



**PRODUCT MANUAL FOR
BIOGAS STOVE
ACCORDING TO IS 8749: 2002**

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 8749: 2002
	Title	:	Biogas Stove
	No. of Amendments	:	One
2.	Sampling Guidelines:		
a)	Raw material	:	As per Cl. 5. and 10.1.1 of IS 8749: 2002.
b)	Grouping guidelines	:	Each type of Biogas Stove shall be tested for GoL/CSoL.
c)	Sample Size	:	One Stove with components, as applicable
3.	List of Test Equipment	:	Please refer ANNEX – A .
4.	Scheme of Inspection and Testing	:	Please refer ANNEX – B .
5.	Possible tests in a day	:	<ul style="list-style-type: none"> a) Gas soundness (Cl. 14) b) Ignition and flame travel (Cl. 18) c) Flame stability (Cl. 19) d) Noise control (Cl. 20) e) Formation of soot (Cl. 21) f) Flashback (Cl. 22) g) Combustion (Cl. 23) h) Surface temperature (Cl. 24) i) Thermal efficiency (Cl. 25)
6.	Scope of the Licence	:	Please refer ANNEX – C .

ANNEX A**List of Test Equipment***Major test equipment required to test as per the Indian Standard*

Sl. No.	Tests used in with Clause Reference	Test Equipment
1.	Flashback test for material of burner, Cl. 5.2	Test setup as per Annex C
2.	Dimension of Injector jet, Cl. 10.1	Vernier caliper, Thread gauge
3.	Screwed gas inlet and outlet connection, Cl. 13.1.2	Gauges as per IS 554
4.	Gas soundness test , Cl.14, Annex E	Compressor, Special fixture to hold the valve assembly, Leak test Equipment, Pressure gauge
5.	Strength test, Cl. 15	Measuring tape, Loads as per Annex F
6.	Gas consumption, Cl. 17	Orsat apparatus, Test set up as per Annex G
7.	Thermal efficiency, Cl. 25	
8.	Flame stability, Cl. 19	Pressure gauge
9.	Ignition and Flame travel test Cl. 18	Gas cylinder filled with LPG
10.	Formation of soot, Cl. 21	Vessel of required dimension, Pressure gauge
11.	Flashback, Cl. 22	Vessel of required dimension
12.	Combustion Test as per clause 23, Annex H	Gas collection hood, Orsat apparatus, Chemicals, Gas regulator, Stop watch, Test Set up as per Annex H
13.	Surface Temperature test as per clause 24	LPG cylinder, Special fixture with adjustable pressure regulator, Pressure gauge, Surface Pyrometer/Thermocouple, Container
14.	Finish, Cl. 9	BNF Jet apparatus or any arrangement as per Cl. 9 for thickness of coating, Apparatus as per Annex D of ISS, Arrangement for adhesion test, Arrangement for corrosion resistance test, Apparatus as per Fig. 4 of ISS for resistance to abrasion test, Arrangement for resistance to heating test

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 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 8749:2002.

3.1 Each stove shall also be accompanied by an instruction sheet, card or leaflet as per Clause 27 of IS 8749:2002.

4. CONTROL UNIT - Gas stoves having same design and material of burners, total gas consumption in 1/h at STP and rating of individual burners in 1/h at STP, 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

(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	General	4.1 & 4.2	IS 8749	R	Each stove	–	
5	Materials	5.1	IS 8749	R	Each stove	–	
		5.1.1 Annex B	IS 8749	S	One piece of each component	Each consignment	No further testing is required, if accompanied with the Test Certificate or ISI Marked. Requirements as per Cl. 5.5 is recommendatory in nature.
		5.2 Annex C	IS 8749	S	One piece of each component		
		5.3	IS 8749 (Ref IS 2305)	S	One (for up to 500)	Each consignment	
					Two (for above 500)		
		5.4	IS 8749	S	One Component	Each consignment	
		5.5	IS 8749	S	One Component	Each consignment	
		5.6	IS 8749	S	All drip trays		
6	Design for maintenance	6.1 to 6.7	IS 8749	R	Each stove	–	
7	Rigidity and Stability	7	IS 8749	R	Each stove	–	
8	Gas taps	8.1 to 8.6 8.8 to 8.11	IS 8749	R	Each stove	Adequate inspection shall be made and gas taps which are likely to affect performance of biogas stoves when fitted shall be segregated and shall not be used.	

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8	Gas cock	8.7	IS 8749	R	One (for upto 250)	Each consignment	1. If any of the samples fail, twice the number of samples shall be tested. If all samples conform, the consignment shall be accepted. 2. The above frequency is applicable to those dimensions which can be measured without cutting section of the gas tap. For dimensions for which cutting of a section is necessary, inspection and checking of a lower but adequate frequency should be done to ensure conformity to the ISS.
					Two (for above 251 and up to 500)	Each consignment	
					Three (for above 500)	Each consignment	
9	Finish	9.1	IS 8749	R	Each stove		-
	Vitreous– enamelled Components	9.2, 9.2.1 Annex D	IS 8749	R	Two components each including drip trays	Each consignment	In case of long storage of any consignment of finishing material or its use over a prolonged period, the test shall be repeated for every fifteen days.
	Nickel Chrome plated material						
	Coating thickness	9.3.1	IS 8749 IS 3203	R	One	Each lot	
	Adhesion	9.3.2	IS 8749	R	One	Each lot	
	Corrosion resistance	9.3.3	IS 8749 IS 6009	R	One	Once in a month	
	Painted surface	9.4 (a), 9.4 (b)	IS 8749	R	One	Every month	
	Concealed gas supplies	9.5	IS 8749	R	Each concealed tubular fitting		
Screws, Nuts, Bolts, Springs	9.6	IS 8749	S	One	Each consignment	No further testing is required, if accompanied with the Test Certificate or ISI Marked.	

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10	Injector jets	10.1, 10.2	IS 8749	R	10 %	Each consignment	If one piece fails, twice the no. of samples shall be drawn. In case of any further failure, consignment shall be rejected.
		10.1.1	IS 8749	S	One	Each consignment	
11	Burners	11.1 to 11.6	IS 8749	R	Each burner		
12	Pan Support	12.1, 12.1.1	IS 8749	R	Each pan support		–
13	Inlet connection	13.1	IS 8749	R	One	Every 30 th Control unit	
		13.1.1, 13.1.2	IS 8749	R	10 %	Each consignment	
		13.2	IS 8749	R	Each stove		
14	Gas soundness	14 Annex E	IS 8749	R	Each gas ways	Each stove	If there is any defect in any of the gas stove for any of these requirements, the defect shall be rectified, and tested again and marked only if found confirming to ISS.
18	Ignition and flame travel	18	IS 8749	R	Each Stove		If there is any defect in any of the gas stove for any of these requirements, the defect shall be rectified, and tested again and marked only if found confirming to ISS.
19	Flame stability	19	IS 8749	R	Each Stove		
20	Noise control	20	IS 8749	R	Each Stove		
21	Formation of soot	21	IS 8749	R	One	Each control unit	
22	Flash back	22	IS 8749	R	One	Each control unit	
26.1	Type tests						
15	Strength test	15 Annex F	IS 8749	R	One	Every Seventh control unit	–

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17	Gas consumption	17 Annex G	IS 8749	R	Three	Every control unit	In case a bio gas stove fails, six more stoves shall be drawn and tested. In case of any failure, all the pieces in the control unit shall be checked and those found conforming to the requirements shall only be marked. However, those pieces which are found failing may be reprocessed and retested and marked only if found conforming.
23	Combustion	23 Annex H	IS 8749	R	One	Every Thirtieth control unit	–
24	Surface temperature	24	IS 8749	R	One	Every Thirtieth control unit	–
25	Thermal efficiency	25 Annex G	IS 8749	R	One	Every seventh control unit	In case of failure, samples from each control unit shall be tested. The original frequency may be restored if samples from three consecutive control units 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.

ANNEX C**Scope of Licence**

“Licence is granted to use Standard Mark as per IS 8749: 2002 with the following scope:	
Name of the product	Biogas stove
Type	(a) Material of body and burner (b) Total gas consumption, l/h at STP (c) No. of burners and rating of burners in l/ h at STP