



उत्पाद मैनुअल
द्रवित पेट्रोलियम गैस (एल पी जी) के लिए रबर होज़ – विशिष्टि
भाग-1: औद्योगिक उपयोग

IS 9573 (Part 1):2017 के अनुसार

PRODUCT MANUAL
FOR RUBBER HOSE FOR LIQUIFIED PETROLEUM GAS (LPG) - SPECIFICATION
PART 1 INDUSTRIAL APPLICATION
ACCORDING TO IS 9573 (Part 1):2017

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में अभ्यास और पारदर्शिता के संचालन में पारदर्शिता सुनिश्चित करने 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 लाइसेंस/प्रमाणपत्र 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 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.	उत्पाद Product	: IS 9573 (Part 1):2017
	शीर्षक Title	: RUBBER HOSE FOR LIQUIFIED PETROLEUM GAS (LPG) – SPECIFICATION PART 1 INDUSTRIAL APPLICATION
	संशोधनों की संख्या No. of amendments	: 01
2.	नमूना दिशानिर्देश Sampling Guidelines	
a)	कच्चा माल Raw material	Inner lining shall be manufactured out of synthetic rubber such as acrylonitrile-butadiene rubber (NBR), blends of NBR-PVC or chloroprene rubber (CR) compound resistant to LPG Gas. It shall be reasonably smooth in bore, uniform in thickness and free from air blisters, porosity and splits Reinforcing wire or cord shall have surface treatment for good bonding with lining and cover compounds Cover shall be manufactured out of synthetic rubber

		compound resistant to abrasion, weather and LPG gas. It may have cloth marked impression finish. The colour of cover shall be black.
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	: Sample of any nominal size may be tested to cover all sizes being manufactured subject to availability of testing and manufacturing facilities. During operation of licence, all sizes covered in licence shall be tested in rotation to the extent possible.
c)	नमूने का आकार Sample Size	: 6 meters
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer Annex–A
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer Annex- B
5.	एक दिन में संभावित परीक्षण Possible tests in a day	
	Construction, Dimensional measurement, Tensile strength, Proof Pressure test, Bursting Pressure, Electrical Continuity Test, Burning Behaviour	
6.	लाइसेंस का दायरा /Scope of the Licence:	
	“Licence is granted to use Standard Mark as per IS 9573(Part 2):2017 with the following scope:	
	Name of the product	Rubber Hose for Liquefied Petroleum Gas(LPG)- for Industrial Application
	Nominal sizes.	Nominal sizes ...,... . in mm

**BUREAU OF INDIAN STANDARDS
MANAK BHAVAN,9, BAHADUR SHAH ZAFAR MARG,
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ANNEX-A

LIST OF TEST EQUIPMENTS

Major test equipment required to test as per the Indian Standard

Sr. No.	Tests used in with Clause reference	Testing Equipment
1.	BoreSize,4.3.1	Vernier Calipers, Internal Diameter Gauge
2.	Thickness of lining and cover,4.3.2	Micrometer/Thickness gauge
3.	Length,4.3.3	Steel Scale or Measurement Tape
4.	Tensile strength and elongation at break of lining and cover compound of hose,4.4.1	Dies and cutters, thickness gauge, cone gauge, Tensile Testing Machine with extensometer, Test rig (for ring test pieces)
5.	Accelerated AgeingTest,4.4.2	Air Oven (Cell type oven or Cabinet Oven or forced air circulation oven of type1 or 2 as per IS 3400 Part 4
6.	Resistance of lining to n-pentane,4.4.3	Liquid n-pentane, Weighing Balance
7.	Adhesion,4.5.1	Apparatus for determination of adhesion consisting of a Test Machine, Grips, Mandrels as per IS3400 (Part24)
8.	Low Temp Flexibility,4.5.2	Freezer capable of maintaining temperature of -40±2°C,Mandrels of suitable sizes
9.	Flexibility of Hose,4.5.3	Calipers, Mandrels
10.	Ozone resistance,4.5.4	Ozone cabinet capable of maintaining ozone concentration of 50± 5 pphm and temperature of40±2°C, magnifying lens (2X), Test piece holder as per Fig 1 of IS 9573 (Part 2), Scale or measuring tape, calipers, Caps
11.	Proof pressure test,4.5.5.1	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
12.	Bursting pressure,4.5.5.2	-do-
13.	Electrical Continuity Test,4.5.6	Multimeter / Continuity tester
14.	Burning Behaviour,4.5.7	Test piece rig as per Fig 2 of Annex B IS 9573 (Part 2), Bunsen Burner

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

ANNEX B

SCHEME OF INSPECTION AND TESTING

1. **LABORATORY-** A laboratory shall be maintained, which shall be suitably equipped (as given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the method given in the specification.

1.1 The manufacturer shall prepare and implement a calibration plan for the test equipment.

2. **TEST RECORD-** 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 marked on each length of hose, provided always that the hoses so marked conforms to each requirement of the specification.

3.2 The hose shall be packed as agreed to between supplier and purchaser. Each length of hose shall be clearly and durably marked at intervals of not more than 0.5 m with the following information:

- a) Manufacturer's Name or Trade Mark
- b) Words LPG, Max W.P. 2.5 MPa
- c) Nominal Bore
- d) Batch/Lot Number
- e) Month and Year of manufacture
- f) IS 9573 (Part 1)
- g) BIS licence number and "For BIS certification details please visit www.bis.gov.in" (In case space is not available on the hose it may be marked on the external packaging or on an attached label as well)

5. **CONTROL UNIT-** 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.

6. **LEVELS OF CONTROL:-** The tests as indicate in Table 1 and at the levels of controls in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and records maintained in accordance with paragraph 2 above.

6.1 All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark.

7. **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.

TABLE 1
LEVELS OF CONTROL

(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	Remarks
4	Requirements						
4.1	General	4.1	IS 9573(Pt 1)	-		Each hose	For identification of raw material, test certificate of supplier may be taken
4.2	Material						
4.2.1	Lining	4.2.1	-do-	-		Each hose	
4.2.2	Reinforcement	4.2.2	-do-	-		Each hose	
4.2.3	Cover	4.2.3	-do-	-		Each hose	
4.3	Dimensional Tolerances						
4.3.1	Bore Size,	4.2.1.2	IS 443	R	6	Each control unit	The reading shall be taken on a set of six test pieces Cut from different sections

4.3.2	Thickness of lining and cover	4.2.2	-do-	R	6	Each control unit	-do-
4.3.3	Length	4.3.3	IS 9573(Pt 1)	R	6	Each control unit	Length as agreed to between purchaser and manufacturer.
4.4	Physical Requirements						
4.4.1	Tensile strength and elongation at Break of lining and Cover Compound of hose		IS 3400 (Pt 1)	R	3	Each control unit	
4.4.2	Accelerated Ageing Test,		IS 3400 (Pt 4)	R	1	Once a week	
4.4.3	Resistance of lining to n-pentane,	Annex A	IS 9573 (Pt 1)	R	1	Once a week	
4.5	Performance Requirements						
4.5.1	Adhesion,		IS 3400 (Pt 24)	R	2	Each control unit	
4.5.2	Low Temp Flexibility,	4.5.2	IS 9573(Pt 1)	S	1	Every 6 months*	*Also at the time of change in composition/material
4.5.3	Flexibility of Hose,	4.5.3	-do-	R	1	Each control unit	
4.5.4	Ozone resistance,	4.5.4	-do-	S	1	Every 6 months*	*Also at the time of change in composition/material
4.5.5	Hydraulic Test requirement						
4.5.5.1	Proof pressure test,	8.1	IS443 (Part 3)	R		Each hose	
4.5.5.2	Bursting pressure,	8.3	IS443 (Part 3)	R	1	Each control unit	

4.5.6	Electrical Continuity Test,	4.5.6	IS 9573 (Pt 1)	R	1	-do-	
4.5.7	Burning Behaviour,	Annex B	-do-	R	1	-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: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.