भारतीय मानक **IS 1220 : 2024**

Indian Standard

टार और बिटुमिनस सामग्री के परीक्षण की पद्धतियाँ — वॉलेटाईल मैटर कंटेनट का निर्धारण

(दूसरा पुनरीक्षण)

Methods for Testing Tar and Bituminous Materials — Determination of Volatile Matter Content

(Second Revision)

ICS 75.14

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

April 2024 **Price Group 4**

Bitumen, Tar and Related Products Sectional Committee, PCD 06

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Bitumen, Tar and Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Product Division Council.

This standard was originally published in 1958 as 'Method for testing tar and bituminous materials — Determination of volatile matter content. The first revision was carried out in 1978 'Tar and bituminous materials' was published as series of 22 standards in the form of a booklet, as given below:

IS No.	*Title*
IS 1201 : 1978	Sampling
IS 1202 : 1978	Determination of specific gravity
IS 1203 : 1978	Determination of penetration
IS 1204 : 1978	Determination of residue of specified penetration
IS 1205 : 1978	Determination of softening point
IS 1206	Determination of viscosity:
(Part 1) : 1978	Industrial viscosity
(Part 2) : 1978	Absolute viscosity
(Part 3) : 1978	Kinematic viscosity
IS 1207 : 1978	Determination of equiviscous temperature (EVT)
IS 1208 : 1978	Determination of ductility
IS 1209 : 1978	Determination of flash point and fire point
IS 1210 : 1978	Float test
IS 1211 : 1978	Determination of water content dean and stark method
IS 1212 : 1978	Determination of loss on heating
IS 1213 : 1978	Distillation test
IS 1214 : 1978	Determination of matter insoluble in benzene (withdrawn due to toxic nature of benzene)
IS 1215 : 1978	Determination of matter insoluble in toluene
IS 1216 : 1978	Determination of solubility in carbon disulphide or trichloroethylene
IS 1217 : 1978	Determination of mineral matter ash
IS 1218 : 1978	Determination of phenols
IS 1219 : 1978	Determination of naphthalene
IS 1220 : 1978	Determination of volatile matter content

However, the Committee responsible for the formulation of standards in the field of bitumen, tar and related products decided to publish these Indian Standards separately for each test so as to make it user friendly.

This revision has been taken up to keep pace with the latest technological development and international practices. In this revision no major changes have been made.

The composition of the Committee responsible for formulation of this standard is given in Annex A.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rule for rounding off numerical values (*second revision*)'.

Indian Standard

METHODS FOR TESTING TAR AND BITUMINOUS MATERIALS — DETERMINATION OF VOLATILE MATTER CONTENT

(Second Revision)

1 SCOPE

This standard prescribes the method for determination of volatile matter content of coal tar pitch.

2 REFERENCE

The standard given below, contain provisions which, through reference in this text, constitute provisions of the standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of this standard:

IS No.	*Title*
IS 334 : 2023	Glossary of terms relating to bitumen and tar (*fourth revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 334 shall apply.

4 APPARATUS

4.1 Platinum Crucible — complying with the following requirements (*see* Fig. 1).

External diameter at base	24.0 mm ± 0.5 mm
External diameter at top	34.0 mm ± 0.25 mm
External height	35.0 mm ± 0.5 mm
Volume to brim	27.0 ml ± 0.5 ml
Weight	22.0 g ± 1.0 g

4.1.1 The crucible shall be provided with a closely fitting lid, grooved to receive the rim of the crucible and having a central hole 2 mm in diameter, as shown in Fig. 1.

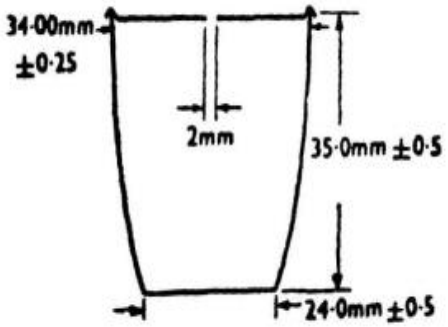
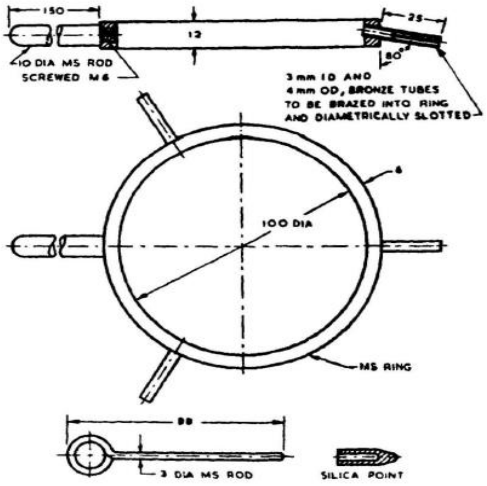


FIG. 1 PLATINUM CRUCIBLE AND LID

4.2 Meker Burner — having a diameter of 31 mm at the top, the flame diameter being 30 mm maximum.

4.3 Water Manometer — connected by means of a T-piece with the gas supply entering the burner.

4.4 Three-Arm Crucible Support — with silica points (*see* Fig. 2).



All dimensions in millimeters.

FIG. 2 THREE-ARM CRUCIBLE SUPPORT WITH SILICA POINTS

4.5 Retort Stand and Clamp — to hold the three-arm crucible support (*see* Fig. 3), so arranged that when in position, the bottom of the crucible is 10 mm above the burner, the crucible being completely enveloped by the flames.

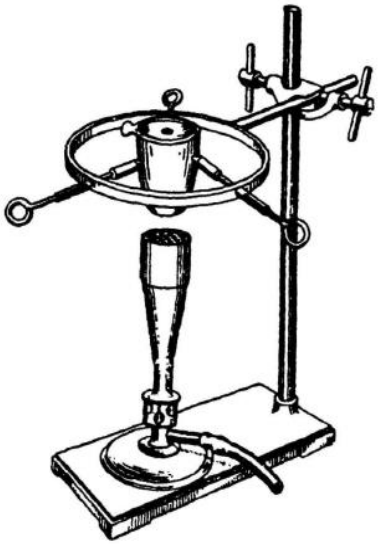


FIG. 3 ASSEMBLY OF APPARATUS

4.6 Standard Draught Screen — consisting of a semi-cylindrical metal sheet, 300 mm in diameter and sufficiently high for the purpose.

5 REAGENT

5.1 Potassium Chromate — pure powdered

6 PROCEDURE

6.1 Assemble the apparatus as illustrated in Fig. 3 powdered pure potassium chromate over the bottom of the crucible. Light the burner, taking care that the gas is lit with the flame fully aerated. Slowly increase the gas pressure at the burner until incipient fusion of the potassium chromate is apparent. The final manometer reading shall be noted as corresponding to the gas pressure to be used in the test on the pitch. The lid of the crucible shall not be used during the trials.

6.2 Clean the crucible, dry and weigh without the lid. Weigh into the crucible 1 g of the finely divided sample and place in position as before with the lid. Relight the burner and, if necessary, readjust the gas pressure until the manometer reading is the same as that noted in the preliminary trial. Place the burner in position under the crucible and, after 3 min, during which the manometer reading shall be kept constant. Extinguish the flame. Cool the crucible and weigh without the lid. The loss in mass shall be the volatile matter in the amount of sample taken for the test. Calculate the percentage of volatile matter by mass in the total sample taken for the test.

6.3 If the method has been properly performed, any deposit on the lid at the end of the experiment will be due to decomposition of the volatile matter. If there be any evidence that molten pitch has spurted on to the lid, the test shall be discarded and a fresh determination made.

7 PRECISION

The duplicate results shall not differ by more than the following:

Repeatability	0.9
Reproducibility	3.8

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Bitumen, Tar and Related Products Sectional Committee, PCD 06

Organization	*Represenative(s)*
CSIR - Central Road Research Institute, New Delhi	PROF MANORANJAN PARIDA **(*Chairperson*)**
Airports Authority of India, New Delhi	SHRI VINOD KUMAR SHARMA SHRI SUPRIO GOSH (*Alternate*)
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Zydex Industries Limited, Vadodara	DR MIKHIL RANKA SHRI HIMANSHU AGARWAL (*Alternate*)
BIS Directorate General	SHRIMATI MEENAL PASSI, SCIENTIST 'F'/ SENIOR DIRECTOR AND HEAD (PETROLEUM, COAL AND RELATED PRODUCTS) [REPRESENATING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI HARI MOHAN MEENA
SCIENTIST 'C'/DEPUTY DIRECTOR
(PETROLEUM, COAL AND RELATED PRODUCTS), BIS

Bureau of Indian Standards

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	2323 7617
Eastern	: 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	2367 0012 2320 9474
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019	265 9930
Southern	: C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113	2254 1442 2254 1216
Western	: Plot No. E-9, Road No.-8, MIDC, Andheri (East), Mumbai 400093	2821 8093

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