



**PRODUCT MANUAL FOR
LIFE JACKETS
ACCORDING TO IS 6685: 2009**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

1.	Product	:	IS 6685: 2009
	Title	:	Life Jackets- Specification
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	<ul style="list-style-type: none"> a) Retro reflector- as per Cl. 3.11 b) Buoyant material- as per Cl. 8 c) Material for protection of buoyant material- as per Cl. 9 d) Cotton duck- as per Cl. 10.1 e) Coating for unicellular plastic buoyant material- as per Cl. 10.2 f) Webbing, Tapes and Cords- as per Cl.13 g) Cotton sewing thread- Variety No. 35 of IS 1720 h) Outer cover of jacket (Visibility requirements)- as per Cl. 11 i) Material for inflatable life jacket- as per Annex E
b)	Grouping guidelines	:	Please refer ANNEX – <u>A</u>
c)	Sample Size	:	20 Nos
3.	List of Test Equipment	:	Please refer ANNEX – <u>B</u>
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – <u>C</u>
5.	Possible tests in a day:		Please refer ANNEX – <u>D</u>
6.	Scope of the Licence		Please refer ANNEX – <u>E</u>

ANNEX A

Grouping Guidelines

1. Life jackets as per IS 6685: 2009 can be classified according to the following:
 - Type – Adult size, Child size
 - Buoyant Material- Unicellular Plastics/ Kapok/ Cork
 - Inflatable Characteristics- Inflatable/ Non- inflatable
 - Type of Light – Constant Light or Flashing Light
 - Colour- Traffic Yellow/ Light Orange/ Indian Saffron

2. Considering the above, the guidelines given below shall be followed for GoL/CSoL:
 - (a) Sample from each Type (Adult size/ Child size) for each Buoyant Material with any colour of outer cover shall be tested to cover that particular variety in the Scope of Licence.
 - (b) Inflatable life jacket and Non- inflatable life jacket shall be tested separately to cover that particular variety.
 - (c) For including jacket with any other colour in the scope of licence for the varieties as per 2 (a) and 2 (b) above, only Visibility Test as per clause 11 need to be done.
 - (d) If sample with Flashing Light is tested then life jacket with constant light may also be covered.

3. The Firm shall declare the varieties they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

4. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX B**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Ease of Donning Cl. 4.3	Availability of suitable Test Persons as per Cl. A-1.1 Different Winter and Summer Clothes for Test person Stop Watch
2.	Tests as per Cl. 4.6 to Cl.4.8	Availability of suitable Test Swimmers as per Cl. A-2.1 Swimming Costume Stop Watch Arrangement for Jumping in pool from a height of 4.5 m Angle measurement Pond or Swimming Pool minimum 25 m length
3.	Ease of Extraction from Water, Cl. 4.10	Test Rig with Dummy as per Fig 1 Balance Suitable lifting device
4.	Tests for Children's life jacket, Cl. 5.3	Availability of suitable Test Persons as per Annex C
5.	Buoyancy, Cl. 6	Tank as per Cl. D-1.1 Spring Balance Wire Mesh Basket as per Cl. D-1.3 Weights
6.	Test for Inflatable Life Jackets Cl. 6.4, Annex E	Deep Freezer capable to maintain temperature of -30 °C Oven Steady Force of 220+-10 N Angle Protector Stop Watch Gas Cylinder as per manufacture's recommendation Pressure Gauge 75 kg Sand Bag as per Cl. E-7 Lowering arrangements as per E-7 Corrosion Resistance Test as per ISO 9227 Magnetic Compass Controlled Room with Temperature Control as per E-9 Spray Arrangement as per E-9
7.	Distribution of Buoyancy Cl. 7	Pond or Swimming Pool Scale, Angle Protector Stop Watch

8.	Buoyant Materials, Cl 8	
9.	Unicellular Plastics, Cl 8.1	Oven Suitable measuring equipments for Taking Dimensions Deep Freezer capable to maintain temperature of -30 °C Oil Tank as per K-1, Diesel Oil Water Tank as per F-2 Weighing Balance
10.	Kapok, Cl. 8.2	Humidity Chamber Weighing Balance, Weights Buoyancy Bag as per Fig1 & 2 of IS 3040 Suitable Container with clean water as per A-2.1 of IS 3040
11.	Cork, Cl. 8.3	Vernier Caliper Weighing balance
12.	Visibility, Cl. 11	
13.	Colour, Cl. 11.1	As per IS 5
14.	Colour Fastness due to action of light	Blue wool reference materials 1 to 8 Blue wool reference materials L2 to L9 humidity-test control fabric Laboratory exposure devices as per Cl. 5.2 of IS/ISO 105-B02
15.	Colour Fastness due to action of sea light	Testing Devices as per Cl. 4.1 of IS 690 Air Oven Two Adjacent Fabrics as per Cl. 4.3 of IS 690 Grey Scale Pure Sodium Chloride, Distilled Water
16.	Webbing, Tapes and Cords, Cl. 13	Tensile Testing Machine
17.	Strength of Neck Opening and Fastening Device, Cl. 16, Annex J	91 kg weight A suitable rig for suspending the jacket and the weight Suitable grips or slings, Arrangements as per Annex J
18.	Strength Test Cl. 17	Test Rig with Dummy Various Weights up to 3200 N Stop Watch
19.	Temperature Cycling Test	Cold and warm chambers/ Deep Freezer capable to maintain temperature of -30 °C/ Oven
20.	Oil Resistance Test as per Cl. 19	Oil Tank as per K-1 Diesel Oil
21.	Fire Test, Cl.	Fire Chamber/Tank Stop Watch

The above list is indicative only and may not be treated as exhaustive.

ANNEX C

Scheme of Inspection And Testing

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirement of Cl. 24 of IS 6685: 2009.

3.1 In addition, information with each life jacket shall be supplied as per Cl. 21 of IS 6685.

4. CONTROL UNIT – Number of life jackets of a particular size, buoyant material, inflatable characteristics and colour manufactured in a day shall constitute a control unit.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

6. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
3.	GENERAL REQUIREMENTS						
3.11	--	3.11	IS 6685	S	One	Each Consignment	Please see Note 1
4.	DESIGN REQUIREMENTS						
4.1	Collar	4.1	IS 6685	R	Each Jacket		--
4.3	Ease of Donning	4.3 Annex A	IS 6685	R	Six	Every 7th Control Unit	--
4.6	--	4.6 Annex-A	IS 6685	R	Six	Every 7th Control Unit	--
4.7	Speed, Ease of Rotation and Self Righting	4.7 Annex-A	IS 6685	R	One	Every 7th Control Unit	--
4.8	Ability to Withstand Impact	4.8	IS 6685	R	One	Every 7th Control Unit	--
4.9	Freedom from Defects	4.9	IS 6685	R	Each Jacket		
4.10	Ease of Extraction from Water	4.10 Annex- B	IS 6685	R	One	Every 7th Control Unit	--
4.11	--	4.11	IS 6685	R	Each Jacket		
5	SIZES						
5.1, 5.2	--	5.1, 5.2	IS 6685	R	Each Jacket		--
5.3	Test for children life jackets	5.3 Annex-C	IS 6685	R	Six	Every Control Unit	--
6	Buoyancy	6.1 to 6.3 Annex-D	IS 6685	R	One	Every 7th Control Unit	--
6.4, E-1 to E-9	Tests for Inflatable life jackets	6.4(a), 6.4(b), 6.4 (c) Annex E	IS 6685	R	One	Every 7th Control Unit	Please see Note 1 for checking conformity of materials as per E-4, E-8
7	Distribution of Buoyancy	7 Annex-A-3	IS 6685	R	One	Every 7th Control Unit	--

8 BUOYANT MATERIALS							
8.1	Unicellular Plastics	8.1 Annex-F	IS 6685	S	Eight Specimen	Each Consignment	Please see Note 1
8.2	Kapok	8.2	IS 6685 IS 3040	S	One		
8.3	Cork	8.3	IS 6685	S	One		
9 PROTECTION OF BUOYANT MATERIALS							
9.1 (a)	Unicellular Plastics	9.1(a)	IS 6685	R	One	Every 7th Control Unit	--
9.1(b)	--	9.1(b) Annex-G	IS 6685	S	One	Each Consignment	Please see Note 1
9.2	Kapok	9.2, 10.1	IS 6685 IS 2076	S	One	Each Consignment	
9.3	Cork	9.3, 10.1	IS 6685	S	One	Each Consignment	Please see Note 1
10 OUTER COVERING FOR BUOYANT MATERIAL							
10.1	Where Buoyant Material Accommodated in Pockets	10.1	IS 6685 IS 1422 IS 1969	S	One	Each Consignment	Please see Note 1
10.2	--	10.2 Annex-G	IS 6685				
11.1,	Visibility	11.1	IS 6685 IS 5	S	One	Each Consignment	Please see Note 1
11.2	Colour fastness	11.2	IS 6685 IS 2454 IS 690				
12	Audibility	12	IS 6685	R	Each Piece		--
13	Webbing, Tapes and Cords	13	IS 6685 IS 1969 IS 3255	S	One	Each Consignment	Please see Note 1
14.1	Sewing	14.1	IS 6685 IS 1720				
14.2	--	14.2 Annex-H	IS 6685	R	One	Each Control Unit	--
14.2.1	--	14.2.1	IS 6685		Each Jacket		--
15	Fastenings	15.1, 15.2	IS 6685	R	Each Jacket		--

16	Strength of Neck Opening and Fastening Device	16 Annex-J	IS 6685	R	One	Each Control Unit	--
17	Strength Test	17	IS 6685	R	One	Each Control Unit	
18	Temperature Cycling Test	3.6, 3.7, 18	IS 6685	S	One	Every six month	--
19	Test for Oil Resistance	19 Annex- F Annex- K	IS 6685	S	One	Every six month	--
20	Fire Test	20	IS 6685	R	One	Every 7th Control Unit	--
25	Life Jacket Lights	25	IS 6685	S	One	Each Consignment	--

Note- 1: In case the consignment is received with a Test Certificate showing compliance to the specification no further testing is necessary.

Note-2: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-3: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.

ANNEX D**Possible Tests in a day**

S. No.	Test
1.	Ease of Donning, Cl. 4.3
2.	Ability to withstand Impact, Cl. 4.8
3.	Freedom from Defects, Cl. 4.9
4.	Ease of Extraction from Water, Cl. 4.10
5.	Buoyancy, Cl. 6
6.	Distribution of Buoyancy, Cl, 7
7.	Audibility, Cl.12
8.	Sewing, Cl. 14
9.	Fastenings, Cl. 15
10.	Strength of Neck Opening and Fastening Devices, Cl. 16
11.	Strength Test, Cl 17
12.	Fire Test, Cl. 19

ANNEX E

Scope of Licence

“Licence is granted to use Standard Mark as per IS 6685: 2009 with the following scope:	
Name of the product	Life Jackets
Type	Adult size, Child size
Buoyant Material	
Inflatable Characteristics	Inflatable/ Non- inflatable
Type of Light	
Colour	