



PRODUCT MANUAL FOR BIOGAS STOVE ACCORDING TO IS 8749: 2024

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: 2024
	Title	:	Biogas Stove
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	As per Cl. 5. and 10.1.1 of IS 8749: 2024.
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	:	a) Gas soundness (Cl. 14) b) Strength test (Cl. 15) c) Ignition and flame travel (Cl. 18) d) Flame stability (Cl. 19) e) Noise control (Cl. 20) f) Formation of soot (Cl. 21) g) Flashback (Cl. 22) h) Combustion (Cl. 23) i) Surface temperature (Cl. 24) j) Thermal efficiency (Cl. 25) k) Resistance to draught (Cl. 26) l) Fire hazard limiting temperature (Cl 27)
6.	Scope of the Licence	:	Please refer ANNEX – C.

ANNEX A**List of Test Equipment***Indicative list of 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, Apparatus as per Fig. 4 of ISS for resistance to abrasion test, Arrangement for resistance to heating test
15.	Resistance to draught, Cl. 26	Rotating Vane Anemometer, Fan
16.	Fire hazard and limiting temperature, Cl. 27	Thermocouple, Stainless steel tube, Temperature indicator

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

ANNEX B**Scheme of Inspection and Testing****1. QUALITY ASSURANCE PLAN**

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit i.e. Batch and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with **para 2.4 below**.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of the manufacturer, control unit for the purpose of this Scheme will be 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.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2. ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in-house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer, and testing parameters/requirements which can only be performed in the factory.

2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in-house as “R” or other tests which can be sub-contracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing

facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. LABELLING AND MARKING – As per the requirements given in IS 8749: 2024. Each stove shall also be accompanied by an instruction sheet, card or leaflet as per Clause 29 of IS 8749:2024.

The Standard Mark, as given in the Schedule of the licence, shall be marked on each Stove, provided always that the Stove thus marked conforms to all the requirement of the specification. In addition, the licence no. CM/L-_____ and details of BIS website shall be marked at an appropriate place as follows: “For details of BIS certification please visit www.bis.gov.in”

4. REJECTION - All the production which conforms to the Indian Standard and covered under scope of the licence shall be marked with Standard Mark. 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	Firm shall exercise adequate levels of control to ensure that entire production conforms to specified requirements. Records shall be maintained.		
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.

8	Gas cock	8.7	IS 8749	S	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	S	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. No further testing is required, if accompanied with the Test Certificate
	Nickel Chrome plated material						
	Coating thickness	9.3.1	IS 8749 IS 3203	R	One	Each consignment plated together	
	Adhesion	9.3.2	IS 8749	R	One		
	Painted surface	9.4 (a), 9.4 (b)	IS 8749	S	One	Every month	
	Concealed gas supplies	9.5	IS 8749	S	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.

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	Once in a month	
		13.1.1, 13.1.2	IS 8749	S	10 %	Each consignment	
		13.2	IS 8749	R	Each stove		
28.2	<i>Routine tests</i>						
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	

28.1	Type tests						
15	Strength test	15 Annex F	IS 8749	S	One	Once in a month	Testing shall be done in such a way that each variety produced in the month shall be covered.
17	Gas consumption	17 Annex G	IS 8749	S	Three	Once in a month	Testing shall be done in such a way that each variety produced in the month shall be covered.. 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	S	One	Once in a month	Testing shall be done in such a way that each variety produced in the month shall be covered.
24	Surface temperature	24	IS 8749	S	One	Once in a month	Testing shall be done in such a way that each variety produced in the month shall be covered.
25	Thermal efficiency	25 Annex G	IS 8749	S	One	Once in a month	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.
26	Resistance to draught	26	IS 8749	S	One	Once in a month	Testing shall be done in such a way that each variety produced in the month shall be covered.
27	Fire hazard and limiting temperature	27 Annex J	IS 8749	S	One	Once in a month	Testing shall be done in such a way that each variety produced in the month shall be covered.

ANNEX C**Scope of Licence**

“Licence is granted to use Standard Mark as per IS 8749: 2024 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