



## PRODUCT MANUAL FOR HIGH PRESSURE FIRE FIGHTING HOSE ACCORDING TO IS 14933 : 2001

*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.	<b>Product</b>	:	IS 14933 : 2001
	<b>Title</b>	:	High Pressure Fire Fighting Hose
	<b>No. of Amendments</b>	:	Nil
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Not applicable
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX – A
c)	<b>Sample Size</b>	:	Hose - 2 nos of 30 meter each
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX –B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX –C
5.	<b>Possible tests in a day:</b>	:	
	i) Internal diameter (Clause 3.4)		ii) Length (Clause 4)
	iii) Coil diameter (Clause 6)		iv) Lining (Clause 8)
	v) Cover (Clause 9)		vi) Kink test (Clause 12)
	vii) Hydrostatic proof pressure test (Clause 10)		
	viii) Hydrostatic burst pressure test (Clause 11)		
	ix) Adhesion test (Clause 13)		
	x) Change in length (Clause 16)		
6.	<b>Scope of the Licence :</b>		
	Licence is granted to use Standard Mark as per IS 14933:2001 with the following scope:		
	Name of the Product	High Pressure Fire Fighting Hose-Specification	
	Type	Type A/ Type B	
	Sizes	38 mm, 50 mm, 63 mm and 70 mm	

**ANNEX A**

**Grouping Guidelines**

1. IS 14933:2001 covers High-Pressure Fire Fighting Hoses which are classified as below:
  - a) Type A and Type B
  - b) Sizes: 38, 50, 63 and 70 mm
2. Considering the above following grouping guidelines is developed for GoL/CSoL:
  - One sample of highest size along with any other size of hose from each type shall be tested for all requirements to cover all sizes of hoses of that type.
3. The Firm shall declare the types and sizes of hoses 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 varieties of hoses 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*

<b>Sl. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1	Internal Diameter (Clause 3.4)	- Conical or Cylindrical plug gauge of required sizes
2	Length (Clause 4)	- Measuring tape
3	Mass (Clause 5)	- Weighing balance - Conditioning chamber for maintaining temperature of $27 \pm 2$ °C humidity of $65 \pm 5\%$
4	Coil diameter (Machine coiled) (Clause 6)	- Steel scale
5	Hydrostatic proof pressure test (Clause 10)	- Hydrostatic pressure testing equipment with arrangement for increasing pressure at specified rate, with hydraulic pressure test, pressure gauge and timer. - End caps - Stop watch
6	Hydrostatic burst pressure test (Clause 11)	- Hydrostatic pressure testing equipment with arrangement for increasing pressure at specified rate, with hydraulic pressure test, pressure gauge and timer. - End caps - Stop watch - Safety cage
7	Kink test (Clause 12)	- Hydraulic pressure testing arrangement with controlled pressure rating and with suitable end plugs and pressure gauge - Stop watch
8	Adhesion test (Clause 13)	- Adhesion test apparatus as per clause A-2 and Fig 1 of IS 14933 : 2001 which consists mandrel and loading arrangement - Stop Watch
9	Abrasion test (Clause 14)	- Abrasion test apparatus as per clause 1.2, Fig 2 of IS 14933 : 2001

10	Accelerated Ageing Clause 15	<ul style="list-style-type: none"> <li>- Conditioning chamber for maintaining temperature of <math>27 \pm 2</math> °C humidity of <math>65 \pm 5</math> %</li> <li>- Hot air oven</li> <li>- Test facilities for Burst test as per clause 11 of IS 14933 : 2001</li> <li>- Adhesion test arrangement as per clause A-2 of IS 14933 : 2001</li> </ul>
11	Change in length (Clause 16)	<ul style="list-style-type: none"> <li>- Hydrostatic pressure testing equipment with arrangement for increasing pressure at specified rate, with hydraulic pressure test, pressure gauge and timer.</li> <li>- End caps</li> <li>- Stop watch</li> <li>- Steel scale</li> </ul>
12	Ozone resistance test (For Type B only) (Clause 17.1)	<ul style="list-style-type: none"> <li>- Ozone resistance test apparatus as per IS 3400 (Part 20)</li> <li>- Conditioning chamber for maintaining temperature of <math>27 \pm 2</math> °C</li> <li>- Magnifying lens of X2 magnification</li> </ul>
13	Oil Resistance (For Type B only) (Clause 17.2)	<ul style="list-style-type: none"> <li>- Thermostatically controlled Oil bath</li> <li>- Oil No 3 of IS 3400(Part 6)</li> <li>- Test apparatus for Adhesion test as per Clause 13 IS 14933 : 2001</li> </ul>
14	Heat resistance (For Type B only) (Clause 17.3)	<ul style="list-style-type: none"> <li>- Muffle Furnace</li> <li>- Steel cubes of size <math>13.0 \pm 0.1</math> mm</li> <li>- Hydrostatic pressure testing equipment with arrangement for increasing pressure at specified rate, with hydraulic pressure test, pressure gauge and timer</li> <li>- Stop Watch</li> <li>- Steel tongs of 30 cm</li> <li>- Steel mesh stout guard</li> </ul>

*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 IS 14933: 2001.

**4. CONTROL UNIT** – Hoses of same type and size manufactured from same raw material under similar conditions of manufacturing in a shift 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	Level of control			
Cl	Requirement	Test Method			No. of Samples	Frequency	Remarks	
		Clause	Reference					
3.2, 3.4	Sizes and Nominal diameter	3.2, 3.3, 3.4	IS 14933	R	Three	Each control unit	In case of failure of sample in any requirement, double the number of samples from the control unit shall be tested and control unit shall be accepted only if retested samples passes	
4	Length	4	IS 14933	R	Three	Each control unit		
5	Mass	5, Table 1	IS 14933	R	Three	Each control unit		
6	Coil diameter (Machine coiled)	6	IS 14933	R	Three	Each control unit		
7	Reinforcement	7, 7.1, 7.2, 7.3	IS 14933	R	Three	Each control unit		
8	Lining	8, 8.1, 8.2, 8.3	IS 14933	R	Three	Each control unit		
9	Cover	9	IS 14933	R	Three	Each control unit		
10	Hydrostatic proof pressure test	10 8.3	IS 14933 IS 443	R	-	All Hoses		-
11	Hydrostatic burst pressure test	11 8.2	IS 14933 IS 443	R	One	Every 8000 m or part thereof of same type and size produced in a month		-
12	Kink Test	12	IS 14933	R	One	Every sixth control unit	-	

13	Adhesion Test	13, Annex. A	IS 14933	R	One	Every sixth control unit	-
14	Abrasion Resistance	14, Annex. B	IS 14933	R	One	Every sixth control unit	-
15	Accelerated Ageing	15, Annex- A	IS 14933 IS 443	R	One	Every tenth control unit	-
16	Change in length	16.1, 16.2	IS 14933	R	One	Every tenth control unit	-
17	<b>Type Tests (for Type B only)</b>						
17.1	Ozone Resistance Test	17.1.1, Annex C	IS 14933 IS 3400 (Part 20)	S	One	Once in a month	-
17.2	Oil Resistance	17.2.1	IS 14933 IS 3400 (Part 6)	R	One	Every tenth control unit	-
17.3	Heat Resistance	17.3, Annex. D	IS 14933	R	One	Every sixth control unit	-

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.