



**PRODUCT MANUAL
FOR RUBBER HOSE FOR WELDING
ACCORDING TO IS 447:1988**

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 447:1988
	Title	:	Specification for Rubber Hose for Welding
	No. of Amendments	:	01
2.	Sampling Guidelines:		
a)	Raw material	:	No specific requirement
b)	Grouping guidelines	:	Please refer Annex – A
c)	Sample Size	:	15 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 :	:	All except accelerated ageing test
6.	Scope of the Licence :		
	Licence is granted to use Standard Mark as per IS 447:1988 with the following scope:		
	Name of the product	Rubber Hose for Welding	
	Nominal Bore Size	5.0/6.3/8.0/10.0/12.5 mm	

ANNEX-A
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GROUPING GUIDELINES

As per IS 447 : 1988 , Rubber hose for welding are classified as below on the basis of nominal bore size:

a) 5.0 mm b) 6.3 mm c) 8.0 mm d) 10.0 mm e) 12.5 mm

Accordingly, rubber hoses for welding have been classified as below into two groups.

Nominal bore size	5.0-8.0mm	Group I
	10.0-12.5 mm	Group II

One sample from each group (preferably the highest size) shall be tested for all requirement of the specification in order to over the complete range of sizes for the purpose of grant of licence/addition in scope of licence. However, availability of manufacturing and testing facilities shall be ensured for the sizes to be covered in the scope of licence.

During the operation of licence, samples of each size covered in the scope of licence, shall be drawn and tested in rotation.

ANNEX-B
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LIST OF TEST EQUIPMENTS

Major test equipment required to test as per the Indian Standard

Sr. No.	Test Equipment	Tests used in with Clause Reference
1.	Vernier Caliper, ID Gauge	3.2.1 Bore Size
2.	Micrometer/thickness gauge	3.2.2 Lining and Cover Thickness
3.	Measuring scale or tape	3.2.3 Length
4.	Dies and cutters, thickness gauge, cone gauge, Tensile Testing Machine with extensometer, Test rig (for ring test pieces)	3.3.1 Tensile Strength and Elongation at break of lining and cover
5.	Air Oven	3.3.1 Accelerated Ageing of lining and cover
6.	Pressure source, calibrated pressure gauge or pressure transducer with digital readout, sliding vernier calipers or micrometer, length measuring tape, circumferential measuring tape (π tape) as per IS 443 (Part 3):2017	3.4.1 Hydrostatic test
7.	-do-	3.4.1 Bursting pressure
8.	-do-	3.4.1 Increase in outside diameter at working pressure
9.	-do-	3.4.1 Change in length at proof pressure
10.	Apparatus for determination of adhesion consisting of a Test Machine, Grips, Mandrels as per IS 3400 (Part 24)	3.4.1 Adhesion between components

The list above is indicative and may not be taken as exhaustive

ANNEX – B

SCHEME OF INSPECTION AND TESTING
FOR RUBBER HOSE FOR WELDING
ACCORDING TO IS 447:1988

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. **MARKING** – The Standard Mark as given in the Schedule of the license shall be marked on each length of hose as well as on the reel on which the hose is wound; provided that the hoses to which this mark is thus applied conforms to every requirement of the specification.
 - 3.1 Marking shall be done as per the provisions of the Indian Standard. In addition In addition, the following details shall be mentioned on each length of hose:
 - a) BIS Licence No. CM/L _____.
 - b) BIS website details i.e.–“For details of BIS certification please visit www.bis.gov.in”*

** (b) may be indicated on an accompanying label/tag or on packaging in case sufficient space is not available on the hose surface.*
4. **CONTROL UNIT** – For the purpose of this scheme, all the rubber hoses manufactured from the same rubber compound mix and vulcanized at a time 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 Standard 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 Methods	Clause Reference		No. of Sample	Frequency	Remark
3.1	<u>Construction</u>						
3.1.1	Lining	3.1.1	IS 447	R	All hoses	NA	
3.1.2	Reinforcement	3.1.2	-do-	R	All hoses	NA	
3.1.3	Cover	3.1.3	-do-	R	All hoses	NA	
3.1.3.1	Colour of the Cover	3.1.3.1	-do-	R	All hoses	NA	
3.2	<u>Dimensions</u>						
3.2.1	Bore Size	3.2.1	IS 447	R	Two	Each control unit	See note 3
3.2.2	Lining and Cover Thickness	3.2.2	-do-	R	Two	-do-	-do-
3.2.3	Length	3.2.3	-do-	R	One	-do-	
3.3, Table 2	<u>Physical requirements</u>						
i)	Tensile Strength and		IS 3400 (Pt.1)	R	One	Each control unit	
ii)	Elongation at break of lining and cover		-do-	R	One	-do-	
iii)	Accelerated Ageing of lining and cover		-do-	R	One	Each week	

3.4, Table 3	<u>Performance requirements</u>						
i)	Hydrostatic test		IS 443 (Pt. 3)	R	Two	Each control unit	See note 3
ii)	Bursting pressure test		-do-	R	Two	-do-	-do-
iii)	Increase in outside diameter at working pressure		-do-	R	One	-do-	
iv)	Change in length at proof pressure		-do-	R	One	-do-	
v)	Adhesion between components		IS 3400 (Pt. 24)	R	One	-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 empaneled 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.

Note-3: Whenever two samples are drawn from the control unit, they shall be taken from the beginning and end of each length.