



**PRODUCT MANUAL FOR
COMMERCIAL BURNERS USING LPG AT INLET
PRESSURE UPTO 147.1 kN/m² (1500gf/cm²)
ACCORDING to IS 14612:1999**

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 14612:1999
	Title	:	COMMERCIAL BURNERS USING LPG at INLET PRESSURE upto 147.1 kN/m² (1500 gf/cm²)
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	Clause 6 of IS 14612:1999
b)	Grouping guidelines	:	Please refer ANNEX – A
c)	Sample Size	:	1 Burner
3.	List of Test Equipment	:	Please refer ANNEX – B
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – C
5.	Requirements which can be tested in a day :		
	All Tests except Immersion Test of Non-Metallic Components as per Clause 6.3.		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 14612:1999 with the following scope:		
	Name of the product	Commercial Burners using LPG at Inlet Pressure upto 147.1 kN/m² (1500gf/cm²)	
	Type of Burner	T 22 / T 35 / T 50 / T 78 M 22 / M 35 / M 50 / M 78 V Type	
	Length of Burner (for V- type Burner)	300 mm / 600mm / 900mm / 1200mm.	

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ANNEX - A**Grouping Guidelines**

1. The following parameters have been taken into consideration for developing the grouping guidelines for certification of Commercial Burners using LPG at Inlet Pressure upto 147.1 kN/m² (1500 gf/cm²) as per IS 14612:1999:

(i) Type of the Burner and (ii) Thermal Efficiency

2. Considering the above, following Groups have been formed for GoL/CSoL:

Group	Type of Burners		Minimum Thermal Efficiency
I	T - Type	T 22 T 35 T 50 T 78	45 38 35 35
II	M - Type	M 22 M 35 M 50 M 78	45 38 35 35
III	V - Type	Length of Burner (in mm) 300 600 900 1200	38

3. For T-Type and M-Type, Burner having highest Thermal Efficiency in each group shall be drawn for testing to cover all Types of Burner in that particular group. However, in-house test results for all remaining types in the group shall also be submitted by the Firm.
4. For V-Type, Burner having largest Length shall be drawn for testing to cover all Lengths of Burner. However, in-house test results for all remaining burners shall also be submitted by the Firm.
5. The Firm shall declare the varieties of Burners intended to be covered in the Licence and submit to BIS the drawing or suitable document to identify each variety of Burner. The Scope of the Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
6. During the operation of the licence, BOs shall ensure that all the varieties covered in the licence are tested in rotation, to the extent possible.

ANNEX - BList of Test Equipments**Major test equipment required to test as per the Indian Standard**

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Mercurous Nitrate Test as per Clause 6.2	a. Mercurous Nitrate, Di-hydrate b. Distilled Water c. Conc. Nitric Acid d. Weighing Balance e. Measuring Cylinders
2.	Determination of Swelling of Non Metallic materials (Immersion Test) as per Clause 6.3	a. N-Pentane b. Weighing Balance
3.	Gas Soundness as per Clause 12	a. Air Compressor b. Air pressure gauge
4.	Gas Consumption as per Clause 16	a. Weighing Scale b. Air Compressor c. Gas Flow Meter d. Thermometer e. Pressure Gauge f. Barometer g. Anemometer h. Burner
5.	Ignition and Flame Travel as per Clause 17	a. Gas cylinder b. Burner c. Pressure Gauge d. Gas Flow Meter
6.	Flame Stability as per Clause 18	a. Gas cylinder b. Burner c. Pressure Gauge d. Gas Flow Meter
7.	Flash Back as per Clause 19	a. Vessel b. Burner c. Gas cylinder d. Distilled water e. Gas Flow Meter
8.	Formation of Soot as per Clause 20	a. Vessel b. Burner c. Gas cylinder d. Distilled water e. Pressure Gauge f. Rotating Vane Anemometer
9.	Resistance to draught as per Clause 21	a. Rotating Vane Anemometer b. Mini fan

10.	Thermal Efficiency as per Clause 23	<ul style="list-style-type: none"> a. Weighing Scale b. Thermometer c. Pressure Regulator, Manometer d. Air Conditioner e. Cylindrical Pan of stainless steel with Lids and Stirrer. f. Aluminium Pan with Lids and Stirrer. g. Test appliance as per fig 4 of Annex B of IS 14612:1999 h. Gas Cylinders
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The above list is indicative only and may not be treated as exhaustive.

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.

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. LABELLING AND MARKING – As per the requirements of IS 14612: 1999.

4. CONTROL UNIT – All burners of same type, manufactured in a day 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

TABLE 1

(1)				(2)	(3)		
Test Details				Test equipment requirement	Levels of Control		
Cl.	Requirement	Test Methods		R: required (or) S: Sub-contracting permitted	No. of Sample	Frequency	Remarks
		Clause	Reference				
5	General	5	IS 14612	R	Each Burner		
6	MATERIAL						
	Copper and Copper alloy	6.2	IS 14612 IS 2305	S	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked
	Non –metallic alloy	6.3, Annex-A	IS 14612				
	Main body of Burner (including mixer head, mixing tube and burner head)s	6.4	IS 14612				
7	Design for Maintenance	7	IS 14612	R	Each Burner	-	-
8	Stability	8	IS 14612	R	Each Burner	-	
9	Workmanship and Finish	9	IS 14612	R	Each Burner	-	-
10	Injector Jets	10.1, 10.2	IS 14612 IS 6912	S	One	Each Consignment	No further testing is required, if accompanied with test certificate or ISI marked
		10.3	IS 14612	S	10%		

11	Burners	11	IS 14612	R	Each Burner	-	-
12	Gas Soundness	12	IS 14612	R	Each Burner	-	-
13	Gas Inlet Connection	13	IS 14612 IS 319	S	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked
14	Air Adjuster	13	IS 14612	R	Each Burner		Optional Requirement
PERFORMANCE							
16	Gas Consumption	16	IS 14612	R	One	Each Control Unit	In case of failure, two more burners shall be tested from the same control unit and if any burner fails all the burners in the control unit shall be checked and those burners which are conforming shall be marked. However, those burners which are failing may be reprocessed and retested and marked only if found conforming.
17	Ignition and Flame Travel	17	IS 14612	R	Each Burner	-	If there is any defect in any burner, it shall be rectified. The rectified burners shall again be tested and marked only if found conforming.
18	Flame Stability	18	IS 14612	R			

19	Flash Back	19	IS 14612	R	One	Each Control Unit	In case of failure, all burners in the control unit shall be tested and only those burners which are conforming shall be marked.
20	Formation of Soot	20	IS 14612	R	One		
21	Resistance to Draught	21	IS 14612	R	One	Every 30 th Control Unit	-
22	Combustion	22	IS 14612	Please see note under Clause 22			
23	Thermal Efficiency	23	IS 14612	R	One	Every 7 th Control Unit	In case of failure, samples from three consecutive control units shall be tested and original frequency may be restored if all the samples pass.

NOTE-1: 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 by BO Head