



उत्पाद मैनुअल
वेल्लिंग के लिए रबर होज
IS 447:2026 के अनुसार
PRODUCT MANUAL
FOR RUBBER HOSES FOR WELDING
ACCORDING TO IS 447:2026

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	मानक संख्या IS No.	: IS 447:2026 ISO 3821:2019
	शीर्षक Title	: Rubber Hoses for Welding
	संशोधनों की संख्या No. of amendments	: 0
2.	नमूना दिशानिर्देश Sampling Guidelines	
a)	कच्चा माल Raw material	: No specific requirement. Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	: Please refer Annex – A
c)	नमूने का परिमाण Sample Quantity	: 30 meters. Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market).

d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	Duty rating, Construction/Service category, Inside Diameter : Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer Annex –B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer Annex - C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	: All except accelerated ageing test. Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.
6.	लाइसेंस का दायरा /Scope of the Licence:	
	Licence is granted to use Standard Mark as per IS 447:2026 with the following scope:	
	Name of the product	Rubber Hoses for Welding
	Duty rating	Light/Normal
	Construction/Service category	Single hose for oxygen service/Universal fuel gas hose/Twin hose construction etc.,
	Inside diameter (Nominal Size)	From ... mm upto and including ... mm

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN,9, BAHADUR SHAH ZAFAR MARG,NEW
DELHI-110002

ANNEX-A
Grouping Guidelines

a) As per Cl 6, the hoses covered by this Standard are designated using the following information:

- a) Inside diameter (Table 1)
- b) light or normal duty (pressure rating), (Table 4)
- c) Colour and marking (gas service), (Table 5)

b) Accordingly, the hoses are grouped as given below:

Group	Construction/Service Category	Inside Diameter
Light duty hoses	1. Single hose for oxygen service. 2. Single hose for acetylene / other fuel gases (except LPG, MPS, natural gas and methane). 3. Single hose for L PG / MPS / natural gas / methane. 4. Single hose for compressed air / nitrogen / argon / helium / CO₂. 5. Universal fuel gas hose. 6. Fluxed fuel gas hose. 7. Twin hose construction.	1. 4.0 mm to 6.3 mm
Normal duty hoses	1. Single hose for oxygen service. 2. Single hose for acetylene / other fuel gases (except LPG, MPS, natural gas and methane). 3. Single hose for L PG / MPS / natural gas / methane. 4. Single hose for compressed air / nitrogen / argon / helium / CO₂. 5. Universal fuel gas hose. 6. Fluxed fuel gas hose. 7. Twin hose construction.	1. 4.0 mm to 6.3 mm 2. 7.1 mm to 25 mm 3. 32.0 mm to 50.0 mm

c) One sample from each group and each construction/service category and each size range, preferably the highest nominal size, shall be tested for relevant requirements of the standard for grant of licence or addition in scope. However, availability of manufacturing and testing facilities shall be ensured for the sizes to be covered in the scope of licence.

d) In the case of Normal duty hoses, if manufacturer intends to cover all Construction/Service category and all size ranges in the scope, the samples drawn of different size ranges from the above Construction/Service category shall be such that samples of all Construction/Service category, intended to be covered in the licence, are drawn and tested.

e) During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible

ANNEX – B
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sr. No.	Tests used in with Clause Reference	Test Equipment
1.	Construction, Cl. 7.1	Micrometer/Thickness Gauge
2.	Dimensions and tolerances, Cl. 8	Vernier Caliper, ID Gauge, icrometer/Thickness Gauge, Measuring Scale or tape
3.	Tensile strength and elongation at break, Cl.9.2.1	Dies and cutters, thickness gauge, cone gauge, Tensile Testing Machine with extensometer, Test rig (for ring test pieces)
4.	Accelerated ageing, Cl.9.2.2	Air Oven
5.	Adhesion, Cl.9.2.3	Apparatus for determination of adhesion consisting of a Test Machine, Grips, Mandrels, Type 2 or Type 4 test piece as per ISO 8033
6.	Hydrostatic test, Cl.9.2.4	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 1402
7.	Flexibility at ambient temperature, Cl. 9.2.5	Apparatus as per clause 4.1 of ISO 10619-1 for Method A1 or Apparatus as per clause 5.1 of ISO 10619-1 for Method A2 Conditioning chamber
8.	Low – temperature flexibility, Cl. 9.2.6	<u>Method B</u> Mandrel having an outside diameter equal to twice the minimum bend radius specified for the hose with an arc of at least 180° Conditioning chamber
9.	Protection against incandescent particles and hot surfaces, Cl. 9.2.7	Test apparatus as per fig C.2 of Annex C Flexible hose pressurized to 0.1 MPa (1 bar) excess pressure, chromium-nickel steel wire of diameter 2.5 mm, thermocouple, current conductors
10.	Ozone resistance, Cl. 9.2.8	Ozone cabinet, as per ISO 1431-1. Test piece holder as shown in Figure 1 (for method 1) or Jig, for elongation of test pieces (for method 3) or Cylinder, as shown in Figure 3 (for method 4) as per ISO 7326 Conditioning chamber

ANNEX – C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : All rubber hoses of the same gas service category, duty rating, size group and made from the same compound mix and vulcanized under essentially similar conditions at a time shall constitute a control unit.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND 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 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements:** Additionally, the following may be indicated on an accompanying label/tag or on packaging in case sufficient space is not available on the hose surface.

a) “For BIS certification details please visit www.bis.gov.in”

4. REJECTION - The production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. 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
(Recommended Levels of Control by BIS- For Guidance Only)

(1)				(2)		
Test Details				Levels of Control		
Cl.	Requirement	Test Methods	Clause Reference	No. of Sample	Frequency	Remark
7.1	Construction	7.1	IS 447	All hoses	NA	
7.2	Manufacture	7.2	IS 447	All hoses	NA	
8	Dimension and tolerance					
8.1	Inside diameters	8.1	IS 447	All hoses	NA	
8.2	Outside diameters	8.2	IS 447	All hoses	NA	
8.3	Wall thickness	8.3	IS 447	All hoses	NA	
8.4	Concentricity (total indicator reading)	8.4	ISO 4671	All hoses	NA	
8.5	Cut length and tolerances	8.5	IS 15933/ISO 1307	All hoses	NA	
9.2	Basic requirements					
9.2.1 (Table 3)	Tensile strength and elongation at break		IS 3400 (Pt 1)/ISO 37	One	Each Control Unit	
9.2.2	Accelerated ageing		IS 3400 (Pt 4)/ISO 188	One	Monthly	
9.2.3	Adhesion		IS 3400 (Pt 24)/ISO 8033	One	Each Control Unit	
9.2.4 (Table 4)	Hydrostatic requirements					
9.2.5	Flexibility at ambient temperature		IS 443 (Pt.10)/ISO 10619 - 1	One	Monthly	
9.2.6	Low-temperature flexibility		IS 443 (Pt.11)/ISO 10619 - 2	One	Monthly	
9.2.7	Protection against incandescent particles and hot surfaces	Annex C	IS 447	One	Monthly	
9.2.8	Ozone resistance		IS 443 (Pt.1)/ISO 7326	One	Once in a year	
9.3	Special requirements					
9.3.1	Non-ignition requirement for oxygen hoses	Annex A	IS 447	One	Once in 3 years or whenever compound changes	
9.3.2	Resistance to acetone and dimethylformamide for acetylene hoses	9.3.2	IS 447	One		
9.3.3	Resistance to n-pentane for propane hoses	9.3.3	IS 447	One		
9.3.4	Resistance to azeotrope of	9.3.4	IS 447	One		

	trimethylborate with methanol for flux fuel gas hoses					
9.3.5	Flexibility of flux fuel gas hoses	9.3.5	IS 447	One		
9.3.6	Permeability to LPG, MPS, and natural gas of methane hoses, universal fuel gas hoses, and flux fuel gas hoses	9.3.6	IS 447	One		
9.3.7	Requirements for twin hoses	9.3.7	IS 447	One		
9.3.8	Requirements for universal fuel gas hose	9.3.8	IS 447	One		