



Ministry
of Defence

██████████
Defence Equipment and Support
Secretariat
Building C16, C Site
Ministry of Defence
Ploughley Road
Lower Arncott
Bicester OX25 2LD



Email: DES SEC-PolSec LE-JSC-WPNS@mod.gov.uk

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██████████
██████████

Our Reference:
FOI2020/00188
Date:
30 January 2020

Dear ██████████,

Thank you for your email of 6 January 2020 requesting the following information:

"...In particular, I am seeking copies of the manufacturing specifications, including amendments, for specific items of combat clothing. These documents are several pages long and contain the exact design and manufacturing instructions for garments. I know that they were previously held by the QAD at Didcot, but with all the subsequent changes affecting the MoD the trail has since gone cold ! Any assistance in seeking these documents would be gratefully acknowledged. I am happy to put in a new FOI request if necessary and pay for any costs incurred.

1968 Pattern Combat Smock (and Trousers)

1976/77 Pattern Parachutist's Smock

1963 Pattern Windproof Smock

Any information whatsoever on the development of DPM camouflage and it's introduction into service (this would be 1960's to early 1970's).

I am treating your correspondence as a request for information under the Freedom of Information Act 2000 (FOIA).

A search for the information has now been completed within the Ministry of Defence and I can confirm that some information in scope of your request is held. However, some of the information falls entirely within the scope of the absolute exemption provided for at Section 40 (Personal Data) of the FOIA and has been redacted.

Section 40(2) has been applied to some of the information in order to protect personal information as governed by the General Data Protection Regulation and Data Protection Act 2018. Section 40 is an absolute exemption and there is therefore no requirement to consider the public interest in making a decision to withhold the information.

Defence Equipment & Support

The information you have requested can be found below and in the attached specifications (UK/SC/4440 Issue 3 and UK/SC/5225), which have been redacted in part to support their release. I also attach the Patt 210049A photograph.

Under Section 16 of the Act (Advice and Assistance) you may find it helpful to note that we have identified that the Imperial War Museum (IWM) holds information on the 1968 Pattern Combat Smock and Trousers, see the links below:

<https://www.iwm.org.uk/collections/item/object/30094714>

<https://www.iwm.org.uk/collections/item/object/30094716>


It appears that the IWM has information on a 1978 Pattern Parachutist's Smock rather than the 1976/77 version you seek. You could also try the National Archives to see if they hold any files with the information you seek in them or the National Army Museum, given its broad interest in military clothing, might have copies of relevant material regarding DPM or a knowledge of where such material might be held.

If you have any queries regarding the content of this letter, please contact this office in the first instance.

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.gov.uk). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at <https://ico.org.uk/>.

Yours sincerely


Defence Equipment and Support

UK/SC/4440 Issue 3

Specification for
SMOCK, PARACHUTIST'S



Defence Logistics Organisation

Defence Clothing & Textiles
Integrated Project Team

PROPERTY OF :-
DEFENCE CLOTHING & TEXTILE
INTEGRATED PROJECT TEAM
DLO Caversfield
Skimmingdish Lane
Bicester
Oxon
OX27 8TS

D/DCTA/P1097 (ST)
D/DCTA/528/09 (QPS)

Date of Approval: 30 March 1998
Previous Issue: 03 May 1978

NATO Stock Numbers

Pattern Number

8415-99-132-4008 to 4021

21119A

IPR STATEMENT

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This Specification has 13 Pages

1. SCOPE

A smock made in disruptively patterned woodland cotton and polyester drill for use by army parachutists in temperate areas.

2. RELATED SPECIFICATIONS AND DOCUMENTS

2.1 Reference is made in this specification to:

BS EN 23758	Textiles. Care labelling code using symbols
BS EN 26330	Textiles. Domestic washing and drying procedures for textile testing
BS EN 20105/ISO 105(BS 1006)	Textiles. Tests for colour fastness
BS 3870	Stitches and seams
BS 5742	Specification for textile labels requiring to be washed and/or dry cleaned
BS 6157	Specification for industrial sewing threads made wholly or partly from synthetic fibres
DEF STAN 83-48	Cloth, plain weave cotton
UK/SC/4559	Slide fasteners
UK/SC/4782	Cord, braided, nylon
UK/SC/5121	Buttons, sewing various
UK/SC/5225	Cloth, satin drill, cotton and polyester, DPM, FS, SF, WR

2.2 Reference in this specification to a British Standard or any other specification or document means, in any tender or contract, the edition current at the date of such tender or contract, unless otherwise stated.

3. PATTERNS

3.1 Standard Pattern

A Standard Pattern garment, which is to be obtained the Technical Information Office, is to provide the criteria for all materials, components and manufacturing features not fully defined in this specification.

3.2 Paper Patterns

Paper patterns, which are for guidance only, may be obtained from the Technical Information Office. Patterns are non returnable.

4. MATERIALS

4.1 The garment is to be made of the following materials:

Body of garment, collar, crotch, shoulder straps, breast, hip and sleeve pockets	Cloth, satin drill, cotton and polyester, DPM, FS, SF, WR, Pattern No.8806A to Specification UK/SC/5225 NATO Stock No.8305-99-665-0279
Back, shoulder and sleeve lining, skirt and inside breast pockets, waist channel and pocket stays	Cloth, poplin, cotton, olive, MERC, WR, FS Pattern No.8049A to DEF STAN 83-48 NATO Stock No.8305-99-135-7285
Drawcords for waist channels, upturn, slide fastener puller and hanger	Cord, braided, nylon, green, Pattern No.9483C to Specification UK/SC/4782 NATO Stock No.4420-99-130-3131
Interlining for right forepart facing	Interlining, cotton, plain weave, white cross-linked finished weight 210g/m ² , with approximately 19 ends and 16 picks per cm. Shrinkage not to exceed 1 per cent in each direction of warp and weft when tested to BS EN 26630 Process 2A, line dried
Fastener for front opening	Fastener slide, heavy weight, brass, non-glint, colour to match the shade of the Standard Pattern, open ended, auto locking slider, top stops, 16mm wide stringer with a sealed end to retain a thin edge and prevent fraying. To comply in all other respects with the requirements of Specification UK/SC/4559. Length to be in accordance with the size schedule
Snap fastener	Fasteners, snap, matt finished, as on the Standard Pattern, or an alternative approved by the DCT IPT.
Cuffs, knitted wool	To comply with Annex A
Buttons	Buttons, sewing, 4 hole, 30 ligne (19mm), green, Patten No.S/2438 to Specification UK/SC/5121 NATO Stock No.8315-99-973-0862
Identification/care instruction label	Fabric, marking and attachment to comply with the requirements of BS 5742 Paragraph 3

4.2 The following sewing threads, or alternatives approved by the DCT IPT, are to be used.

For sewing buttonholes	Thread, polyamide, nylon 6.6 continuous filament, to BS 6157, olive, Metric Ticket No.60
For all other purposes	Thread, corespun, to Table 3 of BS 6157, olive Metric Ticket No.12 for gimp for buttonholes Metric Ticket No.36 for sewing on buttons Metric Ticket No.180 for overedging Metric Ticket No.50 for all other sewing

5. MANUFACTURE

5.1 Design

Single breasted smock with slide fastener closure, stand collar and shoulder straps, pivot style sleeves fitted with knitted cuffs. Two outside breast and hip bellows patch pockets with storm flaps. A bellow type patch pocket with single pointed flap on the right sleeve. Two inside breast pockets. The upper portions of the back, sleeves and shoulders are to be lined. A skirt pocket at the lower part of the back. Drawcords at the waist and bottom of the smock. A crotch strap is to be attached to the bottom of the back.

5.2 Stays and interlining

5.2.1 A stay of poplin, cotton, extending from the front edge to the side seams is to be provided for each outside hip pocket and flap. The stays are to be 5cm wide having the raw edges overlocked.

5.2.2 A stay of body material is to be provided for all snap fasteners.

5.2.3 The right forepart facing is to be provided with an interlining 6cm wide.

5.3 Foreparts

5.3.1 The shoulder of each forepart is to be lined full width with poplin cotton, measuring 22cm deep when measured from the front end of the collar seam. The bottom edge of the lining is to be finished with seam type 6.02.01 of BS 3870. The remaining edges are to be sewn in with the stitching of the front opening, shoulder, collar and sleevehead seams respectively.

5.3.2 A stay of body material, 15cm long and 5cm wide, is to be sewn on the inside of each forepart with the lower end of the stay 7cm from the bottom edge of the forepart. The front edge of the stay is to be sewn in with the front edge of the forepart; the remaining edges are to be finished with seam type 6.02.01 of BS 3870.

5.3.3 Each stay is to have three female portions of snap fasteners each fitted with a dome, on the outside of the smock. The fasteners are to be positioned vertically with the top, middle and bottom fasteners 20.5cm, 15.5cm and 10.5cm respectively from the bottom edge of the smock, and horizontally so that each pair of studs are 9cm apart when the fronts are closed by means of the slide fastener.

5.4 Front opening

5.4.1 The front edge of the right forepart is to be provided with a sewn-on facing 6cm wide, commencing from the top of the stand collar and terminating 2cm from the bottom of the smock.

5.4.2 One half of a slide fastener is to be securely sewn in with the front edge of the right forepart and the facing, with the teeth of the fastener level with the front edge of the smock. The remaining half of the slide fastener is to be securely sewn to the inside of the left forepart with the teeth of the fastener level with the front edge. The slide fastener is to commence 3cm below the top edge of the stand collar and extend for the length stated in the Schedule. The slide fastener is to be securely sewn with 2 rows of machine stitching 0.6cm apart. A tag of nylon braid 5cm long, is to be securely sewn to the puller of the slide fastener.

5.5 Pockets

- 5.5.1 A bellows patch breast pocket with flap, 18cm wide and 18cm deep including flap, is to be fitted to each forepart positioned as on the Standard Pattern. Each patch is to have a bellows at the bottom and the sides 4cm wide. The flap, shaped as on the Standard Pattern, is to be 8cm deep at the centre and 4cm at the sides. The top of the patch is to have an inturn 9cm deep having the raw edge overlocked and secured to the patch by a row of machine stitching 4cm above the overlocked edge. A second row of machine stitching is to be made through the inturn 2.5cm below the top edge. The top end of the patch is to extend 2.5cm above the sewing-on edge of the flap to form a fold 2.5cm deep. The sewing is to be made immediately alongside the flap stitching.
- 5.5.2 A bellows patch hip pocket with flap, 21.5cm wide and 24cm deep including flap, is to be fitted to each forepart, positioned as on the Standard Pattern. Each patch is to have a bellows at the bottom and the sides 4cm wide. The flap, shaped as on the Standard Pattern, is to be 8cm deep at the centre and 5cm at the sides. The pocket is to be finished in an identical manner to that used on the breast pockets.
- 5.5.3 The pockets are to be attached to the smock using seam type 6.02.01 of BS 3870.
- 5.5.4 A female portion of a snap fastener is to be clenched through each breast and hip pocket flap, positioned centrally, with the centre of the fastener 2cm from the point. A male portion of a snap fastener, positioned to correspond with the female snap fastener, is to be securely clenched through the pocket and inturn.
- 5.5.5 Each forepart is to have an inside swing pocket with a vertical opening 15cm long. The front of the pocket on the right forepart is to be positioned parallel with the inner edge of the forepart facing. The front of the pocket on the left forepart is to be positioned 2.5cm behind the front edge of the smock. The top and bottom ends of the opening are to be securely tacked. The top of the pocket is to be 14cm below the collar seam, measured at the front edge and the bottom of the pocket is to extend not less than 10cm below the bottom tack. The pocket is to measure not less than 15cm wide. The top edge of the pocket is to be stitched through the forepart.

5.6 Back

The inside of the top of the whole back is to be lined with poplin cotton. The lining is to extend 26cm below the collar seam and have the bottom finished with seam type 6.02.01 of BS 3870. The remaining edges are to be sewn in with the stitching of the collar, shoulder and sleeve seams respectively.

5.7 Inside skirt pocket

- 5.7.1 An inside skirt pocket is to be provided inside the smock, positioned at the bottom of the back, extending from side seam to side seam with the pocket opening 30cm from the bottom of the smock. The top of the pocket is to be finished with an inturn 3cm deep using stitch type 6.03.04 of BS 3870.
- 5.7.2 Two vertical row of machine stitching 15cm apart, positioned centrally, are to be made through the pocket and the back of the smock, extending the full depth of the pocket.

5.7.3 Two female portions of snap fasteners are to be fitted between the two rows of machine stitching with the dome on the inside of the back. The fasteners are to be positioned 2.5cm below the top edge of the pocket and 9cm apart.

5.8 Sleeves

5.8.1 The crown of the two-piece, set-in pivot style sleeve is to be lined with poplin cotton, 17cm deep when measured from the highest point of the crown. The bottom edge of the lining is to be finished with seam type 6.02.01 of BS 3870, and the raw edges at the sides and top, stitched in with the forearm, hindarm and armhole seams respectively.

5.8.2 A patch pocket with a flap 10cm wide and 18cm deep including flap, is to be fitted to the left sleeve, positioned as on the Standard Pattern. The flap, 6cm deep at the centre and 4cm at the sides, is to be sewn to the sleeve with the top of the flap positioned 2.5cm above the top of the patch pocket. The top of the patch is to have an inturn 2.5cm deep finished using stitch type 6.03.04 of BS 3870. A pen division is to be formed by a row of machine stitching 2.5cm from the front edge of the patch pocket. The patch is to be attached to the sleeve using seam type 6.02.01 of BS 3870. A buttonhole, 2.5cm long is to be worked in the flap, positioned centrally, with the eye of the buttonhole 1.2cm from the point. A button, positioned to correspond with the eye of the buttonhole, is to be sewn to the pocket.

5.8.3 A bellows patch pocket with single pointed flap snap fastener, fastening is to be fitted to the top of the right sleeve hindarm, positioned as on the Standard Pattern. Finished dimensions: flap 9cm deep at the centre and 6.5cm at the sides, width 9cm, bellows 3cm deep, patch 8cm wide, total depth from top of flap 13.5cm.

5.8.4 A female portion of a snap fastener is to be clenched through the flap of the left pocket, positioned centrally, with the centre of the fastener 2cm from the point. A male portion of a snap fastener, positioned to correspond with the female snap fastener, through the pocket and inturn.

5.8.5 The bottom of the sleeves are to be fitted with knitted wool cuffs, securely sewn to the sleeve with two rows of machine stitching.

5.9 Waist channel

5.9.1 Three strips of poplin cotton to form a channel 2.5cm wide are to be provided inside the smock, one on each forepart and one across the back, positioned as stated in the Schedule. The outer edges of the channel are to be securely edge stitched to the smock.

5.9.2 The channels on the foreparts are to extend from the inner edge of the facing to the side seams, having the front ends of the channel sewn in with the facing seam. The channel on the back is to extend from side seam to side seam and be in alignment with the channels on the foreparts.

5.9.3 The channels are to be provided with drawcords fitted for waist adjustment. The drawcords are to extend at least 15cm from each open end of the channels on the foreparts and the back. The protruding ends of the drawcords are to have a knot tied in the ends. The concealed ends of the drawcords in the forepart channels are to be sewn in with the facing seam. The drawcords in the back of the channel is to be tacked centrally through the channel and the back of the smock.

5.10. Upturn

- 5.10.1 The bottom of the smock is to be fitted with an upturn 3cm deep, using stitch type 6.03.04 of BS 3870. The upturn is to form a channel for a drawcord.
- 5.10.2 An eyelet hole is to be worked centrally at each end of the upturn positioned 6cm from the front edge. A drawcord is to be threaded through the eyelets in the upturn. The ends are to be knotted to prevent the drawcord receding into the channel and protrude 15cm beyond each eyelet hole when the garment is fully extended. The drawcord is to be secured by a vertical row of machine stitching, made through the upturn at the centre back.

5.11 Shoulder straps

- 5.11.1 The shoulder straps of two thicknesses of self material, are to be 6cm wide at the sleevehead seam and taper to 4.5cm at the level of the eye of the buttonhole and be finished with a rounded end.
- 5.11.2 A buttonhole, 2.5cm long, is to be worked in the shoulder strap with the eye 1.5cm from the rounded end, to correspond with a button sewn on the shoulder seam.
- 5.11.3 The shoulder straps are to be positioned centrally and lie flat on the shoulders when buttoned, with the rounded end terminating 2cm from the collar seam.

5.12 Crotch strap

- 5.12.1 A crotch strap, of two thicknesses of body material shaped as on the Standard Pattern, is to be fitted centrally at the bottom of the back and extend 31cm below the bottom of the garment.
- 5.12.2 The strap is to be sewn in with the upturn, turned down and secured by a row of stitching through the strap and bottom edge of the back.
- 5.12.3 Two male portions of a snap fastener are to be clenched in the free end of the strap. The fasteners are to be positioned 9cm apart as on the Standard Pattern.

5.13 Collar

- 5.13.1 A stand collar 9cm deep, formed from two layers of body material is to be sewn to the neck of the smock.
- 5.13.2 Three buttons are to be securely sewn to the outside of the collar, 1cm from the collar seam, one at each shoulder seam and the remaining one positioned equidistant between those two.

5.14 Hanger

A hanger is to be securely sewn to the back neck of the smock through the collar, having an effective length of 6cm between tacks.

5.15 Seams and stitching to BS 3870

- 5.15.1 Single machine stitching is to be stitch type 301 with at least eight but not more than ten stitches per 2cm.
- 5.15.2 The front edge of the facing on the smock and the edges of the crotch strap, shoulder straps, collar and pocket flaps are to be stitched 0.6cm from the edge. Top stitching is to be regular and unbroken.

- 5.15.3 Side, sleeve and shoulder seams are to be sewn using seam type 1.01.01 with the raw edges overedge stitched together.
- 5.15.4 Machine buttonholes are to have at least twenty two stitches per 2cm and be either bar tacked or taper barred.
- 5.15.5 All raw edges are to be finished using stitch type 502, 503, 504 or 505.
- 5.15.6 Buttons are to be securely sewn with at least sixteen stitches through each hole.

5.16 General

- 5.16.1 The sewing threads used may be treated with a stain free lubricant.
- 5.16.2 The garments are to be free from all ends of sewing threads, be pressed and delivered in a clean condition.
- 5.16.3 All seams are to be free from pucker.
- 5.16.4 All ends of braided nylon are to be heat sealed.

6. MEASUREMENTS

- 6.1 Stock size garments are to conform to the Schedule.
- 6.2 Special measure garments are to be made to the wearer's measurements to be supplied to the contractor: the Schedule is then to be used as a guide for the allowance at the chest and waist over the measurement of wearer and measurements not shown on the special form.

7. IDENTIFICATION/CARE INSTRUCTION LABEL TO BS 5742 PARAGRAPH 3

- 7.1 Composite label may be used.
- 7.2 Position: Attached centrally to the buggy lining 2.5cm below the collar seam; care label below identification label.
- 7.3 Information and format is to be as follows:
 - 7.3.1 For stock sizes: Item name, NATO Stock Number, size, contract number, indication of position for wearer's name and number. The size number is to be 0.6cm high.
 - 7.3.2 For special measure garments Item name, NATO Stock Number, name, number and measurements of wearer, contract number.
 - 7.3.3 Care label: To BS EN 23758 (see over).

Specimen label

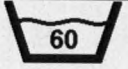




Stock sizes

Special measure

SMOCK, PARACHUTIST'S
 8415-99-132-4015
 Height/Chest
 Size: 180 / 96
 0/000/0000
 Name:
 No:

SMOCK, PARACHUTIST'S
 8415-99-132-4021
 Name:
 No:
 Height:
 Chest:
 0/000/0000

Care label

	Maximum Wash If heavily soiled repeat wash
	DO NOT BLEACH
	Steam iron to improve water repellency
	DO NOT DRY CLEAN
	Tumble Dry - Hot
To maintain water repellency, reproof every third wash with a suitable proprietary reproofing agent.	

ANNEX ACUFFS KNITTED, WOOL

The cuff is to be knitted from two-fold worsted yarn, and it is to be to the shade and quality of that incorporated in the Standard Pattern. The cuff is to be a double layer of fabric, achieved by folding in the middle of its length, and it may be either flat knitted with an overlock side seam or circular knitted. The 'wrist section', when folded, is to be a 5-6cm length of 1x 1 rib having at least 8 courses per cm and the 'sleeve section' is to be a 5cm length of half cardigan construction. The ends of the inner and outer sleeve sections are to be joined with a three thread overlock seam (stitch type 504 of BS 3870) containing at least one thread of wool.

The width of the cuff, when in a relaxed condition, is to be 7-8cm at the wrist and 15cm at the sleeve, and it is to be capable of being stretched in width by a further 8cm in both sections.

The minimum weight of ten pairs of the cuffs is to be 420g.

Colour fastness

The colour fastness of the cuffs is to be not lower than the ratings shown in Table 1 below:

TABLE 1
COLOUR FASTNESS REQUIREMENTS

METHOD OF TEST			
BS EN 20105/ISO 105 (Concurrent with BS 1006)			
Part	B02	CO6/C2S	
Agent	Light	Laundering (60°C)	
	Reference Rating	Colour change	Staining Cotton
	5-6	3	3

SCHEDULE
SMOCK, PARACHUTIST'S
All measurements are in centimetres

NATO Stock Nos 8415-99-132-	Measurements of Man		Measurements of Garment														
	Size No Height/ Chest	Chest	Across chest at level of top of pocket when fastened		From edge to edge at		Length from collar seam			Length of underarm seam from top of cuff to bottom edge	Length of slide fastener	Full width of back	Sleeve		Length of collar at sewing on edge		
			Waist	Bottom	Back	Front	Length of topside from shoulder to top of cuff	Around elbow	Width Cuff								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
4008	160/88	150	Up to 88	47	120	138							47		48	24	47
4009	160/96		88-96	51	128	146						71	50	49	50	26	49
4010	160/104	160	96-104	55	136	154	41	75	38	71	91		53	54	52	28	51
4011	170/88	160	Up to 88	47	120	138							47		48	24	47
4012	170/96		88-96	51	128	146						74	50	49	50	26	49
4013	170/104		96-104	55	136	154							53	54	52	28	51
4014	170/112	170	104-112	59	144	162	44	78	41	74	99		56		54	30	53
4015	180/96	170	Up to 96	51	128	146							50		50	26	49
4016	180/104		96-104	55	136	154						80	53	59	52	28	51
4017	180/112	180	104-112	59	144	162	47	84	44	80	110		56		54	30	53
4018	190/104		Up to 104	55	136	154							53		52	28	51
4019	190/112		104-112	59	144	162						86	56	64	54	30	53
4020	190/120	180	112-120	63	152	170	50	90	47	86	121		59		56	32	55
4021	For special measure garments																

D/DCTA/P1097 (ST)
D/DCTA/528/09 (QPS)

SPECIFICATION UK/SC/4440 ISSUE 3
SMOCK, PARACHUTIST'S

AMENDMENT NO.1

Page 4, Clause 5.4.1 Front opening

Delete: The front edge of the right forepart is to be provided with sewn-on facing 6m wide,

Insert: The front edge of the right forepart is to be provided with sewn-on facing 5cm wide,

11 April 2000

Copies of Specifications and Standards may be obtained from the following departments. It is advisable to check the current terms of issue and/or changes for publications at the time of ordering.

BRITISH STANDARDS

Customer Services
British Standards Institution
389 Chiswick High Road
London
W4 4AL

Tel: +44 (0)20 8996 9001
Fax: +44 (0)20 8996 7001
e-mail: orders@bsi-global.com
e-mail: info@bsi-global.com
www.bsi-global.com

DEFENCE STANDARDS & DEF

DStan Helpdesk
UK Defence Standardisation
Room 1138
Kentigern House
65 Brown Street
Glasgow
G2 8EX

Tel: +44 (0)141 224 2531/2532
Fax: +44 (0)141 224 2503

www.dstan.mod.uk

TS & SPIS

AQUILA
Golf Road
Bromley
Kent
BR1 2JB

Tel: +44 (0)208 285 7541
Fax: +44 (0)208 285 7242

UK/SC SPECIFICATIONS, PERFORMANCE SPECIFICATIONS (PSs) PURCHASE DESCRIPTIONS (PDs) AND DRAWINGS PUBLISHED BY THE DCT (STANDARD PATTERNS & PAPER PATTERNS if applicable)

Technical Information Office
Defence Clothing and Textiles
Integrated Project Team
DLO Caversfield
Room 18, Bldg 23
Skimmingdish Lane
Bicester, Oxon. OX27 8TS

Tel: [REDACTED]
Fax: [REDACTED]

e-mail: [REDACTED]

UK/SC/5225

Specification for
CLOTH, SATIN DRILL, COTTON AND POLYESTER
Disruptively Patterned, FS, SF, WR



Defence Logistics Organisation

Defence Clothing & Textiles
Integrated Project Team

PROPERTY OF :-
DEFENCE CLOTHING & TEXTILE
INTEGRATED PROJECT TEAM
DLO Caversfield
Skimmingdish Lane
Bicester
Oxon
OX27 8TS

NN/P2072
NV/459/012

Date of Approval: 13 December 1991

NATO Stock Numbers

None

Pattern Number

8806A

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This Specification has 10 Pages

1. SCOPE

This specification describes the requirements for a cotton and polyester cloth to be used for temperate combat suits and associated items. The cloth is to be robust for this arduous end use.

2. RELATED SPECIFICATIONS AND DOCUMENTS

Reference is made in this specification to:

BS F 100	Procedure for inspection and testing of textiles
BS 1006	Method of test for the colour fastness of textiles and leather
BS 1930	Method for the determination of width of woven or knitted fabrics when relaxed at zero tension
BS 2471	Methods of test for textiles - woven fabrics - determination of mass per unit length and mass per unit area
BS 2576	Method of determination of breaking strength and elongation (strip method) of woven fabrics
BS 2861	Methods for presentation of a weave diagram and plans for drafting, denting and lifting
BS 2862	Methods for the determination of number of threads per unit length
BS 4303	Method for the determination of the resistance to tearing by the wing rip technique
BS 4407	Methods for quantitative analysis of fibre mixtures
BS 4923	Schedule of domestic washing and drying procedures for textile testing
BS 5807	Method of test for determination of dimensional change of textiles in domestic washing and drying
DEFCON 112B	Conditions of Control for Clothing and Textiles

Reference in this specification to a British Standard publication or to any other specification or document means, in any tender or contract, the edition current at the date of such tender or contract unless otherwise stated.

3. STANDARD PATTERN

A Standard Pattern, obtainable from the Technical Information Office, is to provide the criteria for any particulars or properties not fully defined in this specification.

4. MATERIALS AND MANUFACTURE

- 4.1 The yarns are to be spun from blends of cotton and polyester, the quality of the fibres being at least equal to that of the Standard Pattern.
- 4.2 The warp yarns are to be uniformly spun two-fold, the weft are to be singles spun, both yarns of a quality at least equal to that of the Standard Pattern.
- 4.3 The weave of the fabric is to be as indicated in Annex 2, in accordance with BS 2861.

4.4 Width

Unless otherwise agreed between purchaser and supplier, the minimum width of the cloth is to be as specified in Table I. The minimum width specified or agreed refers to the usable width. Unless otherwise stated in the tender or contract, this is the width of the cloth that meets all the requirements of the finished cloth specification and excludes all selvedge material, marks, pinholes.

- 4.5 Selvedges are to be firm, straight and not of such thickness as may lead to unacceptable build-up during laying-up for garment cutting.

4.6 Dyeing and finishing

The shade and finish are to match the appropriate Standard Pattern and are to be uniform throughout.

The cloths are to conform to the dyeing, printing and finishing requirements defined in Table 1, the minimum colour fastness ratings are to be in accordance with the requirements listed in Table 2 and the infra red reflectance is to meet the requirements of Table 3.

- 4.7 The cloth is to be closely singed on both the face and the back and then printed on the warp face in the design and colourings of the Standard Pattern. The cloth is to be coloured on both sides either by dyeing followed by printing (as the Standard Pattern) duplex printing or single sided printing with a large strike through.
- 4.8 White spots, patches or misfitting is not permitted.
- 4.9 The use of sulphur or aniline black dyestuffs or the use of pigment prints are prohibited.

4.10 Stitch finish

The cloths must be sewable on modern high speed sewing machines. Where indicated by the letters SF, a lubricant may be applied during the final finish operations. The lubricant used is not to give rise to staining or other deleterious effects on prolonged storage.

4.11 Water-repellency

The cloths are to be given a water repellent finish, the performance requirements being as stated in Table 1.

6. INSPECTION

Each piece is to be inspected to DEFCON 112B, Clause 10a.

7. SAMPLING

- 7.1 For the purposes of sampling no batch is to exceed 5000m in length. Samples of the cloth taken for testing for compliance with the requirements of this specification are to be representative of each delivery batch.
- 7.2 One sample is to be taken from each batch and is to be identified with the piece from which it is taken.
- 7.3 Each sample is to be taken not less than 20m from the end of the piece, and be large enough to provide material for all the tests required by this specification, and as detailed in Clause 8C of the Contract Conditions Document DEFCON 112B.

8. TESTING

Samples of cloth taken in accordance with Clause 7 are to comply with the requirements stated in Tables 1, 2 and 3 when tested by the methods quoted therein.

- 8.1 All the physical and chemical tests, and the tests for colour fastness other than for light fastness are to be carried out on every sample.
- 8.2 Light fastness determinations are to be carried out on one sample taken from the first batch off a contract. Provided this sample meets the requirements stated in Table 2, and subject to the following proviso, no further light fastness tests need be carried out. If, however, in the course of the contract, the dye formulation is changed, the light fastness is to be redetermined on a sample taken from the first batch to which the new dyeing formulation applies. The DCT IPT reserves the right to have more frequent light fastness tests carried out e.g. on every batch.
- 8.3 The water repellency is to be measured using the Bundesmann test method described in BS F 100 except:
 - 8.3.1 The water flow is to be 62-68ml/min/cup.
 - 8.3.2 Water of pH 6-8 is to be used.
 - 8.3.3 The water temperature is to be 18-22°C.
 - 8.3.4 After wetting the cloth is to be given 10 shakes.
 - 8.3.5 The water repellency is to meet the requirements of Table 1.

9. IDENTIFICATION OF THE PACKAGE

Each piece is to be identified as stated in the Contract Condition Document DEFCON 112B Clause 10c.

10. WRAPPING

Pieces are to be wrapped as stated in the Contract Conditions Document DEFCON 112B Clause 10b.

TABLE 1 – PHYSICAL REQUIREMENTS

METHOD OF TEST		METHOD OF TEST				
BS 4407 composition of blend	%	± 5%	± 5%			
		70% Cotton	30% polyester			
BS 1930	Minimum usable width	cm	Not less than			
BS 2471 Method 5	Mass	g/m ²	270 + 30 - 15			
BS 2862			Threads per	cm		
BS 2576 CRD	Breaking Load	N	Min			
BS 4303	Tear Strength after 6 washes as for dimensional change	N	Min			
			across	Warp Weft	38 42	
BS 5807 using BS 4923 Wash 2A Drying Procedure E (6 washes & dry cycles)	Dimensional change on washing	per cent	Range	Warp Weft	+2% -5% +2 -5	
			Penetration ml	Max	5	
Clause 8.3		Water repellency fabrics (Bundesmann type apparatus)		Absorption per cent	Max	30
		Before and after on BS 4923 2A wash, with Drying Procedure E				

TABLE 2**COLOUR FASTNESS REQUIREMENTS**

The colour fastness of the fabric is to be not lower than the ratings specified in the following Table:

The samples used for colour fastness testing are to predominantly represent the specified colour.

Colour	Method of Test						
	BS 1006						
	BO2 (See also Clause 8.2)	EO4		X12		CO6 : C2S	
	Light	Perspiration acid and alkaline		Rubbing		Washing	
		Colour change	Staining	Dry	Wet	Colour change	Staining Cotton
Dark green	6	4 - 5	4 - 5	4	3	4 - 5	4
Khaki	6	4 - 5	4 - 5	4	2 - 3	4	4 - 5
Brown	6	4 - 5	4 - 5	4	2 - 3	4 - 5	3 - 4
Black	5 - 6	4 - 5	4 - 5	3 - 4	2 - 3	4 - 5	3

TABLE 3**INFRA RED REFLECTANCE – PATTERN NO. 8806A**

The infra red reflectance of the four colours if to conform to the requirements of the following Table:

Colour	Method of Test
	Annex 1 to this specification
	Infra red reflectance per cent
Dark green	45 ± 5
Khaki	60 ± 5
Brown	Less than 25
Black	Less than 25

ANNEX 1

DETERMINATION OF INFRA – RED REFLECTANCE

1. APPARATUS

A spectrophotometer fitted with a diffuse reflection attachment, or an approved alternative type of instrument, working over the range 1,000 to 1,200 nanometres.

A reference standard of barium sulphate of minimum thickness 2mm. Secondary reference standards may be used provided they have been calibrated against freshly prepared barium sulphate.

2. SAMPLING

Four samples large enough to enable two measurements of each colour are to be taken at random from each batch and half each sample is to be washed once using BS 4923 Procedure 2A and press drying at 150°C.

3. METHOD OF TEST AND EXPRESSION OF RESULTS

The result of an individual measurement is to be expressed as the integrated reflectance over the range 1,000 to 1,200 nanometres i.e. the ratio of the areas under the reflection curves of the sample and of the reference standard respectively.

4. CALCULATIONS OF RESULTS AND ACCEPTANCE STANDARD

The mean reflectance value of the four samples is to be calculated for each colour for both the 'as received' and 'washed' samples. The criterion for acceptance is that the mean value for each colour for both 'as received' and 'washed' samples be within the specified range (Table 3) and only one measurement from the 'as received' and comparable 'washed' samples deviates by a maximum of 5% reflectance from the specified range. If more than one measurement is outside the specified range or any single measurement is more than 5% outside the specified range then the batch is to be rejected.

ANNEX 2

The weave of the fabric is to be as indicated in the following diagram:

			X	
	X			
				X
		X		
X				

X

 Indicates
warp up

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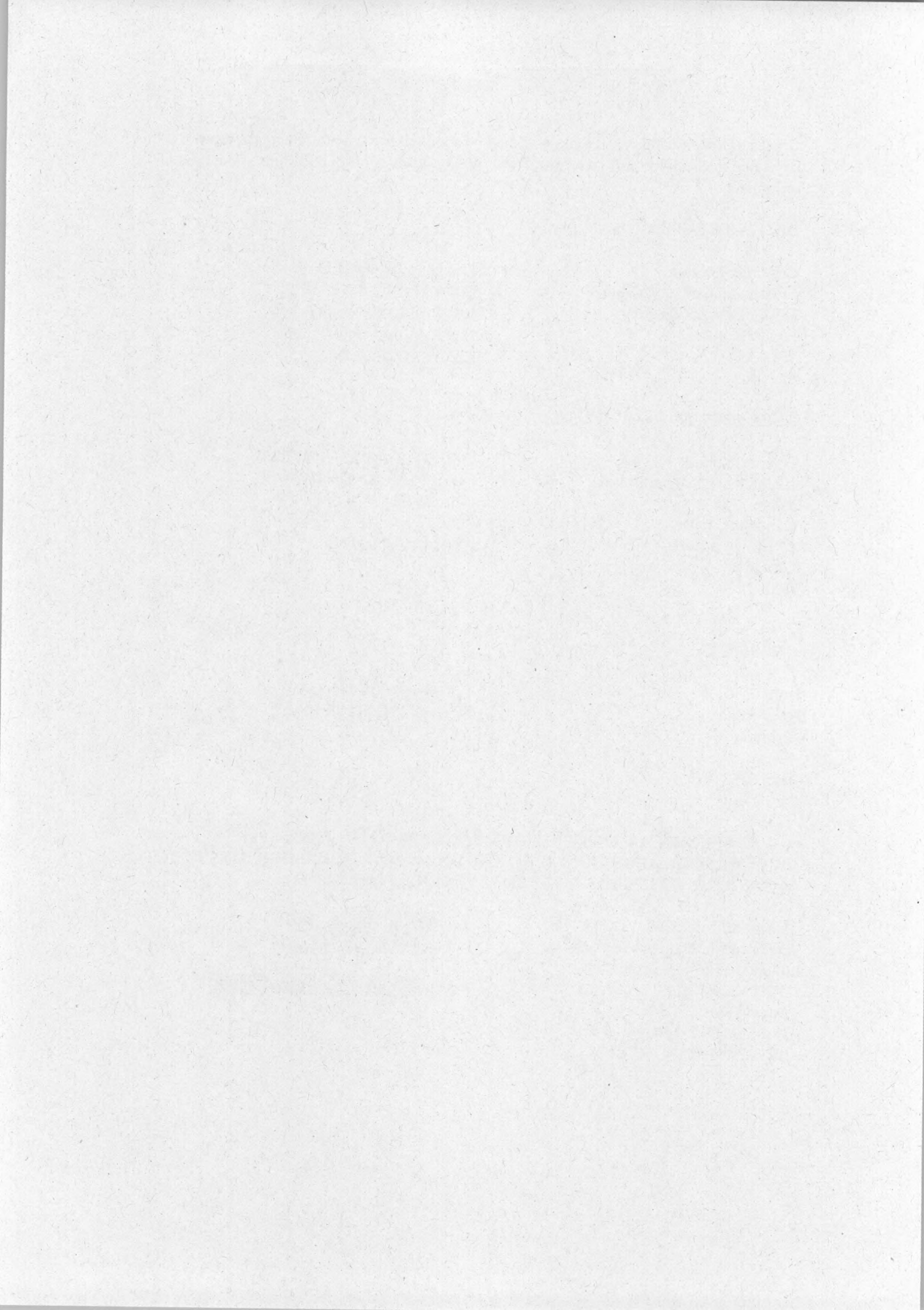
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Fax: +44 (0)208 285 7242

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Technical Information Office
Defence Clothing and Textiles
Integrated Project Team
DLO Caversfield
Room 18, Bldg 23
Skimmingdish Lane
Bicester, Oxon. OX27 8TS

Tel: [REDACTED]
Fax: [REDACTED]

e-mail: [REDACTED]





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