



**PRODUCT MANUAL  
FOR FLEXIBLE RUBBER TUBING FOR LIQUEFIED PETROLEUM GAS  
ACCORDING TO IS 10908:1991**

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.

<b>1.</b>	<b>Product</b>	:	IS 10908:1991
	Title	:	Flexible Rubber Tubing For Liquefied Petroleum Gas-Specification
	No. of Amendments	:	2
<b>2.</b>	<b>Sampling Guidelines:</b>		
a)	Raw material	:	Shall be homogenous and resistant to outdoor exposure
b)	Grouping guidelines	:	NA –Tubing of each size (diameter) shall be tested
c)	Sample Size	:	10 meter
<b>3.</b>	<b>List of Test Equipment</b>	:	Please refer ANNEX –A
<b>4.</b>	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX –B
<b>5.</b>	<b>Possible tests in a day :</b>		
	(i) Workmanship & Finish (ii) Dimensions (iii) Pressure Test (iv) Shore hardness (v) Crushing Test (vi) Burning behaviour		
<b>6.</b>	<b>Scope of the Licence :</b>		
	“Licence is granted to use Standard Mark as per IS 10908:1991 with the following scope:-		
	Name of the product	Flexible Rubber Tubing For Liquefied Petroleum Gas	
	Sizes (Internal Dia)	6.4 mm and 7.0 mm	

BUREAU OF INDIAN STANDARDS  
Manak Bhawan, 9, Bahadurshah Zafar Marg,  
New Delhi – 110002

ANNEX-A

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.	<ul style="list-style-type: none"> <li>-Air conditioner</li> <li>-Thermometer</li> <li>-Plug gauges</li> <li>-Tapered gauges</li> <li>-Micrometer</li> <li>-Vernier slide calipers or</li> <li>-Internal calliper dial gauge with rounded feet</li> <li>-Go-No Go plugs</li> <li>-Steel scale</li> <li>-Measuring tape</li> </ul>	Dimensions (Clause 4.3)
2.	<ul style="list-style-type: none"> <li>-Standard nozzle</li> <li>-Oversized nozzle</li> <li>-Grip strength test set up</li> <li>- Weight of 4.5 Kg</li> <li>- Ageing oven</li> <li>- Air conditioner</li> <li>- Pressure Measuring device</li> <li>- stop watch</li> </ul>	Grip strength test (Clause 4.4)
3.	<ul style="list-style-type: none"> <li>-Stop watch</li> <li>-Pressure testing apparatus with pressure measuring device</li> <li>-Vernier Calliper or micrometer,</li> <li>-Length measuring tape,</li> <li>-circumferential measuring tape (pi tape)</li> </ul>	Pressure test (Clause 4.5)

4.	-Hardness tester	Shore Hardness test (Clause 4.6)
5.	-Air Oven - Hardness tester	Accelerated Ageing (Clause 4.7)
6.	-Liquid pentane - Air conditioner - Stop watch - manometer - Flexibility test apparatus (Fig. 4 of Annex-B of IS 10908:1991) - Mass of 1.6 Kg - angle protector - Butane gas/air supply	Flexibility test (Clause 4.8)
7.	- Compression test m/c - Stopwatch - Air Pressure arrangement	Crushing Test (Clause 4.9)
8.	- Weighing Machine - Immersion tank - N-pentane (min. 98%) - Volumetric measurement cylinder - Glassware - Stopwatch - Air conditioner	Resistance to LPG (Clause 4.10)
9.	- Ozone chamber - Stop watch - Jigs	Resistance to Ozone (Clause 4.11)
10.	- Bunsen burner flame - Stop watch	Burning Behaviour (Clause 4.12)

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

## ANNEX-B

### 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.

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 Flexible Rubber Tubing For Liquefied Petroleum Gas, provided, always that the product so marked conform to requirements of the specification.
- 4. CONTROL UNIT** – For the purpose of this scheme all the Rubber tubing manufactured from a rubber compound masticated 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 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

(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				
4.1	General	4.1	IS 10908:1991	R	One	Each Mix	
4.2	Workmanship and Finish	3.2	IS 10908:1991	R	One	Each length	
4.3.1	Diameter	4.3.1	IS 10908:1991	R	Two (beginning & end)	Each length	
4.3.2	Wall Thickness	4.2.2	IS 443:1975	R	Six	Each length	The reading shall be taken on a set of six test pieces cut from different sample sections.
4.4,4.4.1,4.4.2	Grip Strength Test	Annex-A	IS 10908:1991	R	One	Each Control Unit	
4.5	Pressure test	4.5	IS 10908:1991	R	One	Each Control Unit	
4.6	Shore Hardness	4.6	IS 10908:1991	R	One	Each length	

4.7	Accelerated Ageing Test		IS 3400 (Pt-4):1988	R	One	Once a week	
4.8	Flexibility test	Annex-B	IS 10908:1991	R	One	Once a week	
4.9	Crushing test	4.9	IS 10908:1991	R	Two	Each Control Unit	
4.10	Resistance to n-pentane	Annex-C	IS 10908:1991	R	One	Each Control Unit	
4.11	Resistance to ozone	Annex-D	IS 10908:1991	S	One	Once in six months	
4.12	Burning behavior on exposure to small flame	ANNEX-E	IS 10908:1991	R	One	Each Control Unit	

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.



