इंटरनेट मानक

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"The Right to Information, The Right to Live"

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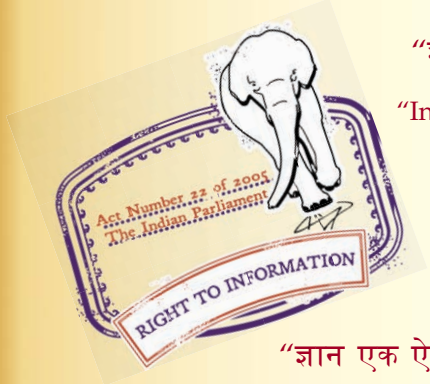
IS 13497 (1992): Fusible plug for dissolved acetylene gas cylinder [MED 16: Mechanical Engineering]



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"Knowledge is such a treasure which cannot be stolen"

IS 13497 : 1992
(Reaffirmed 2010)

भारतीय मानक

विलीन एसिटिलीन गैस सिलिंडर के लिए संगलनीय प्लग — विशिष्टि

Indian Standard

FUSIBLE PLUG FOR DISSOLVED ACETYLENE GAS CYLINDER — SPECIFICATION

UDC 621.646.5 : 621.642.03

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110003

September 1992 Price Group 2

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Gas Cylinders Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

Fusible plug is an operating part in the form of a plug of suitable low melting point material, usually a metal alloy, which closes the safety device channel under normal conditions and is intended to yield or melt at a predetermined temperature to permit the escape of gas. These fusible plugs are used in welded dissolved acetylene gas cylinders.

The taper thread specified in 4.1 and Fig. 2 of this standard is the same specified as 1/8 — 27 NGT in ANSI B 57.1-1977 in 'Compressed gas cylinder valve outlet and inlet connections', published by American National Standard, USA.

Whilst all essential requirements have been set out in considerable details, other requirements are purposely left out to permit a reasonable degree of latitude to designers and users.

Where provision is made in this standard for certain details to be settled by agreement between the purchaser and the manufacturer, it shall be understood that, where applicable, such details are subject to approval by the Chief Controller of Explosives, Nagpur.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

The relevant SI units and the corresponding conversion factors are given below for guidance:

Pressure 1 Pa (Pascal) = 1 N/m^2

1 kgf/mm^2 = 9.806 65 MPa

Indian Standard

FUSIBLE PLUG FOR DISSOLVED ACETYLENE GAS CYLINDER — SPECIFICATION

1 SCOPU

This standard covers requirements for fusible plug for welded type dissolved acetylene gas cylinder.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
1608 : 1972	Methods for tensile testing of steel products (*first revision*)
1816 : 1979	Method for tensile test for light metals and their alloys *(first revision*)
2654 : 1977	Method for tensile test of copper and copper alloys (*first revision*)
5903 : 1970	Recommendation for safety device for gas cylinders

3 MATERIAL

3.1 Material composition of the body of the fusible plug shall be cither extruded brass rod or wrought non-magnetic stainless steel. In case of brass material, copper content of brass shall not exceed 65 percent of copper. The actual composition of the fusible plug body shall be as per agreement between the purchaser and the manufacturer.

3.2 Physical Properties of Raw Material

The tensile strength and elongation of the material of the body determined according to IS 1608 : 1972, IS 1816 : 1961 and IS 2654 : 1977 shall be atleast 345 MPa (35 kgf/mm^2) and 18 percent respectively when measured on a gauge length of 5-65 $\sqrt{S_0}$, S_0 being the original area of cross-section. Each batch of raw material shall be subject to tensile strength/elongation tests.

3.3 Test sample for tensile strength/elongation tests shall be taken from original raw material. The scale of sampling shall be in accordance with Annex A.

4 SCREW THREAD OF THE FUSIBLE PLUG

4.1 The fusible plugs shall have external taper screw thread. The principal dimensions shall be in accordance with Fig. 2. The wrenching size of the fusible plug shall be 12 mm (nominal).

4.2 The fusible plug shall not protrude out of bung/valve pad top face when fully tightened (*see* Fig. 1).

5 TYPE OF SAFETY DEVICE

The type of safety device covered by this specification shall be FP-2 fusible plug according to IS 5903 : 1970 utilizing a fusible alloy with yield temperature 100 $^{+4}_{-2}$ °C.

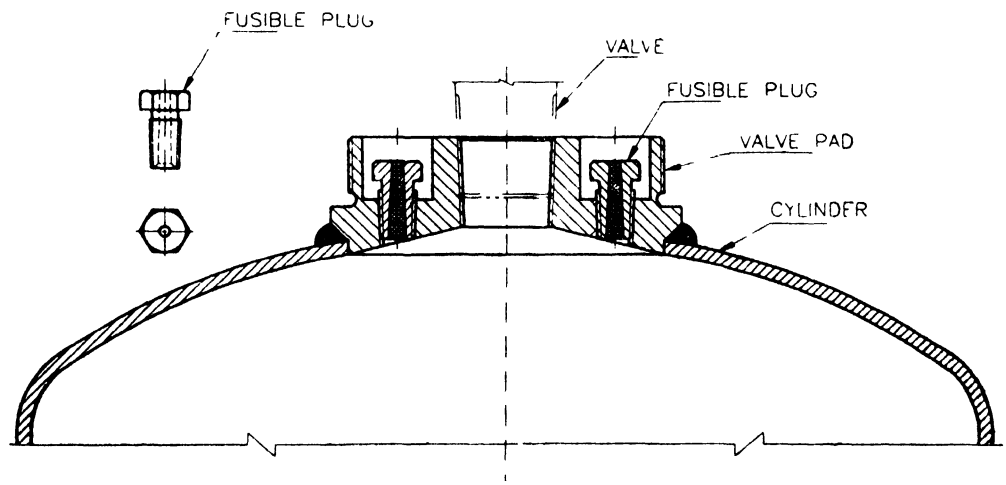

FIG. 1 OENERAL ARRANGEMENT SHOWING LOCATION OF FUSIBLE PLUGS ON WELDED CYLINDER

plugs for 5 minutes at that temperature the requirements shall be considered to have been met.

8.5 Criteria for Acceptance

If any of the samples fails to meet the requirements of **8.3** and **8.4** the entice batch of plugs shall not be accepted unless a retest is carried out in accordance with **8.6**.

8.6 Retest

If the manufacturer so desires, he may subject double the original number of samples, selected at random from the same batch, to identical tests. If all of these additional plugs meet requirements, the remaining plugs of the batch shall be acceptable. If any of the additional plugs falK the entire batch shall not be accepted.

9 PNEUMATIC TEST

Each fusible plug shall be subjected to pneumatic test at pressure of 590 MPa (60 kgf/cm^2) and shall be checked for leakage.

10 MARKINGS

10.1 Each fusible plug shall be marked in a non-critical area for the identification of the manufacturer and a code for tracing back the factory test results.

10.2 Each batch of fusible plug shall be supported with a test certificate indicating the followings:

a) Manufacturer's name and address;
b) Year of manufacture;
c) Batch number for fusible alloy;
d) Control unit number for fusible plug body;
e) Yield temperature range; and
f) Flow capacity.

10.3 Certification Marking

Details available with the Bureau of Indian Standards.

ANNEX A

(*Clause* 3.3)

SAMPLING SCHEME FOR EVALUATION OF MECHANICAL PROPERTIES OF THE FUSIBLE PLUG BODY MATERIAL

A..1 SCALE OF SAMPLING

Raw material for fusible plug body of same material and size and manufactured under similar process of production shall constitute a lot.

A-2 Fusible plug body material shall be selected and examined for each lot separately for ascertaining their conformity to the requirement of mechanical properties.

A-3 The number of samples selected at random from a lot shall be as follows:

Lot Size (kg)	*Sample Size* (Numbers)
Up to 250	2
251 to 500	4

A.4 CRITERIA FOR CONFORMITY

The lot shall be declared satisfactory if each sample passes the requirement of tensile and elongation tests.

A.5 RETEST

If the test specimen fails to meet the requirement of **A-4**, additional specimen equaling twice the number of sample size m the same lot shall be taken and tested. If any of these specimen fails to meet the requirement, the entire lot represented shall not be accepted.

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Revision of Indian Standards

Indian Standards are reviewed periodically and revised, when necessary and amendments, if any, are issued from time to time. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition. Comments on this Indian Standard may be sent to BIS giving the following reference:

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Amend No.	Date of Issue	Text Affected

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