



PRODUCT MANUAL
FOR RUBBER HOSES, TEXTILE-REINFORCED,
FOR GENERAL-PURPOSE WATER APPLICATIONS
ACCORDING TO IS 444: 2017/ISO 1403:2005

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 444 : 2017/ISO 1403:2005
	Title	:	Rubber Hoses, Textile-Reinforced, for General-Purpose Water Applications
	No. of Amendments	:	0
2.	Sampling Guidelines:		
a)	Raw material	:	Not applicable
b)	Grouping guidelines	:	Please refer ANNEX –A
c)	Sample Size	:	5 meter
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 :		
	(i) Construction (ii) Dimensions (iii) Tensile Strength & Elongation at break (iv) Proof Pressure (v) Change in length at proof pressure (vi) Minimum burst pressure (vii) Adhesion between components		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 444 : 2017 with the following scope:-		
	Name of the product	Rubber Hoses, Textile-Reinforced, for General-Purpose Water Applications	
	Type	Type 1 and/or Type 2 and/or Type 3	
	Sizes	Internal diameter	

**ANNEX-A
TO PRODUCT MANUAL
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Grouping Guidelines

1. Rubber Hoses, Textile-Reinforced, for General-Purpose Water Applications as per IS 444 : 2017 are classified based on their pressure rating & internal diameter as follows: -

Type	Type 1, Type 2 and Type 3
Internal diameter	10, 12.5, 16, 19, 25, 32, 38, 50, 63, 76 and 100mm

2. To cover the various sizes & types in the scope of the licence, the following guidelines of grouping based on their pressure rating & internal diameter for grant of licence/inclusion of new variety in the licence :-

Types	Group-1	Group-2	Group-3
Type 1	10 to 19 mm	25 to 32 mm	38 to 100mm
Type 2	10 to 19 mm	25 to 32 mm	38 to 100mm
Type 3	10 to 19 mm	25 to 32 mm	38 to 100mm

One sample from each size group (preferably the highest size) & type shall be tested for all the requirements of the specification in order to cover the complete range of size & type. It shall however be ensured and recorded that applicant/licensee has got complete manufacturing as well as testing facilities for the sizes required to be covered as per grouping.

3. During the operation of the Licence, BO shall ensure that all Sizes & types covered in the Licence are tested in rotation, to the extent possible.

**ANNEX-B
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List of Test Equipment

Major test equipment required to test as per the Indian Standard

Sl. No.	Test Equipment	Tests used in with Clause Reference
1.	-Air conditioner -Thermometer -Plug gauges -Tapered gauges -Micrometer -Vernier slide calipers or -Internal calliper dial gauge with rounded feet -Go-No Go plugs -Steel scale -Measuring tape	Dimensions (Clause 6)
2.	-Tensile Testing machine - Dies and cutters -Thickness gauge -Cone gauge -VernierCalipers	Tensile strength & elongation at break (Clause 7.1 & Table 2)
3.	-Hot air oven with count hour meter -Tensile Testing machine - Dies and cutters -Thickness gauge -Cone gauge -VernierCalipers	Resistance to ageing (Clause 7.1 & table 2)
4	-Air conditioner -Thermometer -Hydrostatic pressure testing apparatus with pressure measuring device -End plugs	Proof pressure at 23 °C (Clause 7.2 & Table 3)
5.	-Sliding VernierCallipers or micrometer, length measuring tape, -circumferential measuring tape (pi	Change in length at proof pressure (Clause 7.2 & table 3)

	tape)	
6.	-Hydrostatic pressure testing apparatus with pressure measuring device - End plugs	Minimum burst pressure (Clause 7.2 & table 3)
7.	-Adhesion Test machine capable of maintaining a substantially constant rate of traverse of the moving head during the test and fitted with an autographic recorder - Grips - Mandrel	Adhesion between components (Clause 7.2 & table 3)
8.	-Air conditioner -Thermometer -Flexibility test equipment	Flexibility at 23 °C (Clause 7.2 & table 3)

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

ANNEX –C
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(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. PACKING AND MARKING** –The Standard Mark, as given in the Schedule of the licence, shall be printed using suitable ink by flexography or gravure printing or stencilling on each length of Rubber Water Hose, provided, always that the product so marked conform to requirements of the specification.
- 4. CONTROL UNIT** –For the purpose of this Scheme, the control unit shall be as follows:-
 - 4.1 **RUBBER WATER HOSE**- For the purpose of this scheme all the Rubber hoses manufactured from a rubber compound masticated and vulcanized at a time shall constitute a control unit.
 - 4.2 **RUBBER COMPOUND** –Rubber compound from mixing made in one cycle of mixing.
- 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 LEVELS OF CONTROL
(Para 5 of Scheme of Inspection and Testing)

(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				
5	Material and Construction		IS 444:2017	R	5	Each Control Unit	Visual
6	Dimension	Appropriate record shall be maintained					
6.1	Internal diameters and tolerances		IS 15913	R	5	Each Control Unit	
6.2	Concentricity		-do-	R	5	Each Control Unit	
6.3	Tolerance of length		-do-	R	5	Each Control Unit	
6.4	Minimum thickness of lining and cover		-do-	R	5	Each Control Unit	
7	Physical properties						
7.1 &Table 2	Rubber compound						

(i)	Minimum tensile strength		IS 3400 (Part1)	R	2	Each Control Unit	
(ii)	Minimum elongation at break		IS 3400 (Part 1)	R	2	Each Control Unit	
(iii)	Resistance to ageing: Change in tensile strength from original value (max). Change in elongation at break from original value (max)		IS 3400 (Part 1) & IS 3400 (Part 4)	R	1	Every Fifth Control unit	In case any of the samples fail to meet the relevant requirements the entire material in the control unit shall be considered unfit for the purposes of marking. In case of any failure each control unit shall be tested till 5 consecutive control units are found to be passing. Thereafter, frequency suggested in this table may be followed.
7.2 & Table 3	Finished hose						
(i)	Proof pressure at 23 ⁰ C		IS 443 (Pt 3)	R	1	Every Control Unit	
(ii)	Change in length at proof pressure		IS 443 (Pt 3)	R	1	Every Control Unit	
(iii)	Minimum burst pressure		IS 443 (Pt 3)	R	1	Every Control Unit	

(iv)	Adhesion between component		IS 3400 (Pt 24)	R	3	Every Control Unit	
(v)	Ozone resistance		ISO 7326	S	1	Once in six months	The testing of Resistance to Ozone shall be carried out once in six months and also at the time of any change in composition and/or source of raw material.
(vi)	Flexibility at 23°C		IS 12656	R	2	Every Control Unit	
(vii)	Low-temperature flexibility		IS 12657	S	1	Once in six months	The testing of low temperature flexibility shall be carried out once in six months and also at the time of any change in composition and/or source of raw material.

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.