भारतीय मानक ब्यूरो
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भारतीय मानक मसौदा

वस्त्रादि — भरी हुई जैकेट — विशिष्टि

Draft Indian Standard

TEXTILES — FILLED JACKET — SPECIFICATION

ICS : 61.020

Made up textiles (Including Ready-Made Garments) Sectional Committee, TXD 20	Last Date of Receipt of Comments 31st October 2025

FOREWORD
(Formal clauses will be added later)

Filled jackets represent a vital segment of the global ready-made garment industry, valued for their essential role in providing warmth, protection, and comfort in cold environments. Filled jackets, encompasses fibre filled, down filled and synthetic fibre/wadding filled jackets widely utilized across diverse applications, ranging from urban fashion to outdoor activities and cold weather conditions.

This standard establishes the essential requirements for filled jackets, focusing on key parameters such as fabric and construction durability, chemical safety, and the performance of trims and accessories. Special attention is given to functional claims, such as water repellency, wind resistance, and breathability, which must be substantiated through standardized testing to ensure reliability without compromising wearer comfort. Formulated to accommodate different styles under the broad spectrum of filled jacket types, this standard seeks to encourage innovation and creativity in design while ensuring that essential baseline quality criteria are consistently met, thereby ensuring quality, reliability, and consumer satisfaction.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall

be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1 SCOPE

1.1 This standard specifies the requirements for ready-made down/feather and synthetic fibre padded jackets, including materials, construction, and associated trims used in their manufacture.

1.2 This standard applies to fibre filled, wadding/nonwoven filled, and down filled jackets intended for general use in cold weather conditions for men, women, and children.

1.3 This standard does not apply to jackets made from denim, corduroy, velvet, leather, or fur leather materials, and tactical jackets for defence military or expedition use.

1.4 The standard does not specify aesthetic attributes such as color, shade, texture, or fashion styling of down and padded jackets.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 TERMS AND DEFINITIONS

For the purposes of this Indian Standard, the following terms and definitions apply:

3.1 Filled Insulating Jacket — A garment designed characterized by an outer shell, an inner lining, and a filling material intended to be used in cold weather.

3.2 Shell Fabric — The outermost layer of the jacket. The shell fabric serves as the primary barrier against environmental elements, including wind, water, and abrasion.

3.3 Lining — The innermost layer of the jacket, which is in direct contact with the wearer or an inner garment. The lining is typically made from lightweight, smooth fabrics or fleece fabric provide comfort, reduce friction, and facilitate ease of wear.

3.4 Filling — The insulating material placed between the shell fabric and lining of the jacket to provide bulk or warmth and is selected based on its thermal properties, weight, and environmental performance.

3.5 Down — A natural insulating material derived from the undercoating of waterfowl, such as ducks or geese.

3.6 Synthetic Wadding — A man-made insulating material, typically composed of polyester fibres, designed to mimic the thermal properties of down. Synthetic fibre padding or wadding retains warmth even when wet, dries faster than down, and is often more durable and cost-effective. Its insulating capacity is measured by weight in grams per square meter (g/m^2), which correlates to its thickness and warmth.

3.7 Quilting — A stitching pattern used to secure the filling material between the shell fabric and lining, preventing it from shifting or clumping.

3.8 Baffle — A construction technique where two layers of fabric are sewn together to create a pocket or chamber that holds the filling material in place. Baffles prevent the shifting of insulation and minimize cold spots, ensuring consistent warmth.

3.9 Fill Weight — The total mass of insulation used in the jacket. For down, it is expressed in grams and reflects the quantity of down present. For synthetic fibre padding, it is expressed in grams per square meter (g/m^2), indicating the density and thickness of the insulation.

3.10 Fill Power — A measure of the loft or fluffiness of down insulation, (expressed in cm^3/g). Higher fill power indicates better insulating efficiency, as the down can trap more air for its weight, providing greater warmth with less bulk.

3.11 Raglan Sleeve — A sleeve design where the sleeve extends in one piece fully to the collar, creating a diagonal seam from the underarm to the neckline. This construction provides greater ease of movement and a distinctive aesthetic, often used in filled insulating jackets for enhanced comfort during outdoor activities.

3.12 Set-In Sleeve — A sleeve design where the sleeve is attached to the body of the jacket at the shoulder through a circular armhole seam. This traditional construction provides a structured, tailored appearance and is commonly used in filled insulating jackets to ensure a snug fit around the shoulder area.

3.13 Mesh Lining — A lightweight, breathable inner fabric made from an open-weave or net-like structure, typically constructed from synthetic fibres such as polyester or nylon. In filled jackets, mesh lining is used to enhance air circulation, improve moisture management, and reduce garment weight, while maintaining wearer comfort and structural integrity.

3.14 Puffer Jacket — A style of filled jacket characterized by a quilted construction with wide baffles or channels, creating a voluminous silhouette. Puffer jackets are designed for maximum warmth, using either down or synthetic insulation, and are suitable for casual

urban wear or outdoor activities in cold climates. They may vary in length, from short to long, depending on the intended coverage and mobility requirements.

3.15 Parka-Style Filled Jacket — A longer style of filled jacket, typically extending to the thighs or knees, designed for extreme cold weather conditions as shown in Fig. 3. Parka-style jackets often feature a hood with fur or faux-fur trim, storm flaps, adjustable drawcords, and multiple pockets, providing enhanced protection against wind, snow, and low temperatures, making them ideal for high-altitude or harsh winter environments.

3.16 Bomber-Style Filled Jacket — A style of filled jacket featuring a fitted waistband and cuffs, often constructed with ribbed fabric, and a shorter length for ease of movementas shown in Fig. 2. Bomber-style jackets offer a tailored appearance while providing warmth through down or synthetic insulation, making them suitable for urban settings and moderate cold weather with a blend of style and functionality.

3.17 Hooded Filled Jacket — A style of filled jacket equipped with an attached or detachable hood, designed to provide additional protection for the head and neck against cold, wind, or rain as show in Fig. 1.

3.18 Sleeveless Filled Jacket (Vest/Gilet) — A style of filled jacket designed without sleeves to provide core warmth while allowing greater arm mobility as shown in Fig. 4.

3.19 Packable Filled Jacket — A style of filled jacket designed to be lightweight and compressible, typically using down or synthetic insulation, allowing it to be folded and stored into a small integrated pouch for portability. Packable filled jackets are intended for travel and outdoor activities, providing convenience and warmth in variable climatic conditions without adding significant bulk.

4 TYPES

Based on the type of filled material and liner used, jackets shall be classified as follows:

a) Type I — Jackets filled with fibres as middle layer and having fleece as lining.
b) Type II — Jackets filled with fibres as middle layer having plain (not raised) fabric as lining.
c) Type III — Jackets filled Nonwoven Wadding as middle layer and having fleece as lining.
d) Type IV — Jackets filled Nonwoven Wadding as middle layer having plain (not raised) fabric as lining.
e) Type V — Jackets insulated with down and/or feathers, typically enclosed within quilted baffles to ensure even distribution of the filling and enhanced thermal efficiency.

5 MANUFACTURE, WORKMANSHIP, AND FINISH

5.1 The fabrics (shell and lining) used in the construction of jackets, when visually examined, shall be free from spinning, weaving, and processing defects, including uneven dyeing, stains, or surface damage. The quilting shall be uniform, and the distribution of down fibres or wadding shall be even and free from clumping or voids to avoid cold spots.

5.2 Stitching operations shall ensure proper seam alignment and construction, avoiding mismatches, puckering, pleats, or irregularities. Seams shall be smooth and durable, and stitch density shall remain consistent and uniform throughout the garment.

5.3 Size labels and temperature suitability labels (if any) shall be accurately positioned and securely attached in accordance with the specified standards. Wash care labels shall be properly attached in the designated locations without misplacement or misalignment. Each jacket shall be provided with a care label that conforms to the requirements specified in IS 14452.

5.4 All thread ends shall be neatly trimmed to eliminate loose or hanging threads on the finished garment. The jacket shall be free from stains, foreign matter, down or wadding migration and leakage, or objectionable odours.

5.5 Jackets designed for enhanced water resistance or wind proofing shall have adequately sealed seams using appropriate seam taping techniques. Taped seams shall be uniformly applied, free from lifting or bubbling, and shall maintain flexibility without delamination during regular use or laundering. Storm flaps, when included to shield zipper openings or closures, shall be evenly stitched, adequately wide, and securely fastened to prevent wind or water ingress.

5.6 The jackets shall be delivered in a commercially dry and clean state, free from foreign matter, unpleasant odours, or any form of contamination.

5.7 Jacket fillings shall be fresh, free from discarded bio-waste, and not sourced from second-hand materials to avoid any potential health hazards (Recycled materials can be used). Fibre composition labelling for down and feather fill shall also be carried out as per the Annex B.

6 PERFORMANCE REQUIREMENTS

6.1 The fabrics used for the shell and lining of the jacket shall confirm to the requirements as specified in Table 1 and Table 2, respectively.

6.2 The jacket shall conform to the requirements as specified in Table 3.
6.3 The jackets having down and feather filling as the insulating layer shall conform to the requirements as specified in Table 4.

6.4 The fabrics, and other trims and accessories used in the manufacture of filled jacket shall meet the chemical requirements specified in Table 5.

6.5 The zippers used in the jacket shall conform to the requirements of IS 3148 for metallic type and IS 14181 (Part 1) for plastic type.

6.6 The snap fasteners used in the jacket shall conform to IS 4108. The minimum unsnapping strength of the snap fasteners used shall be 8N, when tested as per Annex K.

6.7 The hook and loop fasteners used in the jacket shall conform to IS 8156. The elastic tape used in the jacket shall conform to IS 9686.

6.8 Functional performance, and any special claims made for the jacket, shall be substantiated by the corresponding performance requirements detailed in Table 6.

6.9 The permissible tolerances for jacket size measurements when compared to the declared values in the size chart, may be as recommended in Table 7.

Table 1 Requirements for Shell Fabric in Filled Jackets

(*Clause* 6.1)

Sl No.	**Characteristics**	**Requirements for fabrics**				**Methods of Test, Ref to**
		Below 100 g/m²	**100-175 g/m²**	**Above 175-250 g/m²**	**Above 250 g/m²**	
(1)	(2)	(3)				(4)
i)	Tensile strength, N, *Min* a) Warp b) Weft	 100 80	 130 100	 170 150	 240 170	IS 1969-2
ii)	Tear strength, N, *Min* a) Warp b) Weft	 7 6	 8 7	 11 10	 12 11	IS 6489-1
iii)	Abrasion resistance, Number of rubs for physical breakdown (with 9 KPa load), *Min*	8,000	15,000	18,000	20,000	IS 12673-2
iv)	Seam strength, N, *Min* (*see* Note 1)	80	110	130	170	IS/ISO 13935-2
v)	Seam slippage (at ≤ 6 mm seam opening), N, *Min*	60	80	100	110	IS/ISO 13936-1
NOTE — The seam breaking strength for bonded seams and welded seams shall be not less than 130 N and 100 N, respectively.						

Table 2 Requirements for Lining Fabric in Filled Jackets

(*Clause* 6.1)

Sl No.	**Characteristics**	**Requirements for fabrics**			**Methods of Test, Ref to**
		Below 80	**80-150**	**Above 150**	

		g/m²	g/m²	g/m²	
(1)	(2)	(3)			(4)
i)	Tensile strength, N, *Min* a) Warp b) Weft	 60 60	 100 80	 130 120	IS 1969-2
ii)	Tear strength, N, *Min* a) Warp b) Weft	 6 6	 8 7	 9 8	IS 6489-1
iii)	Pilling resistance, Appearance change grade after 2000 revs, *Min* (*see* Note 1 and Note 2)	3-4			IS 10971-2

NOTES —

1. Pilling resistance of fleece lining, where applicable, shall be tested after 5 washes.
2. For fleece linings made of blends with cellulosic or regenerated cellulosic fibres, the pilling resistance grade of 3 shall be acceptable.
3. For reversible jackets, the requirements for both the shell and lining fabrics shall be the same as those specified for the shell fabric, as given in Table 1.

Table 3 Requirements for Jacket garment
(*Clause* 6.2)

Sl No.	Characteristics	Requirements		Methods of Test, Ref to
		Shell	Lining	
(1)	(2)	(3)	(4)	(5)
i)	Fibre composition, Tolerance percent, *Max* a) Single fibre b) Fibre blends	 0 (As declared) ± 3		IS 667
ii)	Fabric areal density, Tolerance percent, *Max*	± 5		IS 1964
iii)	Color fastness, *Min (Applicable to both fabrics and trims)*			
	a) Water: i) Color change ii) Self stain iii) Adjacent stain	 4 4-5 4	 4 4-5 4	IS/ISO 105-E01
	b) Washing: i) Color change ii) Self stain iii) Adjacent stain	 4 4-5 4	 4 4-5 4	IS/ISO 105-C06
	c) Dry cleaning: i) Color change ii) Self stain iii) Adjacent stain	 4 4-5 4	 4 4-5 4	IS/ISO 105-D01
	d) Perspiration (acidic and alkaline):			IS/ISO 105-E04

	i) Color change ii) Self stain iii) Adjacent stain	4 4-5 4	4 4-5 4	
	e) Rubbing: (*see* Note 1) i) Dry ii) Wet	 3-4 3	 3-4 3	IS/ISO 105-X12
	f) Light (Blue wool reference grade 4) i) Dark colors ii) Light colors	 4 3-4	 -	IS/ISO 105-E01
	g) Saliva (*see* Note 2)	Resistant to Saliva		IS 15626
iv)	Dimensional stability to washing, Percent, *Max* (*see* Note 3)	± 3		IS 15370
v)	Dimensional stability to dry cleaning, Percent, *Max*	± 3		Annex C
vi)	Spirality after laundering, Percent, *Max*	5		IS/ISO 16322-3 (Procedure B)
vii)	General appearance after washing and dry cleaning (*see* Note 4 and Note 5)	No obvious defects or major observable changes in appearance. Color change – 4 Self-staining – 4.5		Visual
viii)	Fabric proofness (after 5 wash / dry clean cycles), No. of fibres penetrating, *Max* i) Down and feather filling ii) Synthetic wadding	 30 6		Annex D

NOTES —

1. For dark colors, the color fastness grade to wet rubbing may be 2-3.
2. Colour fastness to saliva applies only to the jackets meant for children.
3. The washing procedure chosen for testing dimensional stability shall be in accordance with the instructions specified on the care label. The test shall have 3 wash and 3 dry cycles.
4. The appearance shall be evaluated visually using the after-wash sample subjected to 3 wash and 3 dry cycles for washing assessment, and the sample dry cleaned as per IS/ISO 105-D01 for dry cleaning assessment.
5. Major changes include, but are not limited to – migration of wadding or uneven clumping/ localised fibre accumulation within the casing (shell and lining), excessively bulky wadding, surface cracking, damage and separation of coating from the face fabric, puckering of seams, puckering of fabric around trims, seams, or similar unravels, holes, detachment of fastenings and trims, excessive snagging of mesh lining, pilling/ lint shedding/ pile loss in fleece lining, unreadable care label, etc. Color change and self-staining grades after washing shall be evaluated in accordance with IS/ISO 105-A02 and IS/ISO 105-A03, respectively.
6. The parameters specified under iv), v), vi), and vii) shall be evaluated on the jacket garment, and not on individual fabric layers.

Table 4 Down and Feather Filling Requirements for Jackets

(*Clause* 6.3)

Sl No.	Characteristics	Requirements	Methods of Test, Ref to
(1)	(2)	(3)	(4)
i)	Alkylphenols – AP	10	IS 17817

	(NP + OP), ppm, *Max*		
ii)	Alkylphenol Ethoxylates - APEO (NP + OP + NP_nEO + OP_nEO), ppm, *Max*	100	IS 17530-1
iii)	Turbidity, mm, Min	300	Annex E
iv)	Oxygen Index number, *Max* (*see* Notes)	20	Annex F
v)	Hygiene and cleanliness – Microbiological state a) Mesophil aerobic bacteria Count, CFU/g b) Faecal Streptococci count, CFU/g c) Sulphite reducing clostridium count, CFU/g d) Salmonella, Presence in 20 g feathers	 10^6 10^2 10^2 None	EN 1884
vi)	Fat and oil content, Percent, *Max*	1.5	Annex G
vii)	Moisture, Percent, *Max*	13	Annex H
viii)	Odour	Pass	SNV 195651

NOTES —

1. For products claiming extra clean/ super clean/ hypoallergenic filling, oxygen number and turbidity shall be 4.8 (Max) and 500 (Min), respectively.

2. Materials with an oxygen number greater than 20 and up to 50 shall require further microbiological analysis to be considered hygienic and clean. If the oxygen number exceeds 50, the material shall be deemed to have failed, and no further testing shall be carried out. Materials with an oxygen number of 20 or below shall be considered acceptable without the need for microbiological analysis.

Table 5 Chemical Requirements for Filled Jackets

(*Clause* 6.4)

Sl No.	**Characteristics**	**Requirements**	**Methods of Test, Ref to**
(1)	(2)	(3)	(4)
Tests to be carried out on shell & lining fabrics and other textile-based trims & accessories such as appliques, patches, embroidery, etc.)			
i)	Extractable heavy metals, ppm, *Max*		
	a) Antimony	30	Annex A of IS 15651
	b) Arsenic	1	
	c) Cadmium	0.1	
	d) Chromium	2	
	e) Cobalt	4	
	f) Copper	50	
	g) Lead	1	
	h) Mercury	0.02	
	j) Nickel	4	

ii)	Formaldehyde, ppm, *Max*	300	IS 14563-1
iii)	Phthalates (DINP, DIDP, DNOP, DEHP, DBP, BBP), Percent, *Max* a) Individual b) Total	 0.05 0.1	IS 17529
iv)	Decomposable carcinogenic aromatic amines derived from azo colorants – Detection limit, ppm, *Max* (*see* Note)	20	IS 17336 Part 1 and IS 17336 Part 3
v)	*p*H value of aqueous extract	5-9	IS 1390
Tests to be carried out on trims with surface coatings			
vi)	Total heavy metals, ppm, *Max*		
	a) Arsenic	25	EN 16711-1
	b) Cadmium	75	
	c) Lead	90	
vii)	Nickel release, µg/cm^2/week, *Max*	0.5	EN 1811
NOTE — The list of banned aromatic amines and arylamine salts released from certain azo dyes that are prohibited from use in the manufacture of textiles and related products is provided in Annex J for reference and compliance.			

Table 6 Functional and Claimed Performance Requirements for Filled Jackets

(*Clause* 6.8)

Sl No.	Characteristics	Requirements	Methods of Test, Ref to
(1)	(2)	(3)	(4)
i)	Thermal resistance, Tolerance percent,	± 5	IS 17376
ii)	Breathability Water vapour transmission rate, g/m^2/24 h, *Min* (*see* Note 1)	800	Annex F of IS 16390
iii)	Water repellent (DWR) claims Spray rating scale, *Min* a) Initial b) After 3 washes / 1 dry clean (*see* Note 2)	 4 3	IS 390 and IS 15370 Type A (3H)
iv)	Water resistant claims Weight gain of blotter (Initial & after 3 washes / 1 dry clean), g, *Max*	1	IS 17375
v)	Water proof claims No leakage at hydrostatic pressure (Initial & after 3 washes / 1 dry clean), mm H_2O, *Min* a) Shell fabric b) Sealed and taped seams (*see* Note 3)	 2000 1600	IS 391
vi)	Wind resistant / Windproof claims		IS 11056

	Air permeability, mm/s, *Max* a) Wind resistant b) Windproof	 20 5	
vii)	Soil repellent claims Soil release grade, *Min* a) Initial b) After 20 washes	 4 3	Annex L
viii)	Wicks away moisture claims Wicking rate (after 5 washes), cm per 30 minutes, *Min* (*see* Note 4)	10	Annex M
ix)	Anti-bacterial claims Anti-bacterial value, *Min*	2	IS/ISO 20743

NOTES —

1. Water vapour Transmission Rate testing shall be carried out on both the shell and the lining fabrics to support breathability claims.
2. Water repellent, water resistant, waterproof, wind resistant /windproof claims shall be tested on the shell fabric.
3. Unless otherwise specified in the care label instructions, washing procedure Type A (3H) and drip drying shall be used.
4. Coated shell fabrics shall be tested at a water pressure rise rate of 60 cm H_2O/min, whereas uncoated shell fabrics may be evaluated at a lower rate of 10 cm H_2O/min.
5. Claims related to moisture-wicking performance shall be verified only when wicking lining materials such as mesh fabrics are used.

Table 7 Recommended Permissible Dimensional Allowances for Finished Jackets

(*Clause* 6.9)

Sl No.	**Characteristics**	**Requirements**	**Methods of Test, Ref to**
(1)	(2)	(3)	(4)
i)	Permissible dimensional allowance, cm, *Max*		
	a) Chest Circumference	± 2.0	Annex N
	b) Waist Circumference	± 1.5	
	c) Total Shoulder Width	± 0.8	
	d) Garment Length	± 1.0	
	e) Sleeve Length i) Set-In Sleeve ii) Raglan Sleeve	 ± 0.8 ± 1.2	
	f) Collar Size	± 1.0	

FIG 1. PADDED AND HOODED FILLED JACKETS

FIG 2. BOMBER STYLE FILLED JACKETS

FIG 3. PARKA STYLE FILLED JACKETS

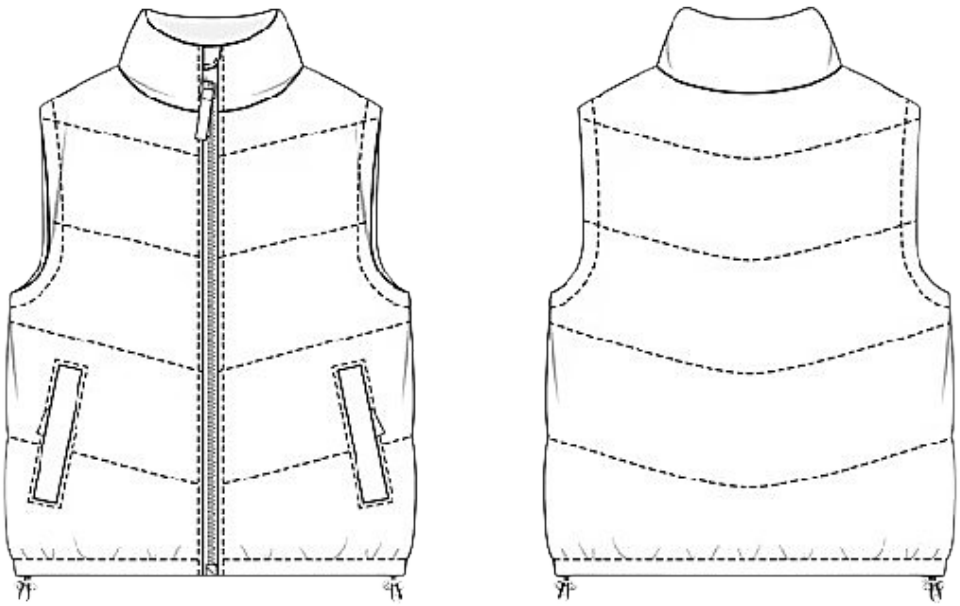


FIG 4. SLEEVELESS FILLED JACKETS (GILETS)

7 PACKING AND MARKING

7.1 Packing

Each jacket shall be packed as per the agreement between the buyer and seller.

7.2 Marking

Each jacket shall be marked with the following:

a) Size, care instructions label (*see* IS 14452);
b) Temperature suitability label;
c) Manufacturer's name and country of origin label;
d) Fibre blend or plumage compositions (*see* Annex P);
e) Functional claims label if any;
f) Batch number, month and year of manufacture; and
g) Any other information required by law in force.

8 BIS CERTIFICATION

The Product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the Bureau of Indian Standards Act, 2016, and the Rules and Regulations framed thereunder, and the product (s) may be marked with the Standard Mark.

9 SAMPLING AND CRITERIA FOR CONFORMITY

9.1 Lot

The number of jackets manufactured with the same fabric type, size, and trims delivered to a buyer against one dispatch note shall constitute a lot.

9.2 The number of jackets to be selected at random shall be according to col (2) and col (3) of Table 8. To ensure the randomness of the selection, IS 4905 may be followed.

9.3 Number of Tests and Criteria for Conformity

9.3.1 The number of pieces to be selected for testing physical parameters shall be as per col (3) of Table 8. For chemical parameters, the number of pieces selected shall be as per col (5) of Table 8.

9.3.2 The lot shall be declared conforming to the requirements of this standard if the total number of defective pieces does not exceed the value given in col (4) and col (6) of Table 8.

Table 8 Sample Size and Permissible Number of Non-Conforming Pairs for Jackets

(*Clauses* 9.2, 9.3.1 and 9.3.2)

Sl No.	Lot Size	Sample Size	Permissible number of Non-conforming Pieces	Sub-sample Size	Permissible number of Non-conforming Pieces
(1)	(2)	(3)	(4)	(5)	(6)
i)	Up to 280	13	1	5	0
ii)	281 to 500	13	1	5	0
iii)	501 to 1200	20	2	5	0
iv)	1201 to 3200	32	3	8	1
v)	3201 to 10000	32	3	8	1

ANNEX A
(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
105-A02 : 1993	Textiles — Tests for colour fastness Part A02 Grey scale for assessing change in colour
105-A03 : 2019	Textiles — Tests for colour fastness Part A03 Grey scale for assessing staining (*first revision*)
105-B02 : 2014	Textiles — Tests for colour fastness — Part B02 Colour fastness to artificial light: Xenon arc fading lamp test
105-C06 : 2010	Textiles — Tests for colour fastness Part C06 Colour fastness to domestic and commercial laundering (*first revision*)
105-D01 : 2010	Textiles — Tests for colour fastness Part D01 Colour fastness to dry-cleaning using perchloroethylene solvent
105-E01 : 2013	Textiles — Tests for colour fastness Part E01 Colour fastness to water (*first revision*)
105-E04 : 2013	Textiles — Tests for colour fastness Part E04 Colour fastness to perspiration (*first revision*)
105-X12 : 2016	Textiles — Tests for colour fastness Part X12 Colour fastness to rubbing (*first revision*)
IS 390 : 2024 ISO 4920 : 2012	Textile Fabrics — Determination of resistance to surface wetting (Spray Test) (*second revision*)
IS 391 : 2020 ISO 811 : 2018	Textile fabrics — Determination of resistance to water penetration — Hydrostatic pressure test (*second revision*)
IS 667 : 1981	Method for identification of textile fibres (*first revision*)
IS 1390 : 2022 ISO 3071 : 2020	Textiles — Determination of *p*H of aqueous extract (*third revision*)
IS 1964 : 2001	Textiles — Methods for determination of mass per unit length and mass per unit area of fabrics (*second revision*)
IS 1969 Part 2 : 2018 ISO 13934-2 : 2014	Textiles — Tensile properties of fabrics — Part 2 Determination of maximum force using the grab method (*fourth revision*)
IS 2500(Part 1 : 2000 ISO 2859-1 : 1999	Sampling procedures for inspection by attributes: Part 1 sampling schemes indexed by acceptance quality limit (AQL) for lot - by - lot inspection (*third revision*)
IS 3148 : 1991	Slide fasteners (General Purpose) (*fourth revision*)
IS 4108 : 1984	Specification for snap fasteners for dresses (*first revision*)
IS 4905 : 2015 ISO 24153 : 2009	Random sampling and randomization procedures (*first revision*)
IS 6357 : 2013	Sulphated oil for leather fatliquoring — Specification (*first revision*)
IS 6359 : 2023	Method for conditioning of textiles (*first revision*)
IS 6489 Part 1 : 2011 ISO 13937-1 : 2000	Textiles — Tear properties of fabrics Part 1 Determination of tear force using ballistic pendulum method (Elmendorf) (*second*

	revision)
IS 8156 : 2024	Textiles — Synthetic hook and loop tape fasteners for consumer goods — Specification (*fourth revision*)
IS 9686 : 1980	Specification for elastic tape
IS 9873 Part 3 : 2020 ISO 8124-3 : 2020	Safety of toys Part 3 Migration of certain elements (*third revision*)
IS 10971 Part 2 : 2022 ISO 12945-2 : 2020	Textiles — Determination of fabric propensity to surface pilling, fuzzing or matting Part 2 Modified martindale method (*second revision*)
IS 11056 : 2013	Textiles — Determination of the permeability of fabrics to air (*first revision*)
IS 12673 Part 2 : 2022 ISO 12947-2 : 2016	Textiles — Determination of the abrasion resistance of fabrics by the martindale method Part 2 Determination of specimen breakdown (*second revision*)
IS/ISO 13935 Part 1 : 2014	Textiles — Seam tensile properties of fabrics and made-up textile articles Part 1 Determination of maximum force to seam rupture using the strip method (*first revision*)
IS/ISO 13935 Part 2 : 2014	Textiles — Seam tensile properties of fabrics and made-up textile articles Part 2 Determination of maximum force to seam rupture using the grab method (*first revision*)
IS/ISO 13936 Part 1 : 2004	Textiles — Determination of the slippage resistance of yarns at a seam in woven fabrics Part 1 Fixed seam opening method
IS 14181 Part 1 : 2002	Synthetic (Plastic) slide fasteners — Special purpose: Part 1 Specification, selection and ordering guideline of the product (*first revision*)
IS 14452 : 2023 ISO 3758 : 2012	Textiles — Care labelling code using symbols (*second revision*)
IS 14563 (Part 1) : 2021 ISO 14184 -1 : 2011	Textiles — Determination of formaldehyde Part 1: Free and hydrolysed formaldehyde water extraction method (*first revision*)
IS 15370 : 2023 ISO 6330 : 2021	Textiles — Domestic washing and drying procedures for textile testing (*second revision*)
IS 15626 : 2006	Textiles — Method for determination of colour fastness of textiles to saliva and perspiration
IS 15651 : 2006	Textiles — Requirements for environmental labelling — Specification
IS/ISO 16322 (Part 3) : 2021	Textiles — Determination of spirality after laundering Part 3 Woven and knitted garments (*first revision*)
IS 16390 : 2015	Agro textiles — Nylon knitted seamless gloves for tobacco harvesters — Specification
IS 17336 Part 1 : 2019 ISO 14362-1 : 2017	Textiles — Methods for determination of certain aromatic amines derived from azo colorants — Part 1: Detection of the use of certain azo colorants accessible with and without extracting the fibres
IS 17336 (Part 3) : 2019 ISO 14362-3 : 2017	Textiles — Methods for determination of certain aromatic amines derived from azo colorants — Part 3: Detection of the use of

	certain azo colorants, which may release 4-aminoazobenzene
IS 17375 : 2020 ISO 18695 : 2007	Textiles — Determination of resistance to water penetration — Impact penetration test
IS 17376 : 2020 ISO 11092 : 2014	Textiles — Determination of physiological effects — Measurement of thermal and water-vapour resistance under steady-state conditions (Sweating guarded-hot plate test)
IS 17529 : 2023 ISO 14389 : 2022	Textiles — Determination of the phthalate content — tetrahydrofuran method (*first revision*)
IS 17530 Part 1 : 2021 ISO 18254-1 : 2016	Textiles — Method for the detection and determination of alkylphenol ethoxylates APEO Part 1: Method using HPLC-MS
IS 17817 : 2022 ISO 21084 : 2019	Textiles — Method for determination of alkylphenols AP
IS/ISO 20743 : 2021	Textiles — Determination of antibacterial activity of textile products (*first revision*)
EN 1811 : 2023	Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin
EN 1884 : 1998	Feather and down — Test methods — Determination of microbiological state
EN 16711 – 1 : 2015	Textiles - Determination of metal content - Part 1: Determination of metals using microwave digestion
SNV 195651 : 2015	Textiles – Determination of Odour Development of Finishes (Sensory Test)

ANNEX B

(*Clause* 5.7)

FIBRE COMPOSITION LABELLING GUIDELINES FOR DOWN AND FEATHER FILL

B-1 Each jacket containing down and/or feather filling shall bear a fibre composition label that is securely attached, clearly legible, and accurately positioned in accordance with applicable labelling standards. The label shall indicate the species (e.g., goose or duck), and the respective percentages of down and feather content.

B-1.1 The terms “100 percent Down”, “All Down”, or “Pure Down” shall be used only when the filling consists entirely of down clusters, verified to be 100 percent by weight, in accordance with recognized international test methods.

B-1.2 The term “Down” (without qualification) may only be used when the down cluster content is not less than 75 percent by weight. Actual percentages shall be stated on the label.

B-1.3 Fillings containing 50 percent to 74 percent down shall be labelled as a "Down and Feather Blend", and those with less than 50 percent down shall be labelled as a "Feather and Down Blend", with both percentages clearly indicated.
B-1.4 A maximum tolerance of ± 5 percent is permitted to account for unavoidable variations in fill composition during processing and testing.

B-1.5 Species-specific claims such as "Goose Down" or "Duck Down" shall be permitted only when at least 90 percent of the total plumage originates from the declared species.

B-1.6 If the animal species is unknown, the supplier shall indicate "animal origin unknown – further investigation required" on the label or documentation.

B-1.7 Down and feather fillings shall be procured through ethical practices that ensure freedom from animal cruelty, explicitly prohibiting live-plucking and force-feeding during the sourcing process. Suppliers shall submit a declaration affirming compliance with these ethical standards and adherence to principles of animal welfare.

B-2 For down and feather materials sourced from Asia or China, a health certificate and fumigation certificate shall be provided to ensure compliance with import regulations related to avian influenza. The health certificate shall include the following details:

B-2.1 Common name and scientific name of the species

B-2.2 Country of origin

B-2.3 Confirmation of farm-raised or wild-sourced origin

B-3 For down and feather materials sourced from countries other than Asia or China, the vendor shall submit a declaration from the material supplier affirming that the feathers are legally sourced, treated, and not derived from prohibited or endangered species. The declaration shall also identify whether the source is Goose (land fowl), Duck (waterfowl), or Unknown.

ANNEX C
(*Table* 3, *Sl No.* v)

METHOD FOR DETERMINING THE DIMENSIONAL STABILITY OF FABRICS TO DRY CLEANING

C-1 GENERAL

This test method evaluates the dimensional stability of fabrics and garments after dry-cleaning in perchlorethylene using a commercial machine, applicable to normal and sensitive

materials. Conditioned fabrics or garments are marked and measured, subjected to a dry-cleaning procedure, and then finished appropriately. After conditioning and re-measurement, dimensional change is expressed as a percentage of the original dimensions.

C-2 REAGENTS

C-2.1 Perchloroethylene, Dry-cleaning grade.

C-2.2 Sorbitan mono-oleate: Typical chemical – Span 80.

C-3 APPARATUS AND MATERIALS

C-3.1 Dry-cleaning machine: Commercial, rotating cage, totally enclosed, suitable for perchloroethylene.

a) Cage diameter: 600 mm –1080 mm
b) Cage depth: ≥ 300 mm
c) 3 – 4 lifters
d) g-factor: 0.5 – 0.8 (cleaning), 35 – 120 (extraction)
e) Equipped with thermometer, solvent/emulsion addition facility, drying system with temperature control (inlet ≤ 80 °C, outlet ≤ 60 °C).

C-3.2 Finishing apparatus: For applying the appropriate finishing treatment.

C-3.3 Standard atmosphere producing means: For testing textiles.

C-3.4 Ballast: Clean textile pieces/garments (80 percent wool, 20 percent cotton/rayon), light coloured.

C-3.5 Marking device: Pen and ink (indelible) or equivalent.

C-3.6 Measuring scale: Graduated in millimetres.

C-3.7 Flat table: Large enough for laying specimens flat.

C-4 TEST SPECIMENS

C-4.1 Garments: Tested as such.

C-4.2 Fabrics: Cut into specimens (≥ 500 mm × 500 mm), stitched on all sides with polyester thread.

C-5 TEST PROCEDURE

C-5.1 Condition specimens and dummy load at 21 °C ± 2 °C and 65 percent ± 5 percent RH for at least 24 h.

C-5.2 Mark specimens without tension: three pairs of marks (≥ 250 mm apart) in both length and width directions. For garments, mark outer fabrics and linings separately.

C-5.3 Normal Materials

C-5.3.1 Load: 50 kg/m³ ± 2 kg/m³ cage volume; specimen ≤ 10 percent of load.

C-5.3.2 Dry-cleaning:

a) Perchloroethylene with 1 g/L sorbitan mono-oleate.
b) Liquor ratio: 6.5 L/kg ± 0.5 L/kg load.
c) Solvent maintained at 30 °C ± 3 °C.

C-5.3.3 Emulsion: 1 part sorbitan mono-oleate + 3 parts perchloroethylene + 2 parts water. Add gradually over 2 min – 12 min.

C-5.3.4 Run time: 15 min.

C-5.3.5 Extraction: Drain, extract 2 min (≥ 1 min at full speed).

C-5.3.6 Rinse: Fresh solvent at same liquor ratio, 5 min, extract again (3 min, ≥ 2 min full speed).

C-5.3.7 Drying: Tumbling in warm air with solvent dryness control; outlet ≤ 60 °C or inlet ≤ 80 °C. Finish with ambient air circulation for 3 min – 5 min.

C-5.3.8 Post-drying: Remove immediately; hang garments, lay fabrics flat for ≥ 30 min before finishing.

C-5.3.9 Finishing: Steam press (370 kPa – 490 kPa) or steam/air garment former (5 s – 20 s steam + 5 s – 20 s warm air).

C-5.3.10 Re-measurement: After conditioning, measure marked distances.

C-5.4 SENSITIVE MATERIALS

C-5.4.1 Load: 33 kg/m³ ± 2 kg/m³ cage volume.

C-5.4.2 Solvent ratio: 10 L/kg ± 1 L/kg load.

C-5.4.3 Relative humidity of solvent: 63 percent ± 2 percent (no water emulsion required).

C-5.4.4 Run time: 10 min.

C-5.4.5 Extraction: Reduce full-speed extraction to 1 min.

C-5.4.6 Measurement: Measure marks to ± 1 mm, garments to ± 2 mm, in standard atmosphere.

C-5.5 Calculate the dimensional change percent as the change in length and width (average), rounded to nearest 0.2 percent. Use minus sign (–) for shrinkage and plus sign (+) for growth.

ANNEX D

(*Table* 3, *Sl No.* viii)

METHOD FOR DETERMINING THE FABRIC PROOFNESS

D-1 GENERAL

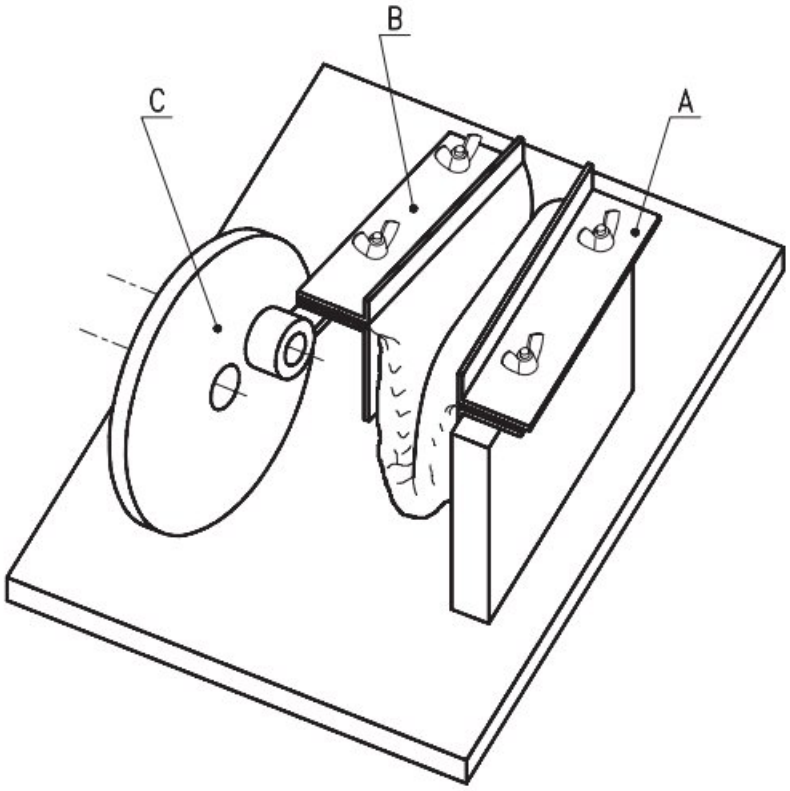
This method specifies the procedure for determining the penetration of down and/or feathers through the primary tick fabric of a specimen containing feather and/or down filling, using a rubbing apparatus. A test cushion of specified size is prepared from the fabric under examination. The cushion is filled with a defined mass of down and/or feather mixture and subjected to rubbing in a mechanical apparatus. After a specified number of revolutions, the number of down and/or feather particles which have passed through, or protruded from, the fabric surface is counted.

D-2 APPARATUS

D-2.1 Rubbing Apparatus — The apparatus shall consist of two clamps (A and B) in which the test cushion is secured as shown in Fig. 5. Clamp A is fixed to the bottom plate. Clamp B is fastened to a wheel that rotates in an elliptical path. Clamps are spaced (44 ± 1) mm apart. Distance between wheel centre and attachment point of clamp B: (25 ± 0.5) mm. Wheel speed: 135 revolutions/minute, with a revolution counter.

D-2.2 Plastic Bag — Low-density polyethylene (LDPE) of thickness (25 ± 1) μm, without pleats with inner dimensions - width (150 ± 10) mm, length (240 ± 10) mm.

D-2.3 Balance — with an accuracy: 0.1 g.



A Clamp fixed to the bottom plate
B Clamp fastened to the wheel
C Wheel

FIG. 5 FABRIC PROOFNESS

D-3 PREPARATION OF TEST CUSHIONS

D-3.1 Condition the test specimens as per IS 6359.

D-3.2 At least two specimens shall be taken from the fabric, each of size (140 ± 5) mm × (420 ± 10) mm.

D-3.3 One specimen is cut along warp direction and one along weft direction.

D-3.4 Fold fabric in half (short side), stitch longer side (10 mm from edge), turn inside out, and stitch shorter sides (20 mm from edge), leaving an opening for filling.

D-3.5 Fill cushion with the required mass of down/feather mix (*see* Table 9).

D-3.6 Final size of test cushion: 120 mm × 170 mm.

Table 9 Filling of Test Cushion

(*Clause* D-3.5)

Sl No.	Down content (percent)	Feather content (percent)	Mass of filling (g)
(1)	(2)	(3)	(4)
i)	>70	< 30	30 ± 0.1
ii)	30 – 70	70 – 30	35 ± 0.1
iii)	< 30	> 70	40 ± 0.1

D-4 Procedure

D-4.1 Place the prepared cushion inside the plastic bag (to collect particles penetrating through fabric). Secure the cushion in the clamps of the rubbing apparatus, folding it between the clamps. Set the counter to 2700 revolutions and operate the machine (~ 20 minutes). After completion, count filling particles collected inside the plastic bag. Place cushion under suitable light and count visible protruding particles (> 2 mm). If the combined total exceeds 50, stop counting and record as "more than 50".

D-4.2 Report the number of fibres protruding from the fabric.

ANNEX E

(*Table* 4, *Sl No*. iii)

METHOD FOR DETERMINING THE TURBIDITY OF DOWN/FEATHER FILLING

E-1 GENERAL

The turbidity of an aqueous extract is an indicator of the presence of organic and inorganic material on the surface of down and feathers. The preparation of the aqueous extract is critical for obtaining accurate and repeatable results. Variations in temperature, shaking time, shaking speed, and even the placement of the jar on the shaking machine can influence the measurement accuracy.

E-2 REAGENTS AND EQUIPMENT

E-2.1 Reagents

E-2.1.1 Grade 3 purified water at 20 °C (± 2 °C).

E-2.2 Equipment

E-2.2.1 Analytical balance (accuracy to 0.1 mg).

E-2.2.2 2000 ml round plastic jar with watertight lid (for shaking).

E-2.2.3 2000 ml glass or plastic beaker.

E-2.2.4 Horizontal shaking machine with 150 shakes per minute and a shaking width of 30 mm – 40 mm.

E-2.2.5 Glass filter, pore size P – 160.

E-2.2.6 Stopwatch.

E-2.2.7 Plastic or rubber gloves.

E-2.2.8 Turbidity glass tube, height at least 550 mm and inside diameter 30 mm – 35 mm.

E-2.2.9 Light source (daylight or artificial light with 600 Lux – 1000 Lux).

E-2.2.10 Chip with double cross marking.

E-3 SAMPLE PREPARATION

E-3.1 Place one representative sample of 10 g (± 0.1 g) in the 2000 ml plastic jar. Wear gloves during handling to avoid contamination.

Note — Prepare and test two separate samples.

E-3.2 Add 1 litre of purified water (Grade 3).

E-3.3 Attach the watertight lid and vigorously shake the jar by hand 10 – 15 times (within 2 minutes) to allow initial wetting of the plumage.

E-3.4 Place the jar horizontally on the shaking machine, ensuring the motion is from lid to bottom. Shake at room temperature for 30 minutes at 150 shakes per minute with a shaking distance of 30 mm – 40 mm.

Note — If the sample fails to absorb water after 5 minutes of machine shaking, shake vigorously by hand. If after 3 minutes of such shaking water absorption is still incomplete, return the jar to the machine for the remaining 25 minutes.

E-3.5 Pre-filter the liquid (aqueous extract, suspension) through a coarse screen to avoid clogging of the glass filter. Then filter through the glass filter into a 2000 ml beaker. Do not squeeze or wring excess liquid from the plumage.

E-3.6 Prepare the second sample in the same way (steps a – e).

E-4 PROCEDURE FOR MEASUREMENT

E-4.1 Place the double cross chip at the bottom of the turbidity glass tube.

E-4.2 Fill the tube with the filtered liquid.

E-4.3 After 60 s, slowly lower the liquid level until the double cross is just visible (this point is referred to as the visibility threshold).

E-4.4 Record the height of the liquid in millimetres as H1.

E-4.5 Add liquid to the tube to raise the level by at least 20 mm.

E-4.6 Again, slowly lower the liquid until the double cross is just visible.

E-4.7 Record the height in millimetres as H2.

E-4.8 Repeat steps a – g for the second sample.

E-5 CALCULATION AND REPORTING OF RESULTS

For each sample, calculate the arithmetic mean of H1 and H2. Calculate the average of the results from the two samples and round to the nearest whole number. Report the Turbidity in mm (Glass Tube).

ANNEX F
(*Table* 4, *Sl No*. iv)

METHOD FOR DETERMINING THE OXYGEN NUMBER OF DOWN/FEATHER FILLING

F-1 GENERAL

The oxygen number is an indicator for the amount of organic foreign matter on the surface of the plumage. The preparation of the aqueous extract is the most critical step. Even shaking time, speed, and placement of the jar are critical. Any variance from these specifications will likely give a different result.

F-2 REAGENTS AND EQUIPMENT

F-2.1 Reagents

F-2.1.1 Grade 3 purified water, water must be 20 °C ± 2 °C.

F-2.2.2 3 mol/l Sulphuric Acid (6 N or 25 percent H_2SO_4).

F-2.2.3 0.02 mol/l Potassium Permanganate (N/10 or 0.1 N $KMnO_4$).

F-2.2 Equipment

F-2.2.1 Analytical balance (accuracy to 0.1 mg).

F-2.2.2 2000 ml round plastic jar with watertight lid (for shaking).

F-2.2.3 2000 ml glass or plastic beaker.

F-2.2.4 250 ml glass beaker.

F-2.2.5 Horizontal shaking machine with 150 shakes per minute and a shaking width of 30 mm – 40 mm.

F-2.2.6 Glass filter according to EN 1162, pore size P - 160.

F-2.2.7 Full pipette 100 ml class A.

F-2.2.8 Graduated pipette 5 ml.

F-2.2.9 Micro-burette with divisions of 0.02 ml (Eppendorf pipette).

F-2.2.10 Stopwatch.

F-2.2.11 Magnetic stirrer.

F-2.2.12 Plastic or rubber gloves.

F-3 SAMPLE PREPARATION

F-3.1 Place two representative samples of 10 g each (± 0.1 g) in two 2000 ml plastic jars. Wear gloves while preparing samples to avoid contact with hands.

F-3.2 Add 1 litre of Grade 3 purified water.

F-3.3 After attaching the watertight lid, shake the material by hand 10 –15 times (or more, but no longer than 2 minutes) to ensure that the plumage begins to absorb water.

F-3.4 Place the jar in a horizontal position on the shaking machine. The shaking motion of the jar is from lid to bottom. Shake at room temperature for 30 minutes at a speed of 150 shakes per minute (one shake=back-and-forth motion) and a shaking distance of 30 mm – 40 mm.

Note — If the sample does not absorb water after 5 minutes of shaking on the machine, shake vigorously by hand. If after 3 minutes of vigorous hand-shaking the plumage still does not absorb water, continue using the shaking machine for the remaining time and proceed as below.

F-3.5 Filter the resulting liquid (aqueous extract/suspension) through the glass filter into a 2000 ml beaker. Do not squeeze or wring excess liquid from the plumage.

F-3.6 Prepare the second sample in the same way (steps a – e).

F-4 MEASUREMENT

F-4.1 Pour 100 ml of liquid into a 250 ml beaker.

F-4.2 Add 3 ml of the 3 mol/l sulphuric acid to the beaker of liquid.

F-4.3 Place the beaker on the magnetic stirrer and titrate with potassium permanganate. Add potassium permanganate at the rate of 0.02 ml until a faint pink colour persists in the liquid for 60 s.

F-4.4 Repeat steps a – c for the second sample.

F-4.5 Perform a blank test with 100 ml distilled water.

F-5 CALCULATION AND REPORTING OF RESULTS

F-5.1 Calculate results as follows:

Oxygen Number = 80 × (A – B)

Whereas,

A = quantity in ml of potassium permanganate used in the test samples (average)
B = quantity in ml of potassium permanganate used in the blank test

F-5.2 Calculate the average (arithmetical mean) of the two measurements and round to one decimal place. Report the final oxygen index as the number.

ANNEX G
(*Table* 4, *Sl No*. vi)

METHOD FOR DETERMINING THE FAT AND OIL CONTENT OF DOWN/FEATHER FILLING

G-1 GENERAL

This test method specifies the procedure for determining the fat and oil content in down and feather samples. The extraction quantifies lipids, which indicate cleanliness and potential odor issues; down and feathers require a minimal level of oils for optimal functionality.

G-2 EQUIPMENT AND REAGENTS

G-2.1 Equipment

G-2.1.1 Soxhlet extractor.

G-2.1.2 Thimbles with a 1.5 mm thick cellulose membrane.

G-2.1.3 Extraction flask.

G-2.1.4 Condenser.

G-2.1.5 Distillation adapter.

G-2.1.6 Analytical balance (accuracy ± 1 mg).

G-2.1.7 Water bath or hot plate.

G-2.1.8 Glass beaker.

G-2.1.9 Glass filter or funnel with cotton pledget.

G-2.1.10 Desiccator with desiccant.

G-2.1.11 Drying oven.

G-2.2 Reagents (use one of the following)

G-2.2.1 Petroleum benzene, boiling range 60 °C – 80 °C.

G-2.2.2 Diethyl ether.

G-2.2.3 Purified, distilled dichloromethane.

G-3 PROCEDURE

G-3.1 Sample Preparation

G-3.1.1 Prepare two representative samples of 4 g – 5 g in climate-conditioned state; weigh each to 1 mg accuracy.

G-3.1.2 Alternatively, prepare two samples of 3 g – 5 g (dry mass condition) with the same weighing accuracy; note that when using dry mass, add 13 percent to the measured weight to approximate the climate-conditioned equivalent (*see* Clause **3.4** Note).

G-3.2 Extraction Process

G-3.2.1 Place each sample into a thimble and fit into the Soxhlet extractor. Attach apparatus including condenser and an extraction flask with boiling stones and approximately 250 ml solvent.

G-3.2.2 Immerse on a water bath or hot plate and allow solvent siphoning for at least 20 cycles.

G-3.2.3 Remove the flask from heat and attach the distillation adapter. Evaporate off the solvent until about 20 ml remain.

G-3.2.4 Filter through a solvent-rinsed glass filter or cotton pledget into a clean beaker.

G-3.2.5 Rinse the flask with solvent 5 – 6 times and evaporate the solvent by gentle heating with an air current.

G-3.2.6 Dry the beaker with the residue in the oven at 100 °C – 105 °C.

G-3.2.7 Condition to room temperature in a desiccator and weigh the beaker until mass is constant.

G-4 CALCULATION AND REPORTING OF RESULTS

G-4.1 Notation

A = Weight of beaker with residue
B = Weight of empty beaker
C = Weight of test sample (climate-conditioned; *see* note below)

G-4.2 Calculation

G-4.2.1 Fat and Oil Content (percent) = $\frac{A-B}{C} \times 100$

G-4.2.2 If dry-mass sample is used, use $C_{conditioned} = C_{dry} \times 1.13$ to approximate climate-conditioned weight. Report the fat and oil content as percent.

ANNEX H
(*Table* 4, *Sl No*. vii)

METHOD FOR DETERMINING THE MOISTURE CONTENT OF DOWN/FEATHER FILLING

H-1 GENERAL

This test method determines the moisture content of down and feathers by measuring the mass difference before and after controlled drying. A representative sample is weighed in a pre-dried container, dried in an oven at a specified temperature, cooled in a desiccator, and reweighed until a constant mass is achieved. The difference in mass, expressed as a percentage of the original sample mass (excluding the container), represents the moisture content. The procedure is performed in duplicate to ensure accuracy.

H-2 EQUIPMENT

H-2.1 Analytical balance (down to at least 1 mg).

H-2.2 A 400 ml beaker or weighing container with cover.

H-2.3 Drying oven.

H-2.4 Tongs.

H-2.5 Desiccator with desiccating agent.

H-3 SAMPLE PREPARATION

H-3.1 Take samples from finished product or bulk down and feathers and place into a pre-dried weighing container as described in Clause H-**4.2**.

H-3.2 These samples must not be conditioned prior to testing.

H-4 PROCEDURE

H-4.1 Place the weighing container and the cover separately in the drying oven and dry at 105 °C – 110 °C.

H-4.2 After drying for one hour, use clean tongs to transfer the container and the cover to the desiccator and allow cooling over a desiccating agent for at least 20 minutes.

H-4.3 After cooling to room temperature, use the tongs to cover the container, transfer it to the analytical balance, and weigh.

H-4.4 Repeat the heating, cooling, and weighing cycle until the weight (mass) is constant within 1 mg. Weigh the container and record this as C grams.

H-4.5 Transfer a representative sample of 4 g –5 g to the pre-dried weighing container.

H-4.6 Weigh the container with the sample and record this as A grams.

H-4.7 Place the container with the sample and the lid separately in the drying oven for two hours at a temperature of 105 °C – 110 °C.

H-4.8 Cover the container and use the tongs to quickly transfer it to the desiccator with desiccating agent.

H-4.9 Weigh the covered container after cooling to room temperature.

H-4.10 Repeat the heating, cooling, and weighing cycle until the weight (mass) is constant within 1 mg. Record this as B grams.

H-5 CALCULATION AND REPORTING OF RESULTS

H-5.1 Let,

A = Weight of weighing container with undried sample
B = Weight of weighing container with dried sample
C = Weight of empty weighing container

H-5.2 Calculate the moisture content using the formula:

$$\text{Moisture Content (percent)} = \frac{A-B}{A-C} \times 100$$

H-5.3 Average the results of both tests.

H-5.4 Report the Moisture Content in percent.

ANNEX J
(*Table* 5, Note)

LIST OF RESTRICTED AROMATIC AMINES AND ARYLAMINE SALTS FROM AZO DYES

J-1 Azo dyes and pigments are colorants that contain one or more azo groups (–N=N–) bound to aromatic compounds. While thousands of azo dyes exist, only those that degrade to form certain hazardous aromatic amines are restricted due to their proven carcinogenicity and potential to cause adverse health effects through dermal absorption or prolonged contact. Such azo dyes are not recommended to be used in the manufacture of textiles, apparel,

accessories, or any other wearable products. The restricted aromatic amines and arylamine salts derived from these dyes are listed below.

J-1.1 4-Aminobiphenyl
J-1.2 Benzidine
J-1.3 4-Chloro-o-toluidine
J-1.4 2-Naphthylamine
J-1.5 o-Aminoazotoluene
J-1.6 2-Amino-4-nitrotoluene
J-1.7 p-Chloraniline
J-1.8 2,4-Diaminoanisole
J-1.9 4,4'-Diaminodiphenylmethane
J-1.10 3,3'-Dichlorobenzidine
J-1.11 3,3'-Dimethoxybenzidine
J-1.12 3,3'-Dimethylbenzidine
J-1.13 3,3'-Dimethyl-4,4'-diaminodiphenylmethane
J-1.14 p-Cresidine
J-1.15 4,4'-Methylen-bis(2-chloraniline)
J-1.16 4,4'-Oxydianiline
J-1.17 4,4'-Thiodianiline
J-1.18 o-Toluidine
J-1.19 2,4-Toluenediamine
J-1.20 2,4,5-Trimethylaniline
J-1.21 2,4 Xylidine
J-1.22 2,6 Xylidine
J-1.23 2-Methoxyaniline (= o-Anisidine)
J-1.24 p-Aminoazobenzene
J-1.25 4-Chloro-o-toluidinium chloride
J-1.26 2-Naphthylammonium acetate
J-1.27 4-Methoxy-m-phenylene diammonium sulphate
J-1.28 2,4,5-Trimethylaniline hydrochloride

ANNEX K
(*Clause* 6.6)

METHOD FOR DETERMINING THE RESISTANCE TO UNSNAPPING OF SNAP FASTENERS

K-1 GENERAL

This test method determines the force required to disengage snap fasteners when a pull is applied both perpendicular and parallel to the plane of the snap fastener.

K-2 APPARATUS

K-2.1 Tensile Testing Machine — A constant rate of extension (CRE) or constant rate of traverse (CRT) testing machine with sensitivity to low force levels. The machine must be capable of testing at a traverse rate of 12 in./min or an agreed rate.

K-2.2 Jaws — The back jaws should be at least the same width as the front jaws, with the front jaws being 1 in. wide.

K-2.3 Aluminum Plate — 2 in. x 4 in. x 1/8 in. with dowel pins inserted.

K-2.4 Attaching Machine — A hand-operated, foot-operated, or automatic machine for attaching snap fastener parts.

K-3 SAMPLE PREPARATION

K-3.1 Unattached Snap Fasteners — For unattached snap fasteners, take five male and five female snap fasteners from a randomly selected shipping carton. If male and female parts are packed separately, select five from each.

K-3.2 Attached Snap Fasteners — For garments with attached snap fasteners, randomly select five garments and test all the snap fasteners on each garment.

K-4 TEST PROCEDURE

Prepare the specimens and condition the specimens in a standard atmosphere as per IS 6357, to achieve moisture equilibrium before testing. For unattached snap fasteners, attach the male part of the snap to one fabric specimen and the female part to another, placing them approximately 3/4 in. from the edge as shown in Fig. 6. The fabric specimens should measure 1.5 in. x 3.5 in. Mount the female end of the specimen on the tensile testing machine and adjust the clamps to a distance of 3 in. Clamp the male end in the lower jaw and apply the load perpendicular to the plane of the snap fastener and material until it disengages. Record the force required to disengage the snap fastener to the nearest 0.1 N. Repeat the test three times.

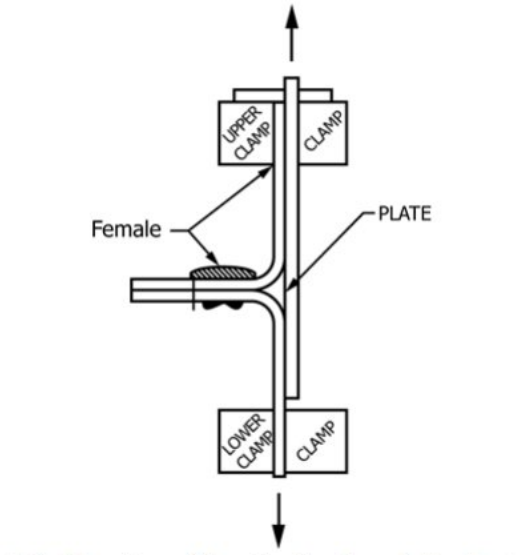


FIG. 6 SNAP FASTENERS

ANNEX L
(*Table* 6, *Sl No*. vii)

METHOD OF DETERMINATION OF STAIN RELEASE: OILY SOIL RELEASE AFTER LAUNDERING

L-1 PRINCIPLE

This test method assesses the effectiveness of fabrics in releasing oily soil following exposure to typical home laundering conditions.

L-2 APPARATUS AND MATERIALS

L-2.1 Conditioning facilities and racks with pull-out, perforated shelves for laying specimens flat.

L-2.2 Blotting Paper.

L-2.3 Corn oil.

L-2.4 Glassine paper.

L-2.5 Timer.

L-2.6 Cylindrical weight, 6.4 cm diameter, 2.268 kg ± 0.045 kg (stainless steel is preferable). Multiple weights are recommended to efficiently process multiple samples.

L-2.7 Amber bottle with medicine dropper, 76 mm glass, 2-mL capacity, capable of dispensing 20 drops/mL.

L-2.8 Automatic washing machine (*see* Table 10 for specifications).

L-2.9 Tumble dryer, normal cycle: maximum exhaust temperature 68 °C ± 6 °C, cool down time ≤10 min.

L-2.10 Standard Reference Detergent (powder, without brightener [WOB]).

L-2.11 Balance with at least 5.0-kg capacity.

L-2.12 Laundering ballast Type 1 (*see* Table 11 for specifications).

L-2.13 Water hardness test kit, residential use.

L-2.14 Evaluation area (*see* Fig. 6).

L-2.15 Stain Release Scale.

L-3 TEST SPECIMENS

Use two test specimens, (38 cm × 38 cm) ± 1 cm, for each determination. Before applying the corn oil, test specimens shall be conditioned in the standard testing atmosphere, as specified in IS 6359.

Table 10 Standard Washing Machine Parameters
(*Clause* L-2.8, L-5.1 and L-5.2)

Sl No.	Cycle	(1) Normal
(1)	(2)	(3)
i)	Water Level, L (gal)	72 ± 4 (19 ± 1)
ii)	Agitation Speed, strokes/min	86 ± 2
iii)	Washing Time, *min*	16 ± 1
iv)	Final Spin Speed, rpm	660 ± 15
v)	Final Spin Time, *min*	5 ± 1
vi)	Wash Temp, °C (°F)[1]	(III) Warm: 41 ± 3 (105 ± 5)

Table 11 Type 1 Laundering Ballast Parameters
(*Clause* L-2.12)

Sl No.	Parameter	Type 1
(1)	(2)	(3)
i)	Fiber Content	100 percent cotton
ii)	Greige Fabric Yarns	16/1 ring spun

iii)	Greige Fabric Construction	52 × 48 ± 5 yarns/in., plain weave
iv)	Finished Fabric Weight	155 g/m^2 ± 10 g/m^2
v)	Edges	All edges hemmed or over-edged
vi)	Finished Piece Size	920 × 920 ± 30 mm
vii)	Finished Piece Weight	130 g ± 10 g

L-4 SOIL APPLICATION PROCEDURE

A single layer of blotting paper shall be placed on a smooth, flat surface, upon which the specimen is laid flat with the face side oriented upward. Using a dropper, apply five drops of corn oil to the specimen, care should be taken to ensure all droplets are deposited at the same location. After that place a 7.6 cm × 7.6 cm square of glassine paper over the oiled area, followed by the placement of a weight directly over the glassine paper. The weight shall remain undisturbed for a period of 60 s ± 5 s, after which it shall be removed. Repeat the process for the second specimen. Wash the specimens within 20 min ± 5 min after applying the corn oil to allow the stains to set. Ensure that the specimens do not come in contact with each other in a way that could transfer the corn oil.

L-5 LAUNDERING PROCEDURE

L-5.1 Set the washing machine controls to achieve the parameters specified in Table 10. The laundering load should include all test specimens in the sample, along with enough laundering ballast pieces to achieve a total load weight of 1.8 kg ± 0.1 kg. Start the selected wash cycle and allow the machine to fill with water to the indicated level. Add 66 g ± 1 g of Standard Reference Detergent (without brightener) to the washing machine. Add the wash load (test specimens and ballast), ensuring it is evenly distributed around the center agitator. Restart the wash cycle and allow it to proceed through the final spin cycle. Once the cycle completes, separate any tangled specimens and ballast pieces, being careful to minimize distortion. Proceed with the drying procedure.

L-5.2 Adjust the washing machine settings to align with the parameters outlined in Table 10. Assemble the wash load by including all test specimens along with a sufficient quantity of ballast material to achieve a total load weight of 1.8 kg ± 0.1 kg. Begin the wash program and allow the machine to fill to the required water level. Accurately measure and add 66 g ± 1 g of Standard Reference Detergent (excluding optical brighteners) to the wash drum. Load the test specimens and ballast evenly around the agitator to ensure balanced movement during washing. Resume the cycle and allow it to run through to the final spin stage without interruption. Once the cycle has concluded, gently untangle the proceed for the tumble drying. Set the temperature control of the tumble dryer to maintain a maximum exhaust temperature of 68 °C ± 6 °C. Operate the dryer until the load is fully dried. Upon completion of the drying cycle, promptly remove the specimens and lay them flat. If required ironing may also be done before evaluation.

L-6 EVALUATION AND CALCULATION

L-6.1 Position the Stain Release Scale on the viewing board. Lay the test specimen flat, face up, at the center of the table. Rotate the fabric to the angle that results in the lowest grade. Stand directly in front of the specimen for evaluation, at a distance of 76 cm ± 3 cm from the viewing board, with your eyes positioned 157 cm ± 15 cm from the floor. Two observers shall independently assign a grade to each test specimen. The grade should correspond to the Stain Release Scale that most closely matches the residual stain on the specimen.

L-6.2 For evaluation firstly place the Stain Release Scale on the viewing board (*see* Fig 7). Place the test specimen face up and flat at the center of the evaluation surface. Adjust the orientation of the fabric to the angle at which the residual stain appears most prominent, indicating the lowest possible grade. Observers should evaluate the specimen while standing directly in front of it, maintaining a distance of 76 cm ± 3 cm from the viewing board and an eye height of 157 cm ± 15 cm from the floor. Each specimen shall be assessed independently by two observers.

L-6.3 Grade 5 represents the best stain removal and Grade 1 the poorest stain removal. Calculate the average of the four grades for the sample (2 observers, 2 specimens) to the nearest 0.1. This is the measurement unit for this test method.

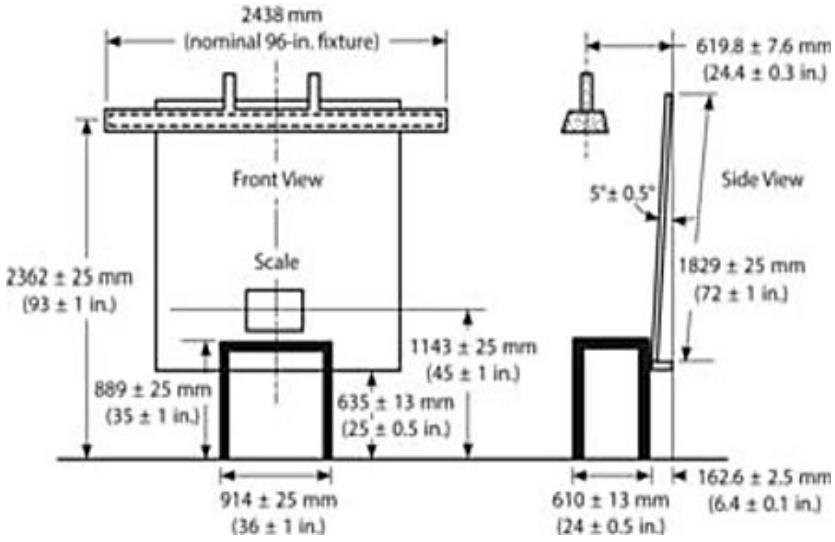


FIG 7 EVALUATION AREA FOR STAIN RELEASE EVALUATION

ANNEX M

(*Table* 6, *Sl No*. viii)

METHOD OF DETERMINATION OF WICKING PROPERTY BY MEASURING VERTICAL WICKING DISTANCE

M-1 PRINCIPLE

This method assesses the wicking characteristics of a fabric by examining the capillary movement of a liquid along and/or through the material originating from a cut edge. The advancement of the liquid is visually observed, manually timed and systematically recorded at specified time intervals.

M-2 APPARATUS AND MATERIALS

M-2.1 Distilled or deionized water.

M-2.2 Marking pens, water-soluble ink.

M-2.3 Stopwatch or digital timer.

M-2.4 Measuring tape or ruler with mm graduations.

M-2.5 Erlenmeyer flask (500 mL) or suitable rectangular pan.

M-2.6 Means of suspending specimen(s) into the flask or pan.

M-3 TEST SPECIMENS

M-3.1 Three specimens shall be cut, each 25 mm ± 3 mm wide and minimum 160 mm long.

M-3.2 The long dimension shall be cut parallel to the fabric direction(s) being tested.

M-3.3 Specimens shall be cut at least 150 mm from seams, pockets, plackets, and other assembly features. Specimens shall be cut such that different sets of fabric length and width yarns are present.

M-3.4 A marking pen with soluble ink shall be used to mark a line across the width of each specimen, 5 mm ± 1 mm from the end to be submerged, on the fabric side to be tested. This line shall denote the level to which the specimen will be submerged at the start of the test (*see* Fig 8).

M-3.5 Additional lines shall be marked 150 mm ± 1 mm above the first line on each specimen.

M-3.6 All the test specimens shall be conditioned in the standard atmosphere for testing, as per IS 6359.

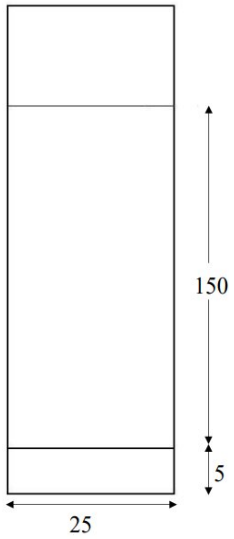


FIG 8 VERTICAL WICKING SPECIMEN MARKING (ALL DIMENSIONS IN MM)

FIG 9 SPECIMEN PREPARED FOR VERTICAL WICKING TESTING IN AN ERLENMEYER FLASK

M-4 PROCEDURE AND CALCULATION

M-4.1 Place the flask on a flat, stable surface at a height that allows eye-level viewing for accurate measurement (*see* Fig 9). Add approximately 100 mL of water to the flask, make sure the water depth is maintained at a minimum of 10 mm. Allow the water to stabilize before positioning the fabric at the mouth of the flask. Also, prior to positioning the fabric, ensure that the lip and neck of the flask remain dry to prevent premature contact between the specimen and the water.

M-4.2 With the aid of a supporting apparatus, suspend the fabric from above and gradually lower it until the end of the specimen is submerged to the 5 mm mark. Initiate timer immediately upon the specimen reaching this specified depth mark to test multiple samples a rectangular pan may be used. While suspending fabric ensure that no fold or creases in the specimen.

M-4.3 The rise of the water shall be monitored, visible as migration of the marking ink or darkening of the specimen. The time it takes for the soluble ink at the 100 mm line to start migrating shall be recorded.

M-4.4 The rise of the water shall continue to be monitored. The time it takes for the soluble ink at the 150 mm line to start migrating shall be recorded. This is the long-period wicking time.

M-4.5 The test shall be terminated when any of the following conditions are met.

M-4.6 Water does not reach the 100 mm line within 30 min.

M-4.7 Water wicks to the 100 mm line.

M-4.8 The distance the water has migrated shall be measured. The time (s), distance (mm) shall be recorded.

M-4.9 For tests in a flask, the specimen shall be removed, and the procedure shall be repeated for the remaining specimens. A clean flask with fresh water shall be used for each specimen.

M-4.10 The average value of three reading for the time taken to reach 100 mm line shall be reported.

ANNEX N

(*Table* 7, *Sl No*. i)

METHOD FOR DETERMINING PERMISSIBLE TOLERANCES FROM CLAIMED MEASUREMENTS IN THE SIZE CHART

N-1 GENERAL

N-1.1 The garment shall be conditioned in a relaxed state at a controlled environment for at least 4 h before measurement to ensure dimensional stability, as per IS 6359.

N-1.2 The garment shall be laid flat on a smooth, non-slip, horizontal surface, free from folds, creases, or wrinkles that could affect measurement accuracy. Gently shake the jacket to ensure even distribution of down/feather filling.

N-1.3 All fasteners and adjustable elements such as zippers, buttons, snaps, drawstrings, cuffs, etc. shall be closed or set to their neutral position, as intended for wear to reflect the jacket’s natural shape.

N-1.4 Measurements shall be taken without stretching, compressing, or distorting the garment to preserve the integrity of the down/feather filling.

N-1.5 A flexible, non-stretchable measuring tape, graduated in millimeters with an accuracy of ± 1 mm, shall be used.

N-2 MEASUREMENT PROCEDURE

N-2.1 Chest Circumference — Measure 2.54 cm below the lowest point of the armhole seam, across the front and back of the garment, and double the value to obtain the full circumference. Ensure the measuring tape is level and does not compress the down/feather filling.

N-2.2 Waist Circumference — Measure at the designated waistline, typically located approximately halfway down the jacket or at a marked point (e.g., drawstring, stitching, or ribcage level), across the front and back, and double the value to obtain the full circumference. For jackets with adjustable waistbands (e.g., drawstrings), measure with the waistband in its relaxed state.

N-2.3 Total Shoulder Width — Measure straight from the outermost point of one shoulder seam (or highest point for raglan sleeves) to the outermost point of the opposite shoulder seam, ensuring the tape follows the natural contour of the shoulder. For jackets with adjustable shoulder features, measure with adjustments in the neutral position.

N-2.4 Garment Length — Measure from the highest point of the shoulder seam, adjacent to the neckline, to the bottom edge of the garment, following a straight vertical line. For jackets with asymmetric designs such as longer fronts, measure both front and back lengths separately and note in the size chart.

N-2.5 Sleeve Length

N-2.5.1 *Set-in sleeve* — Measure from the shoulder seam point to the sleeve hem edge, following the upper contour of the sleeve.

N-2.5.2 *Raglan sleeve* — Measure from the neckline seam at the highest shoulder point to the sleeve hem edge, following the upper contour.

For jackets with adjustable cuffs, measure with cuffs in the neutral position.

N-2.6 *Collar size* — Measure from the inside edge of the primary closure (e.g., zipper, button shank) to the corresponding fastening point (e.g., buttonhole) in a straight line along the collar stand. For jackets with detachable or adjustable hoods, measure the collar in its closed, relaxed state without the hood attached.

N-3 DETERMINATION OF PERMISSIBLE TOLERANCES

Record the measurement in centimetres to the nearest 0.1 cm. Compare each measured dimension with the corresponding claimed measurement in the size chart provided by the manufacturer. Calculate the deviation (tolerance) as follows:

$$\text{Tolerance} = \text{Measured Value} - \text{Claimed Value}$$

ANNEX P

[*Clause* 7.2 (d)]

Down and Feather Composition

Sl No.	Claimed Down Cluster (%)	Allowable Deviation of Down Cluster (%), Max	Down Fibre (%), Max	Feather Fibre (%), Max	Fibre (Both Down and Fe ather) %, Max	Land fowl Content (%), Max	Goose Down and Feather Content (%), Max	Colored Down and Feather Content (%), Max	Long Feather Content (%), Max	Damaged Feathers Content (%), Max	Residue (%), Max	Fill Power (Height in cm), Min	
												Duck	Goose
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
i)	50	-5.0	5.0	10.0	5.0	1.5	85.0	1.0	5.0	2.0	1.5	11.5	12.5
ii)	55	-5.0	10.0	10.0	5.5	1.5	85.0	1.0	4.0	2.0	2.0	12.0	13.0
iii)	60	-5.0	5.0	10.0	6.0	1.0	85.0	1.0	3.0	2.0	1.5	12.5	13.5
iv)	65	-5.0	10.0	10.0	6.5	1.0	85.0	1.0	3.0	2.0	2.0	13.0	14.0
v)	70	-5.0	5.0	10.0	7.0	1.0	85.0	1.0	2.0	2.0	1.5	13.5	14.5
vi)	75	-5.0	10.0	10.0	7.5	1.0	85.0	1.0	1.5	2.0	2.0	14.0	15.0
vii)	80	-5.0	5.0	10.0	8.0	0.8	85.0	1.0	1.0	2.0	1.0	14.5	15.5
viii)	85	-5.0	10.0	10.0	8.5	0.8	85.0	1.0	1.0	2.0	1.0	15.5	16.5
ix)	90	-5.0	5.0	10.0	9.0	0.8	85.0	1.0	1.0	2.0	1.0	16.0	17.0
x)	95	-5.0	5.0	5.0	9.5	0.8	85.0	1.0	1.0	2.0	1.0	16.5	17.5