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उत्पाद मानुयल
Rubber Gaskets
IS 7466:2023 के अनुसार

PRODUCT MANUAL FOR
Rubber Gaskets for Pressure Cookers
According to IS 7466:2023

भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम की स्कीम -I के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीती और पारदर्शिता के सुसंगिता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों एवं लाईसेंस धारियों द्वारा सन्दर्भ सामग्री के रूप में उपयोग किया जाएगा बीआईएस लाइसेंस /प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज 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 licence/certificate.

1.	उत्पाद **Product**	:	IS 7466 : 2023
	शीर्षक **Title**	:	Rubber Gaskets for Pressure Cookers
	संशोधन संख्या **No. of amendments**	:	0
2.	नमुनाकरण दिशा निर्देश **Sampling Guidelines**		
a)	कच्चा माल **Raw material**	:	Raw materials shall conform to requirements as specified in Cl. 4.1 of IS 7466 : 2023.
b)	समूहीकरण दिशा निर्देश **Grouping Guidelines**	:	Please refer Annex - A
c)	नमूने का आकार **Sample Size**	:	six numbers of rubber gaskets for pressure cookers, 5 slabs, 4 small buttons & 4 big buttons, 100 gm cut piece or gasket of equivalent weight to be drawn for chemical tests
3.	परीक्षण उपकरणो की सूची **List of Test Equipment**	:	Please refer Annex - B
4.	निरीक्षण व परीक्षण स्कीम **Scheme of Inspection and Testing**	:	Please refer Annex - C
5.	एक दिन में संभावित परिक्षण **Possible tests in a day**	:	(a) Workmanship & finish (b) Dimension (c) Discoloration (d) Odour and taste (e) Change in volume (f) Volatile matter

			(g) Hardness (h) Tensile Strength (i) Elongation at break (j) Compression set (k) Extractable The tests may be carried out on preconditioned samples as applicable
6.	**लाइसेंस का कार्यक्षेत्र** **Scope of the Licence :**		
	IS 7466:2023 के अनुसार मानक मुहर का उपयोग करने के लिए लाईसेंस निमंलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 7466:2023 with the following scope:		
	Name of the product	Rubber Gaskets for Pressure Cookers	
	Type	Gasket made of Nitrile rubber/ Silicone rubber	
	Lid type of Pressure Cooker	Inner Lid Type or Outer Lid Type or both as applicable	
	Size	Capacity to be mentioned	

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ANNEX A

Grouping Guidelines

1. Rubber Gasket as per IS 7466:2023, specifies two materials, namely,
   (a) Nitrile rubber
   (b) Silicone rubber
2. As per IS 2347, the sizes of the cooker range from 1-24 litres based on Nominal capacities.
   Pressure cooker is primarily categorized under two groups on the basis of lid type:
   (a) Inner lid
   (b) Outer lid
3. Considering the categorization of the material of gasket and groups and sizes, and in line with the grouping guideline of the Domestic Pressure cookers, the following parameters given below in the table shall be considered for grouping of Rubber Gaskets for pressure cookers as per IS 7466 : 2023 for GoL/CSoL:

   (a) Material : Nitrile or Silicone rubber
   (b) Lid Type of Pressure cooker : Inner Lid/Outer Lid
   (c) Nominal Capacity of Pressure Cooker

Group	**Nominal Capacity (litres)**
Group I	1 to 6.5
Group II	7 to 15.5
Group III	16 to 24

4. Rubber gasket of each material and each lid type to be tested separately for GOL/inclusion of the variety
5. Rubber Gasket for Pressure Cookers (preferably the highest nominal capacity) of same material of gasket and same Lid Type from each group shall be tested to cover the entire nominal capacities from the particular group.
6. The Firm shall declare the Nominal capacity of Pressure Cookers within the group intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and testing capabilities of the Manufacturer.
7. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

Annex B

List of Test Equipment

Major test equipments essentially required to test as per requirements of Indian Standard

(1)	(2)	(3)
Sr. No.	Tests used in with Clause Reference	Test Equipment
1.	Dimension, Cl.4.3	Vernier Caliper, Micrometer , Scale
2.	Hardness ,Cl. 3.4, Table 1, Sl. No. (i) & IS 3400 (Part 2):2003	Hardness tester as per 5.2 of Is 3400: Part2: Sec 2 for Methods N or M, arrangement for maintaining lab temperature at 27 degree centigrade
3.	Tensile Strength, Elongation at break Cl. 3.4, Table 1, Sl. No ii),iii) & IS 3400(Part1)	Dies, Tensile testing machine and thickness gauge as described in IS 3400 (Part 1), grips, die cutters, razor or sharp knife, Steel Scale, vernier caliper, micrometer, buffing arrangement, arrangement to maintain temp of 27 +/-2
4.	Ageing in air oven , Table 1, Sl. No iv) & IS 3400(Part4)	Hot Air Oven with required fixtures withrequired fixtures and equipment as per sl 1 and 2
5.	Ageing in autoclave. Table 1, Sl. No v) & IS 3400(Part4)	Auto Clave with required fixtures and equipment as per sl 1 and 2
6.	Change in volume Table 1, Sl. No vi) & IS 3400(Part6)	Apparatus as per 3.1 of IS 3400 (Part 6), balance (LC min 1 mg), micrometer dial guage, instrument for measurement of length and width as per 3.5 of IS 3400 (part 6), sinker, filter paper/lint free fabric, arrangement to maintain temp of 27 +/-2
7.	Compression Set Table 1, Sl No.vii), & IS 3400 (Part 10):Sec 1	Compression assembly as per 4.1 of IS 3400 (Part 10):Sec 1, oven, pair of tong, thickness guage, stopwatch, wooden bench, arrangement to maintain temp of 27 +/-2
8.	Discoloration, Table 1, Sl No.viii), Annex B	Pressure cooker, Knife, distilled water, rice, spoon
9.	Odour and taste, Table 1, Sl No.ix), Annex C	Pressure cooker, Knife, distilled water, rice, spoon
10.	Volatile matter, Table 1, Sl No.x), Annex E of IS 3565	Weighing balance, hot air oven, Desiccator, Dish to hold the sample

11.	Total Zinc Oxide Table 1, Sl No xi) and Annex D	Electric Muffle Furnace, Burette, Hot Plate, Weighing Balance, Steam Bath, Chemicals : Acetone, Aluminum Chloride hexahydrate, Ammonium Fluoride, Acetic acid, Ammonium Acetate, Dithizone Indicator, EDTA Solution, Zinc Chloride Solution, Methyl orange Magnesium Chloride hexahydrate, Dilute Hydrochloric acid Concentrated Hydrochloric acid Laboratory Glassware : Beaker, Volumetric flask, Conical Flask Rubber Cork, Porcelain/ Silica Crucible, Burette, Evaporating dish, Reagent Bottles, Pipettes, Measuring Cylinders, Test tubes, Test tube Stand, Glass stirring Rod, Distilled Water, Stop Watch, Steel Spoon, Bunsen Burner, Asbestos Board, Desiccator,
12.	N-Nitrosamines Sl No xii) Table 1, Annex G of IS 3565 and N-Nitrosatables Sl No xiii) Table 1, Annex G of IS 3565	Sodium hydrogen carbonate, sodium chloride, potassium carbonate, sodium nitrite, Hydrochloric acid solution, Sodium Hydroxide solution (0.1 M), dichloro methane, Kieselguhr, from liquid-liquid extraction,, n-hexane, purified nitrogen, Sodium Hydroxide solution (1 M), Anti bumping granules, sintered glass frits for column, Acetone, Standard Solutions of N-Nitrosamines, Anhydrous sodium sulphate, Ammonia solution, sand (acid washed and calcined), Normal Laboratory apparatus, oven, Glass column with outlet and polytetraflouroethylene stopper, coloumn length 300mm and internal dia approx. 26mm, Glass column with outlet and polytetraflouroethylene stopper, coloumn length 300mm and internal dia approx. 15mm, Kuderna-Danish Evaporative Flask and concentrator, water bath, ampoulessealing tongs, Glass wool (washed with dichloromethane), separating funnel, (100ml, 200ml)Chemiluminescene detector) Gas Chromatograph
13.	Extractables Sl No xiv), Table 1, Annex E	<u>In water</u> Double distilled water, Hot plate, evaporating dish, balance <u>In Hexane</u> Analytical grade n-hexane, Hot plate, evaporating dish, balance
14.	Polycyclic aromatic hydrocarbons (PAH) - EN 161432) Benzo(a)pyrene (BaP) Sum of the benzo(e)pyren (BeP), benzo(a)anthracene (BaA), chrysen (CHR), benzo(b)fluoranthene (BbFA), benzo(j)fluoranthene (BjFA), benzo(k)fluoranthene (BkFA), dibenzo(a, h)anthracene (DBAhA) Sl No xv) Table 1, EN 16143	<u>Solvents (free from PAH, for chromatography)</u> Acetone, cyclohexane, n-pentane, propanol-2 <u>LC Separation phase materials</u> Silica gel of high purity grade, for example TYPE ICN 02747 Sephadex LH20 of high purity grade. <u>Standards</u> Benzo(a)pyrene (BaP), benzo(e)pyren (BeP), benzo(a)anthracene), chrysene (CHR), benzo(b)fluoranthene (BbFA), benzo(j)fluoranthene (BjFA), benzo(k)fluoranthene (BkFA), dibenzo(a, h)anthracene (DBAhA) <u>Internal standards</u> 4,4´,5,5´,6,6´-Decafluorobiphenyl or deuterated/C13 marked PAH, typically blended at 50x10-3g/l concentration. <u>Master standard</u> A commercially available standard solution containing certified concentrations of the PAHs of interest,

		Carrier gas, helium >99.996 purity, UV light source with radiation predominantly at 366nm Pasteur pipette LC Chromatography glass column, consisting of: Column a: ID 10mm, length 160 mm, Column b: ID 23mm, length 100 mm. Syringes, for injection, blending of solutions and internal standards syringes with the following capacities: 1 µl, 5 µl, 10 µl, 25 µl, 50 µl, 100 µl and 250 µl Volumetric flasks, capacity 1 ml, 5 ml and 100 ml Conical bottom flasks, capacity 10 ml. Pipettes, class A, capacity 2 ml. Gas chromatograph with mass spectrometer Sample concentrator
15.	Permissible Levels of Heavy Metals in Gasket Cl 4.5, (Table 2)	Antimony – Chemicals and equipments as per IS 15303 Arsenic - Chemicals and equipments as per IS 3025 (Part 37) Chromium - Chemicals and equipments as per IS 3025 (Part 52) Mercury - Chemicals and equipments as per IS 3025 (Part 48) Cadmium - Chemicals and equipments as per IS 3025 (Part 41) Lead - Chemicals and equipments as per IS 3025 (Part 47) Barium - Chemicals and equipments as per IS 1699 Selenium - Chemicals and equipments as per IS 15303/IS 3025 (Part 56)
16.	Performance Tests Cl. 4.6 & Annex F	Pressure Cookers of different capacities and lid type, gas stove, stop watch, distilled water,

The list above is meant for guidance and may not be treated as exhaustive

Annex – C

SCHEME OF INSPECTION AND TESTING
FOR RUBBER GASKETS FOR PRESSURE COOKERS
ACCORDING TO IS 7466 : 2023

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 equipment.

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 license shall be marked as per Cl 5.4 of IS 7466:2023, provided that the gasket to which this mark is thus applied conforms to every requirement of the specification.

3.1 Packing and Marking shall be done as per provisions of the Indian Standard. In addition, the following details shall be marked on the package :-

a) BIS Licence No. CM/L--------.
b) 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 gaskets produced from the same material and from sheets vulcanized under the same conditions of temperature and pressure 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 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

Test Details				Test equipment requirement R : required (or) S: Sub- contracting permitted	Level of control		
Cl	Requirement	Test Method			No of samples	frequency	Remarks
		Clause	Reference				
4.1	Material	4.1	IS 7466	Adequate precautions to be taken in choosing the rubber and compounding ingredients to ensure that requirements of specification are fulfilled.			
4.2	Workmanship and finish	4.2	IS 7466	Visual examination		Each gasket	Gasket not meeting the requirements shallbe rejected.
4.3	Dimensions	4.3	IS 7466	Firm to have adequate in-process controls to check compliance of this parameter as given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity			
Cl. 4.4, Table 1							
i)	Hardness	-	IS 3400 (Part 2/ Sec 2)/IS 3400 (Part 2/ Sec 4)	R	one	Each control unit	
ii)	Tensile Strength	-	IS 3400 (Part 1)	R	one	-do-	
iii)	Elongation at break			R	one	-do-	
iv)	Ageing in air oven	-	IS 3400 (Part 4)				
a)	Hardness			R	one	-do-	
b)	Tensile Strength			R	one	-do-	
c)	Elongation at break			R	one	-do-	
v)	Ageing in autoclave	-	IS 3400 (Part 4)				
a)	Hardness			R	one	-do-	

b)	Tensile Strength			R	one	-do-	
c)	Elongation at break			R	one	-do-	
vi)	Change in volume	-	IS 3400 (Part 6)	R	one	-do-	
vii)	Compression Set		IS 3400 (Part 10):Sec 1	R	one	-do-	
viii)	Discoloration	Annex B	IS 7466	R	one	-do-	
ix)	Odour and taste	Annex C	IS 7466	R	one	-do-	
x)	Volatile matter	Annex E	IS 3565	R	one	-do-	
xi)	Total Zinc Oxide	Annex D	IS7466/ISO 19050	R	one	Once in a fortnight	
xii)	N-Nitrosamines			S	one	Once in three months. Also when there is any change in source of raw material, nature/formulation of raw material	
xiii)	N-Nitrosatables	Annex G	IS 3565	S	one	-do-	
xiv)	Extractables	Annex E	IS 7466				
a)	In water			R	one	Each control unit	
b)	In hexane			R	one	-do-	
xv)	Polycyclic aromatic hydrocarbons (PAH), Benzo(a)pyrene (BaP) Sum of the benzo(e)pyren (BeP), benzo(a)anthracene (BaA), chrysen (CHR), benzo(b)fluoranthene (BbFA), benzo(j)fluoranthene (BjFA), benzo(k)fluoranthene (BkFA), dibenzo(a,h)anthracene (DBAhA) Sl No xv)	-	EN 16143	S	one	Once in three months. Also when there is any change in source of raw material, nature/formulation of raw material	

	Table 1, EN 16143						
Cl4.5,Table2							
	Permissible Levels of Heavy Metals in Gasket						
a)	Antimony	-	IS 15303	S	one	Once in three months. Also when there is any change in source of raw material, nature/formulation of raw material	
b)	Arsenic	-	IS 3025 (Part 37)	S	one	-do-	
c)	Chromium	-	IS 3025 (Part 52)	S	one	-do-	
d)	Mercury	-	IS 3025 (Part 48)	S	one	-do-	
e)	Cadmium	-	IS 3025 (Part 41)	S	one	-do-	
f)	Lead	-	IS 3025 (Part 47)	S	one	-do-	
g)	Barium	-	IS 1699	S	one	-do-	
h)	Selenium	-	IS 3025 (Part 56)3) /IS 15303	S	one	-do-	
4.6	Performance Tests	Annex F	IS 7466	R	one	Once in a week	

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.