS 1954:1990
6	Mass, gm/m ²	220 ± 15	IS 1964:1970
7	Breaking strength, Newton (Minimum) - Warp-wise - Weft-wise	1200 650	IS 1969:1985
8	Elongation at break, % (Minimum) - Warp-wise - Weft-wise	35 20	IS 1969:1985
9	Tearing Strength, Newton (Minimum) - Warp-wise - Weft-wise	35 35	IS 6489:1993
10	Abrasion Resistance - Up to 50,000 cycles	-No thread breakage	IS 12673:1989
11	Colour fastness to washing - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS/ISO 105 C10,C(3) 2006
12	Colour fastness to perspiration - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS 971:1983
13	Colour fastness to Hot		IS 689:1988


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NSG
Page 7 of 21

11
104

	pressing (200°C. only dry press) - Change in colour - Staining on adjacent Fabric	4 or better 4 or better	
14	Colour fastness to rubbing - Dry - Wet	4 or better 4 or better	IS 766:1988
15	Colour fastness to sea water - Change in colour - Staining on adjacent Fabric	4 or better 4 or better	IS 690:1988
16	Colour fastness to light	4-5 or better	IS 2454:1985
17	Dimensional Change due to relaxation, both directions, percentage, maximum	1	IS 2977:1967 (Re-affirmed 2005)
18	Heat Shrinkage both directions, percentage, maximum	2	IS 12170: 1987 (Temperature : 150±2°C)
19	pH value	6.0-8.0	IS 1390 (Cold method) :1983
20	Pilling (after 5 hours of test), Minimum	4	IS 10971.1984
21	Wrinkle Recovery (after 24 hours), Minimum	3	AATCC 128-2004
22	Air permeability, cc/sec/cm ² , Minimum	3	IS 11056:1984
23	Water vapour permeability (water method), g/m ² /day, Minimum	1400	ASTM E-96 / E 96 M-05, (Water method, Temperature: 32 ±2°C, RH 50±2%, Upright Method; Air velocity 0.02-0.3m/Sec)
24	Colour difference (for all colours)(ΔE)	≤ 3.0	See Table 2 and 3


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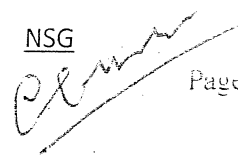

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129
105

TABLE – 2 Disruptive Print –LIGHT COLOUR

Table-2A: Specification of colour of Disruptive Pattern Uniform- Dark Green
(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

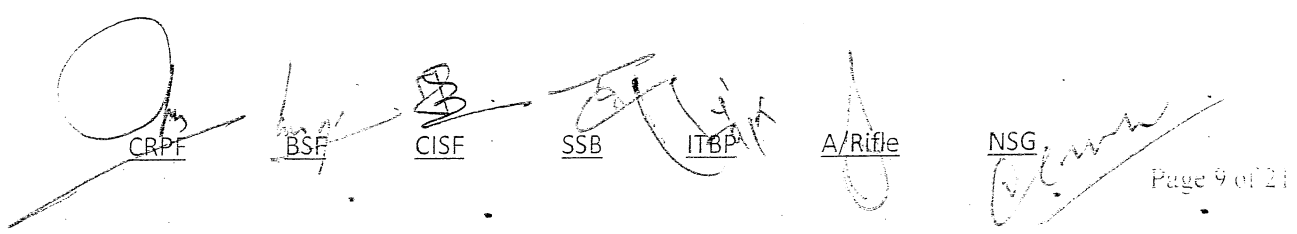
Colour	:	Dark Green		
System	:	CIE LCH		
Illuminant Observer	:	D 65		
Standard Observer	:	10 Degree		
Tristimulus Values	:	X	Y	Z
		12.113	13.044	12.675
L C H	:	L	C	H
		42.829	3.739	117.481
CMC (l:c)	:	2:1		
Colour difference, ΔE_{cmc}	:	≤ 3.0		

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



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173

166

Table 2B: Specification of colour of Disruptive Pattern Uniform- Light Green
(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

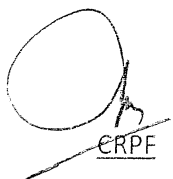
Colour	:	Light Green		
System	:	CIE LCH		
Illuminant Observer	:	D 65		
Standard Observer	:	10 Degree		
Tristimulus Values	:	X	Y	Z
		19.319	20.577	18.966
L C H	:	L	C	H
		52.483	5.930	99.085
CMC (l:c)	:	2:1		
Colour difference, ΔE_{cmc}	:	≤ 3.0		

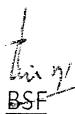
Interpretation of Results :

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

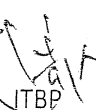
Note-2 : Test should be carried out after proper conditioning as per AATCC 173.

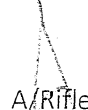

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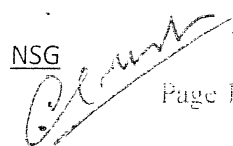

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14
107

Table-2C: Specification of colour of Disruptive Pattern Uniform- 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
		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 :

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

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TABLE - 3 Disruptive Print -DARK COLOUR

Table-3A: Specification of colour of Disruptive Pattern Uniform- Dark Green

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

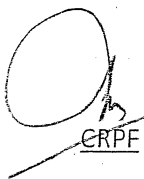
Colour	:	Dark Green		
System	:	CIE LCH		
Illuminant Observer	:	D 65		
Standard Observer	:	10 Degree		
Tristimulus Values	:	X	Y	Z
		5.234	5.964	4.813
L C H	:	L	C	H
		29.321	8.650	124.923
CMC (1:c)	:	2:1		
Colour difference, ΔE_{cmc}	:	≤ 3.0		

Interpretation of Results :

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

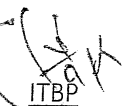
Note-2 : Test should be carried out after proper conditioning as per AATCC 173.


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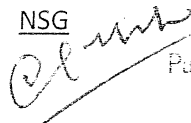

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116
109

Table 3B: Specification of colour of Disruptive Pattern Uniform- Light Green
(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

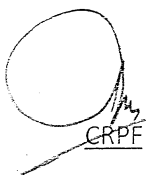
Colour	:	Light Green		
System	:	CIE LCH		
Illuminant Observer	:	D 65		
Standard Observer	:	10 Degree		
Tristimulus Values	:	X	Y	Z
		13.838	14.418	11.139
L C H	:	L	C	H
		44.827	10.951	84.217
CMC (l:c)	:	2:1		
Colour difference, ΔE_{cmc}	:	≤ 3.0		

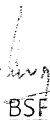
Interpretation of Results :

- (ix) If ΔE_{cmc} is less than or equal to 3, then sample is acceptable.
- (x) 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.

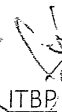
Note-2 : Test should be carried out after proper conditioning as per AATCC 173


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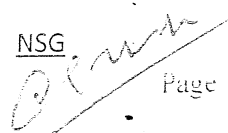

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17
110

Table-3C: Specification of colour of Disruptive Pattern Uniform- Khaki
(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

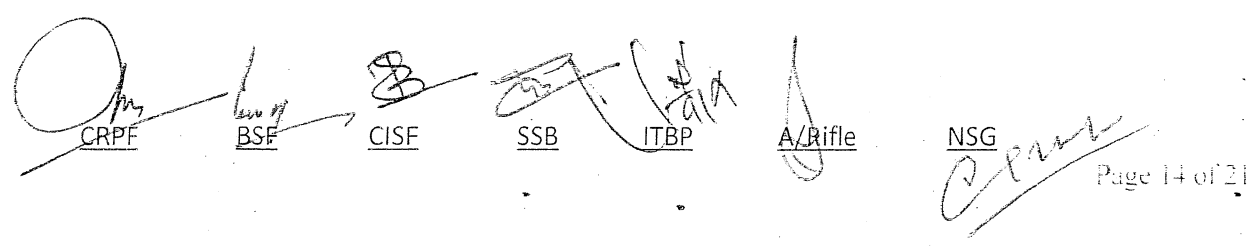
Colour	:	Khaki
System	:	CIE LCH
Illuminant Observer	:	D 65
Standard Observer	:	10 Degree
Tristimulus Values	:	X Y Z
		10.410 10.217 6.302
LCH	:	L C H
		38.229 16.771 70.096
CMC (l:c)	:	2:1
Colour difference, ΔE_{cmc}	:	≤ 3.0

Interpretation of Results :

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



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Page 14 of 21

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11/

Table-3D: Specification of colour of Disruptive Pattern Uniform- Black
(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

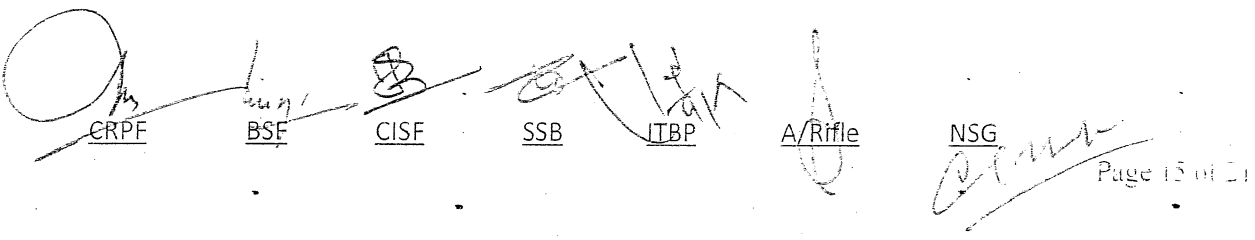
Colour	:	Black		
System	:	CIE LCH		
Illuminant Observer	:	D 65		
Standard Observer	:	10 Degree		
Tristimulus Values	:	X	Y	Z
		2.294	2.393	2.994
L C H	:	L	C	H
		17.428	3.064	280.297
CMC (l:c)	:	2:1		
Colour difference, ΔE_{cmc}	:	≤ 3.0		

Interpretation of Results :

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



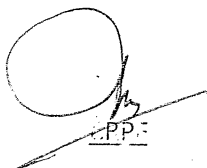
 CRPF BSE CISF SSB ITBP A/Rifle NSG

Page 15 of 21

79
112

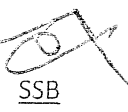
Table 4 : Sample size and permissible number of non-conforming
Disruptive Printed Uniform Cloth

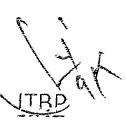
Lot size (1)	Sample size (2)	Permissible number of non-conforming pieces (3)	Sub-sample size (4)	Sub-sub sample size (5)
Up to 100	5	0	3	3
101-150	8	0	3	3
151-300	13	1	5	3
301-500	20	1	5	3
501-1000	32	2	8	5
1001 and above	50	3	13	5


P.P.F.


P.S.G.

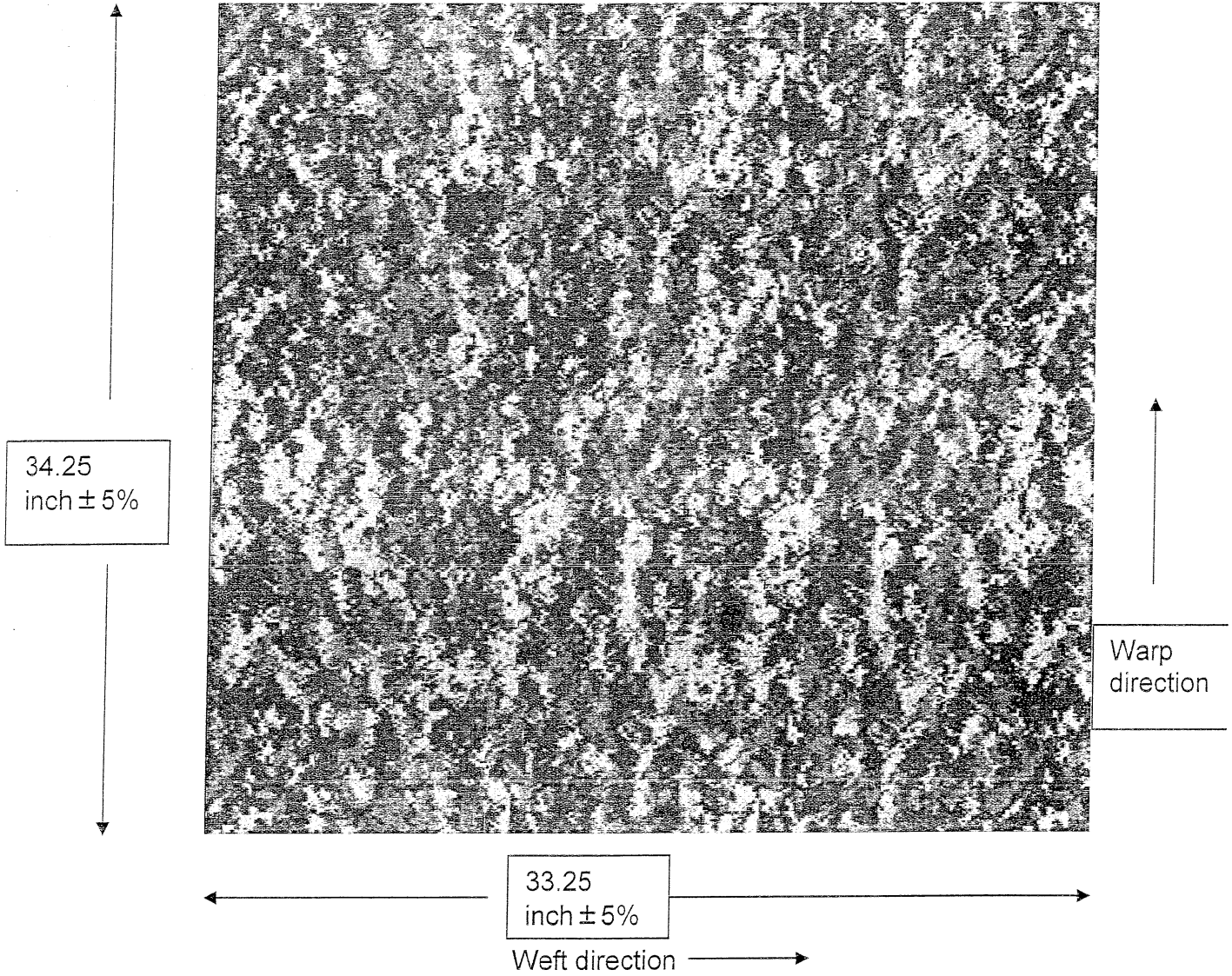

C.I.S.F.


S.S.B.


I.T.R.P.


A.T.M.C.

20
113



Scale:
Warpwise: 1cm=approx. 2.36 inch
Weftwise: 1 cm-approx 2.30 inch

Fig.1 : Disruptive Print –One repeat of the design
(For true colours refer sealed fabric sample)

CRPF BSF CISF SSB ITBP A/Rifle NSG

21
114



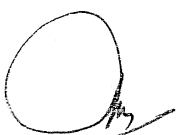
Dark Green


Khaki

Light Green

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

(For true colours refer sealed fabric sample)

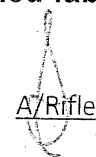

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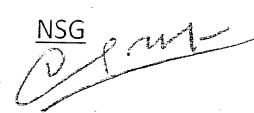

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A/Rifle


NSG

92
115

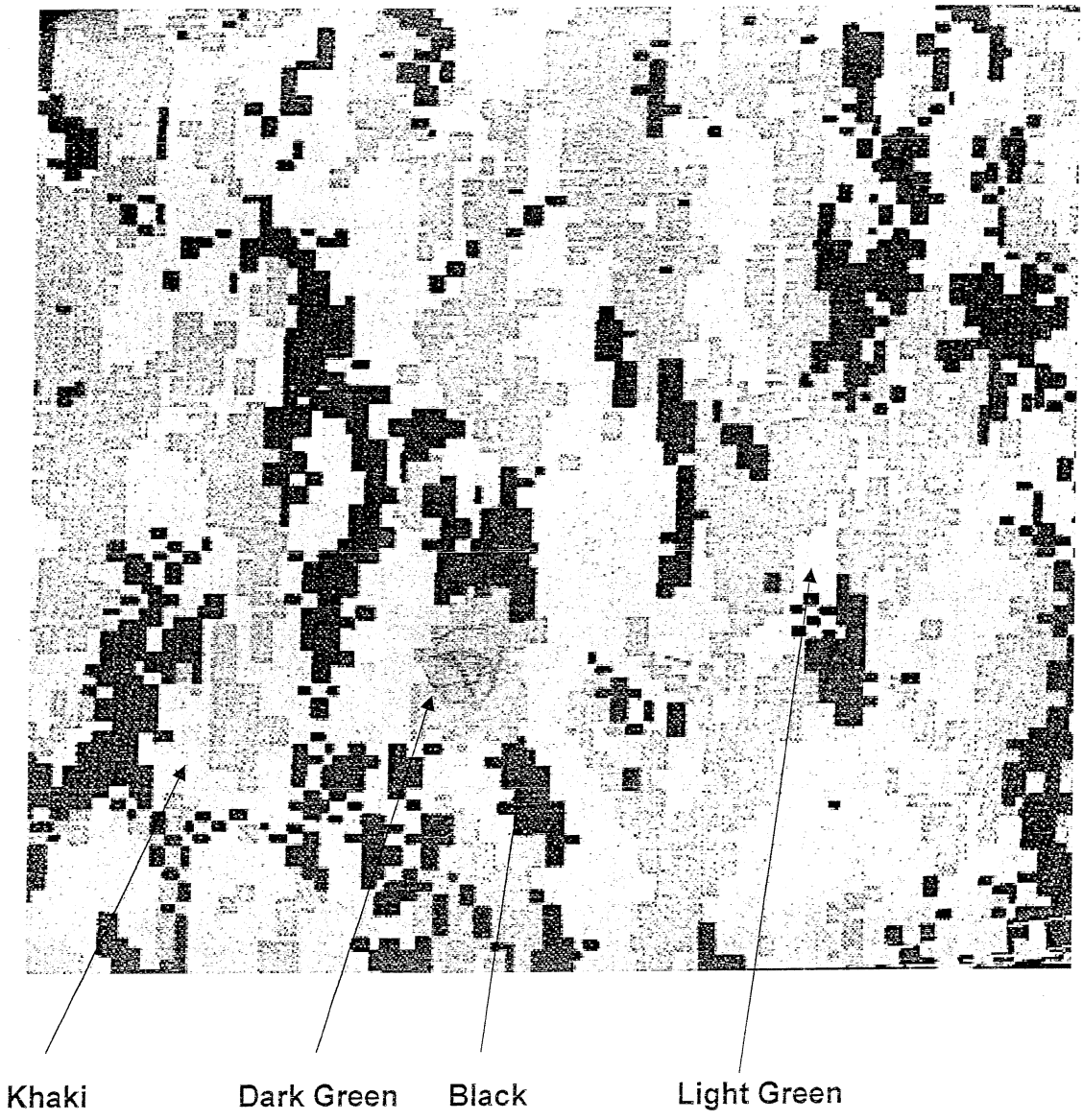


Fig. 3 Disruptive Print –DARK COLOUR (For colour identification only)
(For true colours refer sealed fabric sample)

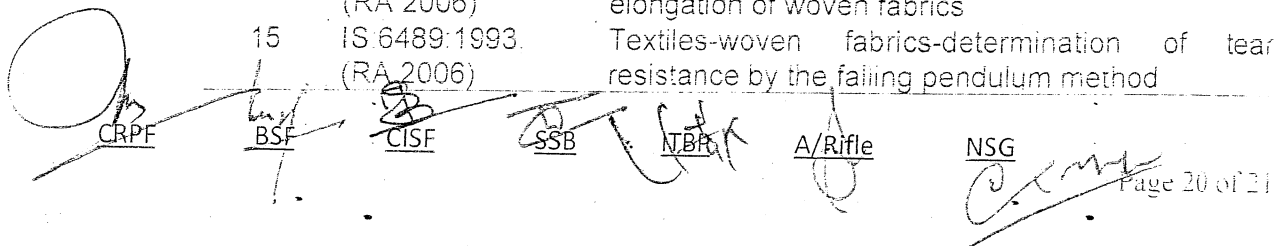
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8.0 REFERENCES

8.1 The list of referred standards is given below :

LIST OF REFERED STANDARDS

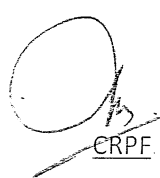





Sl. No.	Method/Spec. number	Title
1	IS:397(Part I) : 2003	Method for statistical quality control during production : Part I Control charts for variable
2	IS:3596 : 1967 (RA 2004)	Glossary of terms relating to hosiery
3	IS:14452:1997 (RA 2006)	Textiles-Care Labeling code using symbols
4	IS:397 (Part II): 2003	Method for statically quality control during production: Part 2 Control charts for attributes and count of defects
5	IS:6359: 1971 (RA 2004)	Method for conditioning of Textiles
6	IS 13510:2000 (RA 2006)	Textile-duck, Polyester/cotton blended, Rip-stop-Specification
7	IS:9543:1980 (RA 2004)	Spun polyester sewing threads
8	IS:10789:2000 (RA 2007)	Classification and terminology of stitch types used in seams
9	IS:11161:2000 (RA 2007)	Textiles-seam types-classification and terminology
10	IS:3442:1980 (RA 2004)	Methods for identification of crimp and count of yarn removed from fabric
11	IS:1963:1981 (RA 2004)	Method for determination of thread per unit length in woven fabric
12	IS:1964:1970 (RA 2006)	Methods for determination of weight per square meter and weight per linear meter of fabric
13	IS: 1954:1990 (RA 2007)	Determination of length and width of woven fabric
14	IS 1969:1985 (RA 2006)	Method for determination of breaking strength and elongation of woven fabrics
15	IS 6489:1993 (RA 2006)	Textiles-woven fabrics-determination of tear resistance by the falling pendulum method



 CRPF BSF CISF SSB NBP A/Rifle NSG

24
116

16	IS:12673:1989, (RA 2005)	Textile fabrics-Abrasion resistance-method for determination
17	IS:110971:1984, (RA 2006)	Method for determination of pilling resistance of fabrics
18	IS:11056:1984, (RA 2006)	Method for determination of air permeability of fabrics
19	IS:11248:1995 (RA 2007)	Textiles-Polyester blend suiting for uniform-specification
20	IS 764 : 1979, Reaffirmed 2008	Method for determination of colour fastness of textile material to washing-Test 3
21	IS 971:1983, Reaffirmed 2004	Method for determination of colour fastness of textile material to perspiration
22	IS 689:1988, Reaffirmed 2004	Method for determination of colour fastness of textile material to hot pressing
23	IS 766:1988, Reaffirmed 2004	Method for determination of colour fastness of textile material to rubbing
24	IS 690:1988, Reaffirmed 2004	Method for determination of colour fastness of textile material to sea water
25	IS 2454:1985, Reaffirmed 2006	Method for determination of colour fastness of textile material to artificial light (Xenon lamp) pressing
26	IS 1390 : 1983 (RA 2004)	Method for determination of pH value of aqueous extract of textile materials
27	AATCC Test method 173 : 2005	CMC: Calculation of small colour differences for acceptability
28	AATCC Evaluation Procedure 7 : 2003	Instrumental assessment of the change in colour of a test specimen.
29	AATCC Test method 20:2007	Fibre analysis: qualitative
30	AATCC Test method 20A	Fibre analysis: quantitative
31	AATCC test method 128:2004	Wrinkle recovery of fabrics: Appearance method
32	ASTM E 96	Standard test methods for water vapor transmission

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 SSB
 ITBP
 A/Rifle

15
98

0.9 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 The specification prescribes the requirement of Disruptive Pattern (Camouflage pattern) cloth (Dark & Light colour) for jungle operations made of Nylon and Cotton blended material, in general known as NYCO.

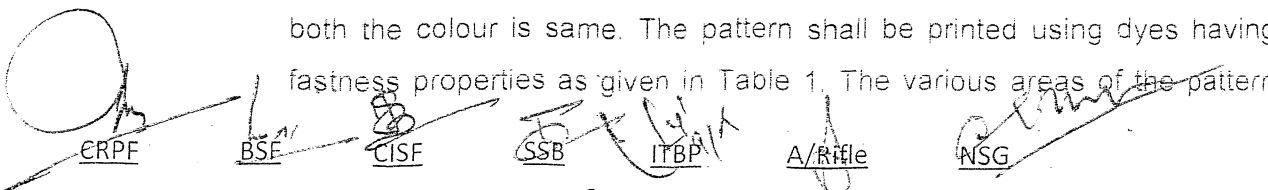
1.2 This specification does not specify the design/ pattern and stitching of uniform from the disruptive pattern cloth.

1.3 This specification does not specify general appearance: feel etc of the Disruptive Pattern cloth.

2.0 MANUFACTURE AND FINISH

2.1 The Disruptive Pattern cloth shall have Rip stop weave (IS 13510:2000). It shall be made from uniform blend of 50% Nylon fibres with 50% Cotton. The selvages shall be firm and straight. The cloth shall be well singed. The fabric shall be 'Heat set' and fully shrunk. The blend composition of the cloth shall conform to the requirements given in the Table 1.

2.2 The disruptive pattern may be obtained by repeats of the design of 34.25 inch \pm 5% in warp direction and 33.25 inch \pm 5% weft direction (see Figure 1) Figure 2 and Figure 3 indicate various colours of the light and dark colour disruptive pattern cloths respectively. The repeat of the design in both the colour is same. The pattern shall be printed using dyes having fastness properties as given in Table 1. The various areas of the pattern


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