



**PRODUCT MANUAL
FOR NON-PERCOLATING FLEXIBLE FIRE FIGHTING DELIVERY HOSE
ACCORDING TO IS 636:2018**

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 636:2018
	Title	:	Non-percolating flexible fire fighting delivery hose
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	No specific requirement
b)	Grouping guidelines	:	Please refer ANNEX –A
c)	Sample Size	:	60 metres
3.	List of Test Equipment	:	Please refer ANNEX –B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX –C
5.	Possible tests in a day :		
	General construction and workmanship, internal diameter, length, coil diameter, hydraulic burst pressure, hydraulic proof pressure, kink test, change in length or diameter, adhesion test without ageing/conditioning.		
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 636:2018 with the following scope:		
	Name of the product	Non-percolating flexible fire fighting delivery hose	
	Type	Type 1/2/3	
	Sizes	38 mm, 50 mm, 63 mm and 70 mm	

ANNEX A

GROUPING GUIDELINES

Non-percolating flexible firefighting delivery hoses are classified into three types: Type 1, Type 2 and Type 3. Further, hoses shall be of the following nominal sizes i.e. 38, 50, 63 and 70 mm.

Based on sizes, hoses of each type have been categorized into 2 groups:

Group	Type	Sizes
Group 1	1,2,3	38 mm and 50 mm
Group 2	1,2,3	63 mm and 70mm

One sample of each type and any one size from each group shall be tested to cover that type and all sizes within the group, in the scope of licence. However, this shall be subject to availability of manufacturing and testing facilities for the varieties so covered in the scope of licence.

During the operation of licence, samples of each variety covered in the scope of licence, shall be drawn in rotation for testing.

ANNEX B

List of Test Equipment

Major test equipment required to test as per the Indian Standard

S. No.	Test Equipment	Test used in with clause reference
1.	Conical Plug Gauges, Vernier calipers	6.2 – Internal Diameter
2.	Measuring tape	6.3 – Length
3.	Conditioning chamber with temp and humidity control, Digital weighing balance	6.4 – Mass
4.	Measurement Scale, Vernier calipers, micrometer	6.5 – Coil Diameter
5.	Hydrostatic Test assembly as per IS 443 (Part 3), Vernier calipers, micrometer, measurement tape, π tape	6.6 – Hydrostatic Proof Pressure test and 6.7 – Hydrostatic Burst pressure test
6.	High Pressure Hydraulic Pump with pressure gauge and end plugs or caps	6.8 – Kink Test
7.	High Pressure Hydraulic Pump with pressure gauge and end plugs or caps, measuring tape	6.9 – Change in Length
8.	High Pressure Hydraulic Pump with pressure gauge and end plugs or caps, Vernier calipers, micrometer, measurement tape, π tape	6.10 - Change in Diameter
9.	Adhesion test apparatus consisting of a mandrel, means of supporting a mandrel and means of applying load to the test piece, as per Annex B of IS 636:2018	6.11.1 - Adhesion
10.	Conditioning chamber with temp and humidity control, Hot air oven	6.11.2 – Accelerated ageing test
11.	Abrasion resistance test apparatus as per Annex C of IS 636:2018	6.12 – Abrasion Resistance
12.	Forced circulation air oven capable of being controlled at $50 \pm 1^\circ\text{C}$, Water bath, filled with distilled water, capable of being controlled at $20 \pm 5^\circ\text{C}$, Conditioning chamber, weighing balance accurate to 0.1 g	6.13 – Water pickup/moisture absorption (Only for Type 2 and 3)
13.	Apparatus consisting of: Lab Furnace ($600+10/-0^\circ\text{C}$), Steel cubes of 13 ± 0.1 mm, High Pressure Hydraulic Pump with pressure gauge and end plugs or caps, steel tongs (30 cm), stout guard made of steel wire mesh	6.14 – Heat Resistance
14.	Oil Bath capable of being maintained at $50 \pm 2^\circ\text{C}$, Oil No. 3 (See IS 3400 Pt 6), Adhesion test apparatus as per Annex B of IS 636:2018	6.15 – Oil Resistance Test (Only for Type 3)

15.	Ozone resistance test apparatus as per IS 443 (Part 1)	6.16 -Ozone Resistance
16.	Hot surface resistance apparatus as per Annex F of IS 636:2018	6.17 – Hot surface resistance
17.	Hydraulic test rig, suitable coupling adaptors and a variable flow rate branch pipe or monitor as per Annex H of IS 636:2018	6.18 – Pressure Loss

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 equipment.

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

3. LABELLING AND MARKING -The Standard Mark as given in Schedule of the license shall be incorporated legibly on each Non-Percolating Flexible Fire Fighting Delivery Hose at a point not less than 1 m from each end provided the hose thus marked conforms to all the requirements of the specification.

3.1 Marking shall be done as per the provisions of IS 636:2018. In addition, details of BIS licence no. CM/L- and BIS website shall be marked as follows: "For details of BIS certification please visit wwwbis.gov.in"

4. LEVELS OF CONTROL - The tests, as indicated in 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.

4.1 All production which conforms to the Indian Standard and covered in the licence should be marked with Standard Mark.

5. CONTROL UNIT- For the purpose of this scheme, entire quantity of hoses of the same type and size, manufactured from the same batch of raw material, but limited to 2000 m hose length, shall constitute a control unit.

6. REJECTION - 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. Any rejected material which is potentially re-salable be sheared or cut or deformed in such a manner that it cannot be used for any other purpose. A separate record shall be maintained giving information on quantity and batch number/control unit number, as applicable, relating to all such rejections/defective/sub-standard material of the production not conforming to the requirements of the Specification and the method of its disposal. Such material shall in no case be stored together with that conforming to the Specification. The Standard Mark (if already applied) on rejected material should be defaced.

TABLE 1: LEVELS OF CONTROL

(1)				(2)	(3)		(4)
Test Details				Test equipment requirement R:required (or) S: Sub-contracting permitted	Levels of Control		Remarks
Clause	Requirements	Test Method			No. of Samples	Lot Size/Frequency	
		Clause	Reference				
6.	Requirements						
6.1.1, 6.1.2	General	6.1.1, 6.1.2	IS 636:2018	R	4	Each control unit	One sample per 500m of Hose length
6.1.3	Workmanship	6.1.3	-do-	R	-do-	-do-	-do-
6.2	Internal Diameter	6.2	-do-	R		All Hoses	
6.3	Length	6.3	-do-	R	4	Each control unit	One sample per 500m of Hose length
6.4	Mass	6.4	-do-	R	-do-	-do-	-do-
6.5	Coil Diameter	6.5	-do-	R	One	Each control unit	One sample per 2000 m of Hose length
6.6	Hydrostatic Proof Pressure Test	8.1	IS 443 (Pt 3)	R		All Hoses	
6.7	Hydrostatic Burst Pressure Test	8.3	-do-	R	One	Every 4 th control unit	One sample per 8000 m of Hose length
6.8	Kink Test	6.8	IS 636:2018	R	one	-do-	-do-
6.9	Change in Length	6.9	-do-	R	One	Each control unit	One sample per 2000 m of Hose length
6.10	Change in Diameter	6.10	-do-	R	-do-	-do-	-do-

6.11	Requirements for Rubber Lining and the Outer Coating	6.11					
6.11.1	Adhesion	Annex B	IS 636:2018	R	One	Every 4 th control unit	One sample per 8000 m of Hose length
6.11.1	Accelerated Ageing test		IS 443 (Pt 3)	R	One	Every 8 th control unit	One sample per 16000 m of Hose length
6.12	Abrasion Resistance	Annex C	IS 636:2018	R	One	Every 4 th control unit	One sample per 8000 m of Hose length
6.13	Water Pick up/Moisture Absorption	Annex D	-do-	R	One	Every 4 th control unit	One sample per 8000 m of Hose length (For type 2 and type 3 only)
6.14	Heat Resistance	Annex E	-do-	R	-do-	-do-	-do-
6.15	Oil Resistance Test	6.15	-do-	R	-do-	-do-	One sample per 8000 m of Hose length (type 3 only)
6.16	Ozone Resistance Test		IS 443 (Part 1)	S	One	Every 8 th control unit	One sample per 16000 m of Hose length
6.17	Hot surface resistance	Annex F	IS 636	R	-do-	-do-	-do-
6.18	Pressure Loss	Annex H	-do-	R	-do-	-do-	-do-

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. 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 to BO Head.