



**GOVERNMENT OF INDIA
MINISTRY OF DEFENCE
ORDNANCE CLOTHING FACTORY,
SHAHJAHANPUR**

**PROVISIONAL SPECIFICATION FOR
JACKET EXTREME COLD CLIMATE
TWO LAYER MK-II**

**DEFENCE STORES CATALOGUE NO.
NIV**



ISSUED BY

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RECORD OF AMENDMENTS

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1.0 SCOPE

- 1.1 This specification covers the requirements of Jacket Extreme Cold Climate Two Layer MK-II in Four sizes viz Small, Medium, Large and Extra-Large, intended for use at high altitude areas. It consists of two independent Layers:—
- (a) Wind Proof Insulated Outer Jacket with detachable & collapsible hood- For environmental protection with added insulation.
 - (b) Inner Jacket with insulating layer.
- 1.2 The Jacket Extreme Cold Climate Two Layer MK-II provides the opportunity to people living in high altitude area up to 14000 ft. where oxygen level is very low and keeping the body warmth is extremely necessary to protect from Hypothermia. The Jacket is effective in sub-zero temperature as low as -20°C & wind velocity of 40km/Hr due to its ability of trapping the body heat and preventing wind, snow and air from penetrating inside.

2.0 RELATED SPECIFICATIONS & REFERENCES

- 2.1 The specifications quoted as reference in this specification as EN, ISO, EN ISO & AATCC specifications are of existing one, however latest specification will be adopted at the time of supply / execution of order and can be obtained from authorized agencies all over the world or respective Organization Websites.
- 2.2 Copies of IS specifications can be obtained on payment from Bureau of Indian Standards, 9 Bahadurshah Zafar Marg, New Delhi or their regional offices. Website/Web address is <http://www.bis.org.in>.

3.0 TERMINOLOGY DEFINITIONS & SYMBOLS

- 3.1 For the purpose of this standard the definitions and terminology given in the relevant Indian Standards should apply.

4.0 STANDARD PATTERN

- 4.1 The sample approved and sealed by OCF Shahjahanpur (Technical section), shall constitute the Standard as regards **appearance, shade, workmanship, finish and any other particulars or properties** not noted/defined in this specification. One each of such sample shall also be provided to the QA Authority and the QA Officer nominated in the contract. **In case of any difference in specification and sealed sample, interpretation of AHSP of OCFS/TCL, Kanpur shall be final. All supplies shall have to be made exactly as per sealed sample kept on OCFS.**

5.0 MATERIALS AND COMPONENTS

5.1 The basic material for the fabrication of **Jacket Extreme Cold Climate Two Layer MK-II** shall be procured from composite mills/reputed suppliers. The basic materials and garniture items shall be pre-inspected for quantity and quality. All materials and components shall be in line with **Pantone Shade no. 19-0511 TPX (For guidance purpose)**.

5.2 The various components of **Jacket Extreme Cold Climate Two Layer MK-II** shall be manufactured from the materials as per details given below: -

Sl.	COMPONENTS	MATERIALS	PARTICULARS
(a)	Windproof Insulated Outer Jacket- Body and other Components	<p>i. Outer Shell Fabric - 100% Nylon PU coated Waterproof and Windproof Breathable Plain Weave Fabric 100 GSM.</p> <p>ii. Inner Lining Fabric - 100 % Polyester Micro-Filament Plain Weave Woven Fabric 70 GSM</p>	<p>Appendix 'A'</p> <p>Appendix 'B'</p>
(b)	Insulated Inner Jacket - Body and other Components	<p>i. Outer Shell Fabric- 100% Nylon Micro-Filament Woven Fabric 50 GSM</p> <p>ii. Inner Lining Fabric - 100 % Polyester Micro-Filament Plain Weave Woven Fabric 70 GSM.</p>	<p>Appendix 'C'</p> <p>Appendix 'B'</p>
(c)	Filling Material (Outer Jacket & Inner Jacket)	Inner Filling insulation Material – Poly Fill (100% Polyester) 100 GSM with Pre-quilted Non-woven web lining.	Appendix 'D'
(d)	Fasteners Synthetic Hook & Loop Tape: Outer Layer: Collar, Storm Flap, Cuff, Shoulder flaps & Right Chest (for Name Plate)	Synthetic Hook & Loop Fasteners Tape 25 mm wide.	IS: 8156-2014, Reaffirmed 2014
(e)	All sewing Thread	Sewing thread spun polyester OG 125 d tex/3 (V. No 4)	IS:9543:1980, Reaffirmed 2010
(f)	Slide Fastener Outer Layer Front Closing	<p>Size- Large & Extra Large: Plastic Slide Fastener L- Type, Double Slider, Two Way, Auto Lock, Open End, Medium Special Duty 74 Cm.</p> <p>Size- Medium & Small: Plastic Slide Fastener L- Type, Double Slider, Two Way, Auto Lock, Open End, Medium Special Duty 68.5 Cm.</p>	IS: 14181 (Part 1 to 3): 2002 Amd. No. 2, Reaffirmed 2013

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	<p>Inner Layer front closing</p> <p>Outer Layer Side Pocket & Inner side Chest Pocket</p> <p>Inner Layer Side Pocket</p> <p>Detachable Hood</p>	<p>Size- Large & Extra Large: Plastic Slide Fastener L- Type, Reversible Slider, Double Puller, Open End Medium Special Duty 71cm.</p> <p>Size- Medium & Small: Plastic Slide Fastener L- Type, Reversible Slider, Double Puller, Open End Medium Special Duty 66.5cm.</p> <p>Plastic Slide Fastener L- Type, Closed End, Auto Lock, Light Special Duty 19 CM.</p> <p>Plastic Slide Fastener L- Type, Closed End, Auto Lock, Light Special Duty 18.5 CM.</p> <p>Plastic Slide Fastener L- Type, Medium Special Duty, Auto Lock, Open End 48 CM.</p>	<p>IS: 14181 (Part 1 to 3): 2002 Amd. No. 2, Reaffirmed 2013</p>
(g)	Elastic cord at Hood of Outer Jacket & Bottom hem & Collar Back and Sleeves in Inner Jacket	Elastic Cord 3.0mm Diameter.	Best Trade Quality
(h)	Tunnel outlet (Bottom & Hood)	Eyelet Steel	DMSRDE/LE2/2000/Eyelet
(i)	Plastic Stopper (Cylindrical) double hole (Bottom & Hood)	Plastic Stopper (Cylindrical) double hole spring type.	Drawing No. OCFS/TS/PSDHST Best Trade Quality & as per Sealed sample held with OCFS.
(j)	Plastic Stopper Single hole (Bottom & Hood)	Plastic Stopper Single hole Spring Type with arrangement of passing of 7mm.Tape.	Drawing No. OCFS/TS/PSSHSTN Best Trade Quality & as per Sealed sample held with OCFS.
(j)	Plastic Ring	Plastic Ring for Cord.	Drawing No. OCFS/TS/PRC, Best Trade Quality & as per Sealed sample held with OCFS.
(k)	Zipper Puller for PSF	Plastic Zipper Pull with strap.	Drawing No. OCFS/TS/PZPS, Best Trade Quality & as per sealed sample held with OCFS

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(l)	Snap Fasteners	Snap Fasteners four piece.	Best Trade Quality & as per Sample held with OCFS.
(m)	Elastic Tape (Bottom & Sleeve Bottom of Inner Layer)	Elastic Tape 20mm.	Best Trade Quality & As per sealed Sample available with OCFS

6.0 PROCESSING/MANUFACTURING

6.1 The **Jacket Extreme Cold Climate Two Layer MK-II** shall be manufactured in two layers. The shape and design as per the prototype sample.

(a) Outer Layer:- The Outer Shell of the Outer Layer shall be made from 100% Nylon PU coated Waterproof and Windproof Breathable Plain Weave Fabric 100 GSM and inner lining shall be made from 100 % Polyester Micro-Filament Plain Weave Woven Fabric 70 GSM & One layer Poly Fill (100% Polyester) 100 GSM with Pre-quilted Non-woven web lining is used as the filling material for providing thermal insulation/resistance against wind, rain and snow. Zippered Side pockets with flap have been provided on both sides of the front. One mobile pocket has also been provided in the inner side of the left front. Detachable Hood with plastic Slide Fasteners made of the same material used for outer layer of the Jacket. Primary purpose of the hood is to cover head, neck and chin area from direct contact of wind, snow and rain. Plastic Slide fastener is provided for closing the front. Cord Elastic with plastic Stopper & ring is also provided at the bottom of the Jacket Extreme Cold Climate Two Layer MK-II and hood for better adjustment according to the requirement of the user. Cuff of the sleeves are provided with Fastener Hook & Loop for better adjustment.

(b) Inner Layer: - 100% Nylon Micro-Filament Woven Fabric 50 GSM used as outer Layer & 100 % Polyester Micro-Filament Plain Weave Woven Fabric 70 GSM used as Inner Shell Fabric. Two layers of Poly Fill (100% Polyester) 100 GSM Pre-quilted Non-woven web lining are used as the filling material for providing thermal insulation. Zippered side pockets with flap have been provided on both sides of the front. Plastic Slide Fastener Heavy Duty is provided for closing the front. For attaching inner layer to Outer layer Elastic cord 3mm is used at collar back & sleeves.

7.0 DIMENSIONS AND TOLERANCES

7.1 All the dimensions are as per the sealed sample held in the custody of Ordnance Clothing Factory, Shahjahanpur.

8.0 TIV VALUE OF THE COMPLETE SYSTEM

Parameters	Specified Value	Test Method
Thermal Insulation Value (TIV) of complete system in CLO values. (Measured at body & groin portion)	3.5 CLO (Min)	ISO 15831:2004

9.0 WORKMANSHIP & FINISH

9.1 The general workmanship and finish of Jacket Extreme Cold Climate Two Layer MK-II shall be of a high standard and similar to sealed sample. In order to attain high standard in aesthetic appearance (shade, fitments and texture), general workmanship (alignments, stitching and consistency), finish (softness, comfort and neatness), the Jacket Extreme Cold Climate Two Layer MK-II shall be free from yarn, weaving, wet processing, garmenting defects and any other spots which affects the serviceability of the Jacket Extreme Cold Climate Two Layer MK-II. All components of the Jacket Extreme Cold Climate Two Layer MK-II shall also be compatible in fitment, workmanship and finish.

10.0 ADVANCE SAMPLE

10.1 Advance sample clause is applicable only if it is mentioned in the contract. In case of its applicability, the manufacturer needs to submit 05 Sets of Jacket Extreme Cold Climate Two Layer MK-II representing size(s) involved in the contract along with three meters each of basic materials as Advance samples for inspection/ trial, testing and approval by AHSP for bulk production clearance (BPC) or as laid down in the contract.

11.0 PRE-INSPECTION BY MANUFACTURER

11.1 Manufacturers/Contractors must satisfy themselves first that the stores manufactured are in accordance with the contract and fully conform to the specification, by carrying out thorough pre-inspection of each store of the lot/batch before actually tendering the same for inspection to the Quality Assurance Officer nominated under the terms of the contract.

11.2 A declaration by the contractor that necessary pre-inspection/tests have been carried out on the stores tendered and the same are fit for inspection and test report shall be rendered along with the challan. The declaration shall include the method followed in pre-inspection showing features checked/tested and the test reports be submitted along with challan.

11.3 If the Quality Assurance officer finds that pre-inspection of the consignment as required above has not been properly carried out, the consignment is liable for rejection.

12.0 QUALITY ASSURANCE

12.1 On examination, random samples taken from any portion of the consignment or during surveillance inspection shall conform to the requirement when tested in accordance with the method mentioned against each in the specification.

12.2 The store should be of the latest manufacture, conforming to the current production standard and having 100% defined life at the time of delivery.

13.0 SAMPLING

- 13.1 The lot size is restricted to 10000 sets.
- 13.2 The supplier shall offer the store in box (four unit packs in a box), serially numbered and arranged in such a manner that the entire lot is easily accessible to the sampling officer.
- 13.3 Based on the lot size offered for quality assurance, sample units for visual examination and dimension check at the time of sampling be drawn as per column-2 and for bulk inspection as per column-4 of the table using technique of random sampling as per IS : 4905-1968.
- 13.4 On being satisfied with the preliminary examination, sample if required for laboratory test/examination shall be drawn as per column 5 & 7 of the table.

TABLE FOR SCALE OF SAMPLING AND PERMISSIBLE NUMBER
BASED ON 4% AQL IS: 2500-2000

Lot size in sets	Sampling Plan For						
	Visual examination/ dimensional check at the time of sampling (L-1)		Sample Size for detail check at bulk QA Stage (L-II)	Physical parameters (for laboratory tests) (S-4)		Chemical parameters (for laboratory tests) (S-2)	
	Sample Size	Acceptance No.		Sample Size	Acceptance No.	Sample Size	Acceptance No.
1	2	3	4	5	6	7	8
Up to 280	13	1	32	13	1	5	0
281 — 500	20	2	50	13	1	5	0
501 —1200	32	3	80	20	2	5	0
1201-3200	50	5	125	32	3	5	1
3201-10000	80	7	200	32	3	5	1

Note:-

- i. The Sampling shall be done randomly as per IS: 4905,1968-Amd -1
- ii. Samples for lab testing will be drawn from the samples drawn and mentioned in Col No. 2 only.
- iii. Samples for chemical test (Col. No.7) shall be drawn out of Physical test samples (Col. No.5).
- iv. Total Acceptance No. mentioned in Col. No. 6 for physical Parameter is inclusive of Acceptance No. mentioned at Col. No.8 for Chemical Parameter

14.0 CRITERIA FOR CONFORMITY

14.1 The lot shall be considered to be in conformity with the required standard if the samples drawn for lab test as above are found satisfactory and the lot is also found otherwise satisfactory with regard to visual parameters.

15.0 TEST METHOD

15.1 The basic cloth and garniture used shall conform to the specification requirements when tested as per method laid down in the relevant specification as shown in Appendix 'A' to 'E'.

16.0 MARKING OF STORE

16.1 Each Outer Jacket and Removable Inner Jacket shall be stitched with marking label made of cloth taffeta synthetic white 7.0 cm x 2.5 cm in double layer on inside below the collar seam of back side in Outer Jacket and Removable Inner Jacket. The label shall be printed with details mentioned below in HINDI & ENGLISH on face & back of the size label.

- (i) Brief Nomenclature of store & Size.
- (ii) Cat/Part No
- (iii) Manufacturers name initials or recognized trade mark.
- (iv) Year of manufacturing.

16.2 MARKING OF WASHING INSTRUCTIONS

16.2.1 Each Jacket shall have washing instructions label made of cloth taffeta synthetic white 7 cm x 2.5 cm attached adjacent to the size label of each component of Jacket Extreme Cold Climate Two Layer MK-II. The label shall be printed with details mentioned below in HINDI on face of the size label.

16.2.2 At top of the label "धुलाई निर्देश" shall be written underlined in bold letters.

17.0 PACKAGING AND MARKING

17.1 As required by the costumer.

18.0 TECHNICAL LITERATURE AND DOCUMENTS

18.1 Refer clause 2.0 of this specification.

19.0 WARRANTY

18.1 "Except as otherwise provided in the invitation to the tender, the Contractor/seller hereby declare that the goods, stores, articles sold/supplied to the purchaser under this Contract shall be of the best quality and workmanship and new in all respects and shall be strictly in accordance with the specifications and particulars contained/mentioned in the Contract. The Contractor/seller hereby guarantees that the said goods/stores/articles would continue to conform to the description and quality aforesaid for a period of 12 months from the date of delivery of the said goods/stores/articles to the purchaser or 15 months from the date of shipment/dispatch from the contractor's work, whichever is earlier and that notwithstanding the fact that the purchaser (Inspector) may have inspected and/or approved the said goods/stores, articles. If during the aforesaid period of 12/15 months the said goods/stores/article be discovered not to be conforming to the description and quality aforesaid or not having satisfactory performance or having deteriorated, the decision of the purchaser in that behalf shall be final and binding on the Contractor/setter to rectify replace by acceptable goods/stores/articles or such portion or portions thereof as is found to be defective by the purchaser within a reasonable period not exceeding three months or as may be allowed by the purchaser in his discretions on the application made thereof by the Contractor/seller and in such an event the above mentioned warranty period shall apply to goods/stores/articles rectified/replaced from the date of rectification/replacement thereof. Otherwise the Contractor/seller, shall pay to the purchaser such compensation as determined by the purchaser as may arise by reason of the break of the Warranty herein contained".

20.0 DRAWINGS/SKETCHES

20.1 One drawing sheet attached to this specification.

21.0 SUGGESTION FOR IMPROVEMENT

21.1 Any suggestions for improvement of this document may be forwarded to:-

THE GENERAL MANAGER
ORDNANCE CLOTHING FACTORY
SHAHJAHANPUR – 242001 (U.P.)
Telephone : 05842-223416, 223704
FAX : 05842-223328
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22.0 DETAILS OF ABBREVIATIONS USED

AHSP	: Authority Holding Sealed Particulars
A/T	: Acceptance of Tender
cm	: Centimeter
m	: Meter
mm	: Millimeter
T&C	: Textiles & Clothing
OCFS	: Ordnance Clothing Factory Shahjahanpur

Date: 04-04-2023

Place: Shahjahanpur

(A.K. VERMA)
ADDL. GENERAL MANAGER
FOR GENERAL MANAGER
ORDNANCE CLOTHING FACTORY
SHAHJAHANAPUR- 242001

APPENDIX 'A'**OUTER JACKET (OUTER SHELL FABRIC)****100% Nylon PU Coated Waterproof and Windproof Breathable Plain Weave Fabric 100 GSM**

Sl.	Parameter	Test method	UoM	Requirement
1.	Material	IS:667		100% Nylon
2.	Mass/m ²	IS:7016 (Part-I)	g/m ²	100 ±5 %
3.	Width	IS:1954-1990	CM	150 (Min)
4.	Breaking Strength			
	a. Warp	ISO13934-1:2013	N	600 (min)
	b. Weft			500 (min)
5.	Tearing Strength			
	a. Warp	ISO13937-2:2000	N	20 (min)
	b. Weft			20 (min)
6.	Spray rating test			
	a. Initial	ISO 4920:2012 (Wash as per ISO 6330:2000, 2A,E)	-	3 or better
	b. After 5 wash			4 or better
8.	Dimensional Property (Shrinking property after 2 washing cycles at 40 ⁰ C)	ISO - 6330:2012/ISO 5077:2007, Type A. Test programme 4 N, (40+/-3) C, Flat Dry)	%	2.5 % on both direction (Max)
9.	Colour fastness to-			
	a. Light	ISO 105 B02:2014, (Xenon Arc Lamp, Blue Scale)		4 or better
	b. Washing	ISO 105 C06: A2S-30Min		4 or better
	c. Perspiration (Acid & Alkali)	ISO 105 E04:2013		4 or better
	d. Rubbing			
	i. Dry	ISO 105 X12:2001		4 or better
	ii. Wet			4 or better
10.	Pantone Shade No.	For guidance purpose	--	19-0511 TPX

APPENDIX 'B'

**OUTER & INNER JACKET (INNER LINNING FABRIC)
100 % Polyester Micro-Filament Plain Weave 70 GSM Fabric**

Sl.	Parameter	Test method	UoM	Requirement
1.	Material	IS:667		100% Polyester
2.	Mass/m²	IS:7016 (Part-I)	g/m ²	70 ±5 %
3.	Width	IS:1954-1990	CM	150 (Min)
4.	Weave	Visual	--	Plain
4.	Breaking Strength a. Warp b. Weft	ISO13934-1:2013	N	500 (min) 300 (min)
5.	Tearing Strength a. Warp b. Weft	ISO13937-2:2000	N	8 (min) 8 (min)
6.	Spray rating test a) Initial b) After 5 wash	IS: 390		80 or better 80 or better
7.	Water Vapour Resistance Ret	ISO 11092:1993	m ² Pa/W	15 (max)
8	Dimensional Property (Shrinking property after 2 washing cycles at 40^o C)	ISO - 6330:2012/ISO 5077:2007, Type A. Test programme 4 N, (40±3) C, Flat Dry)	%	2.5% on both direction (Max)
9.	Colour fastness to- a. Light b. Washing c. Perspiration (Acid & Alkali) d. Rubbing i) Dry ii) Wet	ISO 105 B02:2014, (Xenon Arc Lamp, Blue Scale) ISO 105 C06: A2S-30Min ISO 105 E04:2013 ISO 105 X12:2001		4 or better 4 or better 4 or better 4 or better 4 or better
10.	Pantone Shade No.	For guidance purpose	--	19-0511 TPX

APPENDIX - 'C'**INNER JACKET (OUTER SHELL FABRIC)****100% Nylon Micro-Filament Woven Fabric 50 GSM**

SI No.	Parameter	Test method	UoM	Requirement
1.	Material	IS:667		100% Nylon
2.	Mass/m ²	IS:7016 (Part-I)	g/m ²	50±5 %
3.	Width	IS:1954-1990	CM	150 (Min)
4.	Breaking Strength			
	a. Warp	ISO13934-1:2013	N	500 (min)
	b. Weft			300 (min)
5.	Tearing Strength			
	a. Warp	ISO13937-2:2000	N	15 (min)
	b. Weft			15 (min)
6.	Spray rating test			
	a. Initial	ISO 4920:2012 (Wash as per ISO 6330:2000, 2A,E)	-	4 or better
	b. After 5 wash			4 or better
7.	Water Vapour Resistance Ret	ISO 11092:1993	m ² Pa/W	15 (max)
8.	Dimensional Property (Shrinking property after 2 washing cycles at 40 ⁰ C)	ISO - 6330:2012/ISO 5077:2007, Type A. Test programme 4 N, (40±3) C, Flat Dry)	%	2.5% on both direction (Max)
9.	Colour fastness to-			
	a. Light	ISO 105 B02:2014, (Xenon Arc Lamp, Blue Scale)		4 or better
	b. Washing	ISO 105 C06: A2S-30Min		4 or better
	c. Perspiration (Acid & Alkali)	ISO 105 E04:2013		4 or better
	d. Rubbing			
	i- Dry	ISO 105 X12:2001		4 or better
	ii- Wet			4 or better
10.	Pantone Shade No.	For guidance purpose	--	19-0511 TPX

APPENDIX - 'D'**Filling Material and Testing Methods for both Outer & Inner Jacket**

Sl. No.	Parameters	Specified Value	Test Method
1	Material	Poly fill of 100 % Polyester White Denier 3.5 ± 0.5 Hollow for Middle & Outer Jacket. Both sides of the Poly fill will have Non-woven fabric white locked with ultrasonic welding joints in a regular interval (As per Sample Held in OCFS)	IS: 667 For Fibre Fineness, IS: 10014 (Pt-2)
2	Mass/m ²	100±10% (Excluding Non-woven fabrics on both the sides)	IS : 15891 (Pt-I)
3	width	150 cm. (min)	IS : 1964- 2001, RA 2010
4	Compressional Recovery	90% (Min)	As per Appendix 'G' of Provisional Specification No. IND / TC /4587(c)
5	Thickness (under pressure of 0.5 gm/cm ²)	4.0 mm (minimum)	ISO:9073-2-1995 (E)

APPENDIX - 'E'

METHOD OF TEST FOR IDENTIFICATION OF POLYURETHANE

Approx. 5 g of the coated fabric is dissolved/ swollen in 5ml Glacial Acetic acid by warming for several minutes. To this added 0.1 g p-dimethylamino benzaldehyde. The solution is further warmed for 2-3 minutes. The solution turns yellow indicating presence of polyurethane.