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Edition 3.1
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भारतीय मानक

बिटुमेन (तार) और इमल्शन के लिए हीटर — विशिष्टि

भाग 1 बिटुमेन हीटर्स

(दूसरा पुनरीक्षण)

Indian Standard

HEATERS FOR BITUMEN (TAR) AND EMULSION — SPECIFICATION

PART 1 BITUMEN HEATERS

(Second Revision)

(Incorporating Amendment No. 1)

ICS 93.080.30; 75.140

BUREAU OF INDIAN STANDARDS
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Price Group 2

Construction Plant and Machinery Sectional Committee, HMD 18

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Construction Plant and Machinery Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

Construction Plant and Machinery Sectional Committee had published the following Indian Standards:

IS 2093 : 1974 Specification for distributors for hot tar and bitumen (*first revision*)

IS 2094 : 1996 Heaters for bitumen (tar) and emulsion — Specification (*second revision*)

IS 4198 : 1967 Specification for emulsion spraying machine for roads

The above standards are related to the same subject and, therefore, the Sectional Committee while revising IS 2093 and IS 4198 decided that the revision of these standards be made as Part 2 and Part 3 respectively of IS 2094 and the existing IS 2094 : 1996 be treated as Part 1 of IS 2094. As per the decision, the standards now covered under IS 2094 shall be as under:

IS 2094 (Part 1) Heater for bitumen (tar) and emulsion — Specification : Part 1 Bitumen heaters

IS 2094 (Part 2) Heaters for bitumen (tar) and emulsion — Specification : Part 2 Bitumen sprayers

IS 2094 (Part 3) Heaters for bitumen (tar) and emulsion — Specification : Part 3 Emulsion

The increasing application of the tar and bitumen heaters in the construction and maintenance of black-top roads has necessitated formulation of a specification for these heaters and this standard was first published in 1962 and was revised in 1974. The present revision has been taken up to incorporate modifications found necessary as a result of experience gained during the use of these standards and the latest thinking on the subject. Some of the important modifications made in the standard include provision of a ladder, pressure gauge for air tank. The requirement of volume indicator has been made mandatory in this revision.

This standard includes a number of requirements which are at the option of the purchaser. For the sake of convenience to the purchaser and the supplier, requirements to be specified by the purchaser while making an enquiry or placing an order for hot tar and bitumen heaters have been listed in Annex A.

This edition 3.1 incorporates Amendment No. 1 (March 2000). Side bar indicates modification of the text as the result of incorporation of the amendment.

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, 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.

Indian Standard

HEATERS FOR BITUMEN (TAR) AND EMULSION — SPECIFICATION

PART 1 BITUMEN HEATERS

(Second Revision)

1 SCOPE

This standard covers mobile and transportable heaters for tar and bitumen for use in road construction and maintenance and lays down requirements for capacity, construction, safety, performance and roadworthiness.

2 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

2.1 Binder

Tar, bitumen or a cutback, with or without special additives.

2.2 Heater

A container for the binder equipped with means for heating the contents by solid fuel or oil burners.

2.3 Mobile Heater

A heater, which may be either a trailer or a selfpropelled vehicle, capable of travelling with bitumen considerable distances on roads at speeds up to the statutory limit.

2.4 Transportable Heater

A heater which is intended for travelling short distances at low speeds, and is normally carried to any distant site on another vehicle.

3 TYPE

Heaters shall be of two types, namely, mobile and transportable.

4 CAPACITY

4.1 Heaters shall be of 50, 100, 300, 500, 1 000, 1 500, 2 000, 3 000, 5 000, 7 500 and 10 000 litres nominal capacities.

4.2 Actual capacity of the heater shall be at least 10 percent greater than the nominal capacity to allow for frothing, expansion or overfilling.

5 CONSTRUCTION

5.1 All materials and components shall comply with the appropriate Indian Standards and shall, where applicable, have threads to permit standard pipework or hoses to be attached.

5.2 All heaters shall be fitted with a draw-off cock and a sludge cock. The sludge cock shall be at the lowest part of the tank to enable the tank to be completely drained.

5.3 The covers of heaters shall be so arranged as to prevent entry of rain water.

5.3.1 Each charging hole shall have a lid which, when closed, will prevent the entry of rain water. The lid may be hinged or removable, but shall be fitted with a device enabling it to be kept in position when closed.

5.4 The chimney or flue tube shall be fitted with a damper and a cowl to prevent entry of rain water.

5.4.1 In case the chimney is likely to infringe statutory height regulations it shall be either hinged or made readily detachable, so that it can be lowered for travelling, and a suitable cradle-rest shall be provided to support it in this position.

5.5 Barrel rests shall be provided for the heaters intended to be charged from barrels.

5.5.1 If specified by the purchaser, suitable means of raising the barrels or drums shall be provided (*see also* **7.4**). The arrangement shall be so designed that it can be secured in the raised position, so that the heater is stable under all normal working conditions.

5.6 Heaters of 500 litres and greater capacity shall be provided with a device for agitating the binder. Heaters of 100 litres and 300 litres capacity may be provided with a device for agitating the binder, if required by the purchaser.

5.7 All the heaters shall be effectively lagged, the lagging being protected and kept in position by suitable lagging plates, or an equivalent to ensure that it does not deteriorate in use or becomes impregnated with binder. The temperature drop in a full load of binder, at an initial temperature of 150°C with the atmospheric temperature

between 24 and 30°C, shall not be more than 20°C after 8 hours, when the tank and its contents are at rest.

5.8 Heaters of 5 000 litres and higher capacity may be fitted with a ladder to give access to the top of the heater as agreed to between the purchaser and manufacturer.

6 INSTRUMENTS

6.1 All heaters of 500 litres and greater capacity shall be fitted with a temperature indicator accurate to within ± 3°C to indicate the temperature of the binder. It shall be so positioned that it will record even when the binder is at minimum level for reheat.

6.2 A suitable indicator for the volume of the contents shall be provided.

6.3 The air tank of the fuel burner shall be provided with a pressure gauge for measuring the air pressure. Indication of pressure shall be visible from a distance of 3 m.

7 SAFETY

7.1 The distance between any opening used for charging and the mouth of the chimney or the outlet of any flue shall be at least 62.5 cm. If the size of the machine or design considerations make this impracticable, effective alternative precautions shall be taken to prevent fire resulting from spilling, overflowing, frothing or fuming of binder. Suitable fire extinguisher shall be provided on each heater.

7.2 The fuel oil tanks, when provided, shall comply with the following:

a) They shall be so positioned as to allow at least 5 cm free air space between the heater and the fuel tanks.

b) Fuel filling openings shall be so located as to minimize the risk of fire resulting from spilling, or of fuel entering the heater.

7.3 On closed heaters, an air vent shall be provided.

7.4 All combustion and lifting devices shall comply with the relevant safety regulations.

8 PERFORMANCE AND ROADWORTHINESS

8.1 All heaters shall pass the following test:

When the heater is filled either with the nominal capacity (*see* **4**) of tar having an equiviscous temperature of 34°C or cutback bitumen with a flow time of 50 seconds at 40°C in a standard tar viscometer, the heating arrangement shall be capable of raising temperature of this volume of tar, under normal operating conditions, from 30°C to 150°C in not more than 2.5 hours.

8.2 The heater shall comply with all relevant Road Traffic Regulations.

9 MANUFACTURER'S CERTIFICATE

With every heater, the manufacturer shall supply a certificate stating:

a) that the heater complies with the requirements specified in **8** of this standard; and

b) the fuel consumption at the rate of heating required to achieve this result, and the type of fuel used.

10 MARKING

10.1 Each heater shall have firmly attached to it a plate giving the following particulars:

a) Manufacturer's name;

b) Type identification and serial number;

c) Year of manufacture;

d) Nominal capacity;

e) Type of fuel and its working pressure;

f) Minimum capacity for reheat; and

g) Unladen weight.

10.2 BIS Certification Marking

Each heater may also be marked with the BIS Certification Mark.

10.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(*Foreword*)

INFORMATION TO BE SUPPLIED WITH AN ENQUIRY OR ORDER

A-1 Information in regard to the following requirements which are at the option of the purchaser shall be supplied to the manufacturer while making an enquiry or placing an order for heaters for tar and bitumen:

a) Whether mobile or transportable (*see* **3**);

b) Nominal capacity (*see* **4.1**);

c) Whether barrel rests and/or a hoist are required (*see* **5.5**); and

d) Whether a device for agitating the binder in heaters of 100 and 300 litres capacity is required (*see* **5.6**).

Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

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