



PRODUCT MANUAL
FOR SAFETY DEVICES FOR PROTECTION
AGAINST EXCESSIVE PRESSURE
PART 2 BURSTING DISC SAFETY DEVICES
ACCORDING TO IS 12370 (Part 2): 2023/ISO 4126 (Part 2): 2018

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 12370 (Part 2): 2023/ISO 4126 (Part 2): 2018
	Title	:	Safety Devices for Protection against Excessive Pressure Part 2 Bursting Disc Safety Devices
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	As per Cl. 4 of IS 12370 (Part 2): 2023
b)	Grouping guidelines	:	Please refer <u>ANNEX – A</u> .
c)	Sample Size	:	2 sets of Bursting disc assembly or 2 sets of Bursting disc assembly with bursting disc holder, as applicable
3.	List of Test Equipment	:	Please refer <u>ANNEX – B</u> .
4.	Scheme of Inspection and Testing	:	Please refer <u>ANNEX – C</u> .
5.	Possible tests in a day:	:	All tests
6.	Scope of the Licence	:	Please refer <u>ANNEX – D</u> .

ANNEX – A

Grouping Guidelines

1. Bursting Disc Safety Devices may be classified as follows:

- a) Type of Bursting disc and Bursting disc holders:

Types of Bursting Discs (Cl. 5)	(a) Conventional domed bursting discs (Forward acting) (b) Reverse domed bursting discs (Reverse acting) (c) Flat bursting discs (d) Other types and designs (to be declared by the manufacturer)
Types of Bursting Disc Holders (Cl. 6)	(a) Insert/capsule (b) Full face flange (c) Union (d) Plug/Screw (e) Other (to be declared by the manufacturer)

- b) Material of disc and disc holders

- c) Bursting pressure

- d) Whether provided with ancillary components such as Back pressure supports, Temperature shield, Stiffening rings, Gasket/seals etc.

- e) Nominal size designation (DN or NPS)

- f) Whether bursting disc assembly is replaceable or non-replaceable

2. Based on the above classification, following grouping guidelines shall be followed for considering Grant of Licence (GoL)/Change in Scope of Licence (CSoL):

- (i) The manufacturer shall declare the models of different types of bursting discs along with the corresponding models of Bursting Disc Holders that constitute a Bursting Disc Safety Device. For each model, Material of disc and disc holders, Bursting pressure at a coincident temperature, Nominal size (DN or NPS), and the type of assembly of bursting disc assembly and bursting disc holder, that is, whether replaceable or non-replaceable, shall also be declared by manufacturer. Further, ancillary components, if provided, shall also be declared. In case, types and designs other than the types mentioned in Cl. 5 and Cl. 6 of IS 12370-2/ ISO 4126-2, are intended to be covered, the same shall also be declared.
- (ii) Models may be grouped in a family wherein models of the same design and made from the same material, however of different nominal sizes and different specified bursting pressure at a coincident temperature can be grouped by the manufacturer and declared to BIS. Adequate justification (like similarity of design with variation in thickness of sheet, etc.) shall also be submitted by the manufacturer in support of grouping those models in one family.

Note – Models with change in design/constructional aspects shall be considered as a different family. For example, Conventional domed bursting discs of simple domed, slotted domed, scored simple domed and simple domed with knife blades shall be considered as different family. Similarly, flat bursting disc devices of graphite replaceable element, graphite monobloc shall also be considered as different families.

- (iii) Separate testing shall be done for each family of models. Further, from one family, one sample each of model with lowest, highest and intermediate bursting pressure shall be tested to cover the entire family of models.

Further, if a model of the family with ancillary components are tested, then models of that family without ancillary components may also be covered without separate testing

*An illustrative example of grouping of models in a family, and the samples required to be tested is given in **Appendix-1**.*

3. The Firm shall declare the varieties of Bursting Disc Safety Devices intended to be covered in the Licence. The Scope of Licence may be restricted based on the manufacturing and testing capabilities of the Manufacturer.
4. 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.

Appendix-1**Illustrative example of grouping of models into a family:**

Name/Number/code etc. as uniquely identified by the manufacturer :Family 1, Specification of the family 1						
Type of disc: Conventional domed bursting discs (Forward acting)						
Type of disc holder: Insert						
Whether bursting disc assembly is replaceable or non-replaceable: Non-replaceable						
Material of disc : Nickel alloy 200						
Material of disc holders: Nickel alloy 200						
Bursting Pressure range of the family: 0.7 bar to 24 bar						
Nominal size range: 25 mm to 300 mm						
Whether provided with ancillary components: No						
Models covered in the family and their individual specifications						
Specification Model	Type of Bursting Discs and Disc holder	Whether bursting disc assembly is replaceable or non-replaceable	Material of disc and disc holder	Bursting pressure rating of the model	Nominal size of the model	Whether provided with ancillary components
Model 1	Disc: Conventional domed bursting discs (Forward acting) Holder: Insert	Non-replaceable	Material of disc : Nickel alloy 200 Material of disc holders: Nickel alloy 200	0.7 bar	300 mm	No
Model 2	Disc: Conventional domed bursting discs (Forward acting) Holder: Insert	Non-replaceable	Material of disc : Nickel alloy 200 Material of disc holders: Nickel alloy 200	2.5 bar	225 mm	No
Model 3	Disc: Conventional domed bursting discs (Forward acting) Holder: Insert	Non-replaceable	Material of disc : Nickel alloy 200	5.0 bar	175 mm	No

			Material of disc holders: Nickel alloy 200			
Model 4	Disc: Conventional domed bursting discs (Forward acting) Holder: Insert	Non-replaceable	Material of disc : Nickel alloy 200 Material of disc holders: Nickel alloy 200	10 bar	120 mm	No
Model 5	Disc: Conventional domed bursting discs (Forward acting) Holder: Insert	Non-replaceable	Material of disc : Nickel alloy 200 Material of disc holders: Nickel alloy 200	15 bar	75 mm	No
Model 6	Disc: Conventional domed bursting discs (Forward acting) Holder: Insert	Non-replaceable	Material of disc : Nickel alloy 200 Material of disc holders: Nickel alloy 200	20 bar	50 mm	No
Model 7	Disc: Conventional domed bursting discs (Forward acting) Holder: Insert	Non-replaceable	Material of disc : Nickel alloy 200 Material of disc holders: Nickel alloy 200	24 bar	25 mm	No

Samples to be tested to cover all models in the above family: minimum bursting pressure - Model1, Intermediate bursting pressure - Model 5, and Highest bursting pressure - Model 7

Method to arrive at the intermediate pressure rating:

(Lowest bursting pressure + Highest bursting pressure)/2 = $(0.7+24)/2 = 12.35$ bar

Thus, select the next higher bursting pressure as intermediate one, which in this case is, Model 5 of 15 bar.

ANNEX – B

List of Test Equipment

Indicative list of major test equipment required to test as per the Indian Standard (For guidance only)

S.No.	Tests used in with Clause Reference	Test Equipment
1.	Pressure Testing (Cl. 14.2)	Pressure Gauge (based on the specified Bursting Pressure)
2.	Burst Testing (Cl. 14.3)	Pressure Gauge (based on the specified Bursting Pressure) Testing Oven (based on the Coincident Temperature)
3.	Leak Testing (Cl. 14.4)	Pressure Gauge (based on the specified leakage rate)
4.	Non-destructive examination (Cl. 14.5)	Helium Leak Detector Or Any other suitable instruments

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

ANNEX – C

Scheme of Inspection and Testing

1. LABORATORY - Manufacturers shall establish a suitably equipped and staffed in house laboratory (In-house testing facility) for testing of all parameters for ensuring quality of the product.

1.1 Column 2 of Table 1 indicates tests on Bursting Disc Safety Devices where test equipment is required in-house as “R” or raw material/components, tests of which can be subcontracted as “S”. Subcontracting of tests on raw materials/components is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

1.2 The manufacturer shall prepare a calibration plan for the test equipment.

2 TEST RECORDS – The manufacturers shall maintain test records for the tests carried out to establish conformity of the product. For the tests of raw materials/components being subcontracted to BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports of raw materials issued by the laboratories shall be available for inspection by BIS.

3 PACKING, LABELLING AND MARKING – As per the requirement of IS 12370 (Part 2):2023/ISO 4126-2: 2018. The Standard Mark, as given in the Schedule of the licence, shall be marked on each packet or marking plate of the safety device provided always that the product 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 on product or package as follows: “For details of BIS certification please visit www.bis.gov.in”.

4 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

4.1 Control Unit: For the guidance of manufacturers, the recommended definition of Control Unit is the quantity of Bursting Discs or Bursting Disc Safety Devices made as a single group of the same type, size, materials and specified bursting pressure requirements where the bursting discs are manufactured from the same lot of the same material under similar manufacturing conditions against a particular purchase order.

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

4.3 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.

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

5. REJECTION - The production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the 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 (ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				Test equipment requirement	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Materials	4	IS 12370 (Part 2)	S	Each Consignment		
14.2	Pressure Testing	14.2	IS 12370 (Part 2)	R	1	Each Control Unit	
14.3	Burst Testing	14.3	IS 12370 (Part 2)	R	1	Each Control Unit	
14.4	Leak Testing	14.4	IS 12370 (Part 2)	R	As per the requirements of the purchaser and manufacturer		
14.5	Non-destructive Examination	14.5	IS 12370 (Part 2)	R			

ANNEX – E
Scope of Licence

Licence is granted to use Standard Mark for **Safety Devices for Protection against Excessive Pressure Part 2 Bursting Disc Safety Devices** as per IS 12370 (Part 2): 2023/ISO 4126-2: 2018 with the following scope (Details of family and models covered in the family):

Family name/number/code (as uniquely identified by the manufacturer), Specification of the family						
Types of Bursting Discs	(a) Conventional domed bursting discs (Forward acting) (b) Reverse domed bursting discs (Reverse acting) (c) Flat bursting discs (d) Other types and designs					
Types of Bursting Disc Holders	(a) Insert/capsule (b) Full face flange (c) Union (d) Plug/Screw (e) Other					
Whether bursting disc assembly is replaceable or non-replaceable						
Material of disc Material of disc holders						
Bursting Pressure Range of family at a Coincident Temperature						
Nominal size range						
Whether provided with ancillary components: yes/no						
Models covered in the family and their individual specifications						
Specification Model	Type of Bursting Discs and Disc holder	Whether bursting disc assembly is replaceable or non-replaceable	Material of disc and disc holder	Specified Bursting pressure of the model at a coincident temperature	Nominal size of the model	Whether provided with ancillary components