उत्पाद मानुयल

द्रवित पेट्रोलियम गैस (एल॰ पी॰ जी॰) मोटर वाहनों के लिए रबड़ होज और रबड़ होज़ समुच्चय - विशिष्टि

IS 15355: 2018/ ISO 8789: 2009 के अनुसार

PRODUCT MANUAL FOR RUBBER HOSES AND HOSE ASSEMBLIES FOR LIQUEFIED PETROLEUM GAS (L.P.G) IN MOTOR VEHICLES — SPECIFICATION ACCORDING TO IS 15355: 2018/ ISO 8789: 2009

भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम **2018** की स्कीम-**I** के तहत यह उत्पाद मानुयल प्रमाणीकरणके प्रचलन मे रीति और पारदर्शिता के सुसंगता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाइसेन्स धारियों द्वारा संदर्भ सामग्री के रूप मे उपयोग किया जाएगा। बीआईएस लाइसेन्स/प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग 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 license/certificate.

1	उत्पाद **Product**	:	IS 15355: 2018/ ISO 8789: 2009
	शीर्षक **Title**	:	Rubber Hoses and Hose Assemblies for Liquefied Petroleum Gas (L.P.G) in Motor Vehicles— Specification
	संशोधन संख्या **No. of Amendments**	:	Nil
2	नमुनाकरण दिशा निर्देश **Sampling Guidelines:**		
a)	कच्चा माल **Raw material**	:	i) Manufacturer to submit declaration/undertaking in compliance to Clause 4 of IS 15355: 2018/ ISO 8789: 2009 ii) Manufacturer to submit declaration/undertaking in compliance to Clause 7.1 of IS 15355: 2018/ ISO 8789: 2009
b)	समूहिकरण दिशा निर्देश **Grouping guidelines**	:	Not applicable
c)	नमूने का परिमाण **Sample Size**	:	5 metres Proof pressure test to be done on full length of hose shall be conducted as part of factory testing.

3	**परीक्षण उपकरणो की सूची** **List of Test Equipment**	:	कृपया Annex-A देखें Please refer ANNEX–A
4	**निरीक्षण व परीक्षण स्कीम** **Scheme of Inspection and Testing**	:	कृपया Annex-B देखें Please refer ANNEX–B
5	**एक दिन में संभावित परीक्षण** **Possible tests in a day :**	:	i) Internal diameter ii) Concentricity iii) Length iv) Visual examination v) Tensile strength vi) Elongation at break vii) Proof pressure viii) Burst pressure ix) Fittings x) Gas leakage xi) Visual examination
6	**लाइसेन्स का कार्यक्षेत्र / Scope of the Licence**:		
	IS 15355: 2018/ ISO 8789: 2009 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेंस निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है: Licence is granted to use standard Mark as per IS 15355: 2018/ ISO 8789: 2009 with the following scope:		
	उत्पाद का नाम Name of the product	Rubber Hoses and Hose Assemblies for Liquefied Petroleum Gas (L.P.G) in Motor Vehicles	

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New Delhi – 110002

ANNEX – A
LIST OF TEST EQUIPMENT
FOR RUBBER HOSES AND HOSE ASSEMBLIES FOR LIQUEFIED PETROLEUM GAS (L.P.G) IN MOTOR VEHICLES — SPECIFICATION ACCORDING TO IS 15355: 2018/ ISO 8789: 2009

Major test equipment required to test as per the Indian Standard

Sl. No	Tests used in with Clause Reference	Test Equipment
1	Internal diameter, Cl. 5.1	Vernier Calipers, Internal Diameter Gauge, Micrometer
2	Concentricity, Cl. 5.2	Mandrel, dial indicator gauge or micrometer with a rounded anvil or Vernier slid calipers, thickness caliper dial gauge
3	Length, Cl. 5.3	Vernier Slide Calipers, Micrometer or dial gauge or optical magnifier, optical magnifying glass
4	Tensile strength, Cl. 6.3, Table 2	Dies and cutters, Thickness gauge, Cone gauge, Tensile Testing Machine, Test rig for ring test pieces
5	Elongation at break, Cl. 6.3, Table 2	Dies and cutters, Thickness gauge, Cone gauge, Tensile Testing Machine, Test rig for ring test pieces
6	Resistance to ageing a) Change in tensile strength from original value b) Change in elongation at break from original value, Cl. 6.3, Table 2	Apparatus as per ISO 188 Ageing Oven equipped with Flow meter and Digital temperature controller Apparatus as per ISO 37 Dies and cutters, Thickness gauge, Cone gauge, Tensile Testing Machine, Test rig for ring test pieces
7	Resistance to n-pentane a) Change in tensile strength from original value b) Change in elongation at break from original value c) Change in volume Cl. 6.3, Table 2	Apparatus as per ISO 1817 Method A – Glass vessel of flange type with glass lid, having a ground surface where it seals to the vessel flange and clamped by suitable means OR Method B – Glass vessel with stopper or lid OR Method C – Glass vessel with reflux condenser. OR Method D – Pressure vessel with hermetically closed lid, OR Method E – Apparatus for testing one surface only which holds the test piece in contact with the liquid(as per Fig 2 of ISO 1817:2022 Apparatus as per ISO 37 Dies and cutters, Thickness gauge, Cone gauge, Tensile Testing Machine, Test rig for ring test pieces
8	Proof pressure, Cl. 6.4, Table 3	Dial Pressure Gauge, Calibrated pressure gauge or pressure transducer with digital readout, Dimensional equipment, sliding vernier caliper or micrometre, length measuring tape, circumferential measuring tape (π tape)

9	Burst pressure, Cl. 6.4, Table 3	Dial Pressure Gauge, Calibrated pressure gauge or pressure transducer with digital readout, Dimensional equipment, sliding vernier caliper or micrometre, length measuring tape, circumferential measuring tape (π tape)
10	Adhesion between lining and reinforcement and between reinforcement and cover, Cl. 6.4, Table 3	Dynamometer, Grips, Mandrel, cutting blade
11	Ozone resistance Cl. 6.4, Table 3	Ozone cabinet with apparatus for generating ozone, monitoring and controlling the ozone concentration, Test piece holder(as shown in Figure 1 of ISO 7236), Test piece holder(as shown in Figure 2 of ISO 7236)
12	Low-temperature Flexibility, Cl. 6.4, Table 3	Mandrel, Conditioning chamber
13	Permeability to propane gas, Cl. 6.4, Table 3	Water bath, Gas supply provided with a suitable pressure gauge and emergency excess flow shutoff valves, Gas-collecting apparatus, Barometer, Thermometers(Two in nos.)
14	Gas leakage, Cl. 8.1	Gas supply provided with a suitable pressure gauge and emergency excess flow shutoff valves, Barometer,

This is an indicative list and may not be taken as being exhaustive

ANNEX B
SCHEME OF INSPECTION AND TESTING
FOR RUBBER HOSES AND HOSE ASSEMBLIES FOR LIQUEFIED PETROLEUM GAS (L.P.G) IN MOTOR VEHICLES — SPECIFICATION ACCORDING TO IS 15355: 2018/ ISO 8789: 2009

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 and implement 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 on the container or the label applied to it, provided always that the product so marked conform to requirements of the specification.

3.1 Packing - The hose shall be packed as agreed between the purchaser and the supplier, in line with the provisions of National Annex-A of IS 15355:2018.

3.2 Marking - The information as mentioned under clause 9 of IS 15355:2018, shall be legibly and indelibly marked on each hose. In addition, the following shall be incorporated on each hose:

(i) BIS Licence No. CM/L--.

(ii) BIS website details i.e. — "For details of BIS certification please visit www.bis.gov.in".

4. **CONTROL UNIT** – For the purpose of this scheme, all the rubber hoses manufactured from a rubber compound masticated and vulcanized in a day, shall constitute a control unit

4.1 The batch shall be considered fit for the purpose of marking if sample taken from control unit and tested as in Table 1 is found to conform to the relevant requirements of the specification.

4.2 In case the sample fails to conform to any of the requirements as laid down in the specification, the entire material in the batch shall be considered as unfit for the application of the Certification Mark of the Bureau. The batch could, however, be reprocessed and then retested for compliance with the specification.

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 Methods**			**No. of Sample**	**Frequency**	**Remarks**
		Clause Reference	**IS**				
	Dimensions						
5.1	Internal diameter	---	ISO 4671	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
5.2	Concentricity	---	ISO 4671	R	-do-		
5.3	Length	5.3	IS 15355	R	-do-		
6.2	Visual examination	6.2	IS 15355	R	By visual inspection.		
Physical Properties (Finished Hose)							
Cl. 6.4, Table 3	Proof pressure	--	ISO 1402	R	Each Hose		
Cl. 6.4, Table 3	Burst pressure	--	ISO 1402	R	One	Once in a month	
Requirements for fittings							
Cl. 7.2	Fittings	--	ASME B1.1 (for inch threads) or ISO 68-1	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the		

			(for metric threads)		manufacturer for evidence of conformity.		
Physical Properties (Rubber compounds)							
Cl. 6.3, Table 2	Tensile strength	---	ISO 37	R	One	Once in a week	
Cl. 6.3, Table 2	Elongation at break	---	ISO 37	R	One	Once in a week	
Cl. 6.3, Table 2	Resistance to ageing a) Change in tensile strength from original value b) Change in elongation at break from original value	---	ISO 188 a) ISO 37 b) ISO 37	R	One	Once in a week	
Cl. 6.3, Table 2	Resistance to n-pentane a) Change in tensile strength from original value b) Change in elongation at break from original value Change in volume	---	ISO 1817 a) ISO 37 b) ISO 37 c) ISO 37	R	One	Once in a week	
Physical Properties (Finished Hose)							
Cl. 6.4, Table 3	Adhesion between lining and reinforcement and between reinforcement and cover	--	ISO 8033	R	One	Once in a week	
Cl. 6.4, Table 3	Ozone resistance	--	ISO 7326: 1991	S	One	Every 6 months	Also at the time of change in

							composition/ material
Cl. 6.4, Table 3	Low-temperature Flexibility	--	ISO 4672: 1997 (Method B)	S	One	Every 6 months	
Cl. 6.4, Table 3	Permeability to propane gas	--	ISO 4080: 2009	S	One	Every 3 months	
Requirements for hose assemblies							
Cl. 8.1	Gas leakage	8.1	IS 15355: 2018	R	One	Every control unit	
Cl. 8.3	Visual examination	8.3	IS 15355: 2018	R	By visual inspection.		

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 the approval by BO Head.