



PAVING BITUMEN
IS 73 : 2013 के अनुसार

PRODUCT MANUAL FOR
PAVING BITUMEN
ACCORDING TO IS 73 : 2013

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	मानक संख्या IS No.	:	IS 73 : 2013
	शीर्षक Title	:	Paving Bitumen -Specification
	संशोधनों की संख्या No. of amendments	:	4
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific raw material requirement. Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/Factory Surveillance.
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Not Applicable.
c)	नमूने का परिमाण Sample Quantity	:	Approx. 3 kg for all tests. Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (incase of market surveillance, effort may be made to procure therequired quantity of product sample, as far as

			possible since raw material sample may not be available in market).
d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request		Grade Note: Apart from the above, any other requirements / parameters may also be declared as per the standard, as applicable.
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer ANNEX – <u>A</u>
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer ANNEX – <u>B</u>
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	All tests are possible in one day. Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide readyreference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.		
6.	लाइसेंस का दायरा /Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 73: 2013 with the following scope:		
	Name of the product	Paving Bitumen	
	Grades	VG10 and/or VG20 and/or VG30 and/or VG40.	

BUREAU OF INDIAN STANDARDS
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ANNEX A

List of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Homogeneity Cl 6.1	Hot air oven
2	Penetration at 25 °C,100 g,5 s,0.1 mm Cl 6.2, Table 1, Sr. No. (i)	<u>(As per IS 1203)</u> Weighing Balance Air Oven Transfer Dish Benzene Penetration apparatus Needle Sample container Water bath(with thermostat) Thermometer (required range and accuracy Range — 0 to 44°C LC— 0.2°C Stop watch As per Cl 3.6
3	Absolute viscosity at 60 °C Cl 6.2, Table 1, Sr. No. (ii)	<u>(As per IS 1206 Part.2)</u> Capillary Type vacuum viscometer (as per Cl.3.1 Viscometers) Bath for temp maintaining at 135 °C Sample container Water Bath Chromic Acid Vacuum system (pump) (as per Cl.3.4)

		Thermometer Range Low — 0 to 44°C Medium — 37.8 to 82°C High— 76 to 122°C (A suitable thermometer/digital temperature probe with least count 0.1 °C may be used) Reference material for Calibration of Viscometer Stop watch (as per Cl 3.5).
4	Kinematic viscosity at 135 °C, cSt Cl 6.2, Table 1, Sr. No. (iii)	<u>(As per 1206 Part.3)</u> Capillary Type viscometer(as per Cl.3.1) Bath for temp maintaining 135 ° ± 0.1 °C Stopper Sample container Pipette Vacuum system (pump) Thermometer Range, Low — 0 to 44°C Medium — 37.8 to 82°C High— 76 to 122°C (A suitable thermometer/digital temperature probe with least count 0.1 °C may be used) Stop watch capable of being read up to 0.5 s Reference material for Calibration of Viscometer
5	Flash point (Cleveland open cup), °C Cl 6.2, Table 1, Sr. No. (iv)	<u>[As per IS 1448 PART 69 : 2019]</u> Cleaning solution Verification liquids <u>(as per Cl. 5.2)</u> Steel Wool Cleveland open cup apparatus

		Shield (to cover at least three sides of the test cup) Fume Hood Thermometer Temperature range — - 6 to 400 °C Accuracy (after calibration)— 2.0 °C for temperatures up to 260 °C and 4.0 °C for temperatures over 260 °C. Barometer <u>[As per Cl 6.4]</u> (reading absolute pressure accurate to 0,5 kPa with a resolution of 0,1 kPa) Filter Paper Wire for Tension Ring
6	Solubility in trichloroethylene or Toulene, % Cl 6.2, Table 1, Sr. No. (v)	<u>[As per IS 1216]</u> Analytical Weighing Balance As per cl 2.5 LC— 0.001 g Glass tap funnel As per Cl 3.1.1 Glass plate As per Cl 3. 1.2 Glass funnel Filter paper As per Cl 3.1.4 Whatman No.5 or equivalent Oven Dessicator Beaker Gelatin Water Glycerine Trichloroethylene Toulene Stirrer Watch Glass

7	Softening point (R&B), °C Cl 6.2, Table 1, Sr. No. (vi)	<u>[As per IS 1205]</u> Ring and ball apparatus (As per Cl.3.1) Steel ball (As per Cl.3.1.1) Brass rings and support (As per Cl.3.1.2 and 3.1.4) Ball guides (As per cl.3.1.3) Thermometer Range- Low Temperature range — (- 2°C to 80°C), LC — 0.2°C High Temperature range — (30 - 200°C), LC — 0.5 °C Beaker Stirrer Water bath Oven Metal Plate Glycerine Dextrine Knife Forceps
8	Tests on residue from rolling thin film oven test Cl 6.2, Table 1, Sr.No.(vii) Preparation of Residue	Rolling Thin Film Oven Flowmeter Thermometer Range — 150 to 170°C LC— 0.5 °C Container Cooling Rack Pressure Ageing Vessel Stainless Steel Pans Vacuum System Weighing Balance

	a) Viscosity ratio at 60 °C	[As per IS 1206 PART 3] Capillary Type vacuum viscometer (As per Cl.3.1) Bath for temp maintaining 135 °C (As per Cl.3.3) Accuracy of the viscometer bath should be ± 0.1 °C over the entire length of the viscometer Sample container Water Bath Chromic Acid Vacuum system (pump) (as per Cl. 3.4 of IS 1206 PART 2 : 1978) Thermometer Range Low — 0 to 44°C, Medium — 37.8 to 82°C, Hard — 76 to 122°C, (A suitable thermometer/digital temperature probe with least count 0.1 °C may be used) Stop watch A stop watch or stop clock capable of being read up to half a second.
	b) Ductility at 25 °C, cm	[As per IS 1208 (Part 1)] Mould (As per Cl.4.1) (made of brass, Total length 75.0 ± 0.5 mm) Water bath With a thermostat Ductility testing machine (As per Cl.4.3) Thermometer (As per Cl.4.4) Range — 0 to 44 °C (A suitable thermometer/digital temperature probe with least count 0.1 °C may be used)

		Gas burner Glycerine Dextrine Brass Plate Putty Knife or Spatula
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ANNEX B

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : For the purpose of this Scheme, the Paving bitumen of a particular type/grade of setting produced in a shift shall constitute a Batch.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.3 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.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred :

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark(s), as given in the Schedule of the licence shall be Stencilled on each container and/or printed on the label applied to the container; provided always that the material in each container to which this Mark is thus applied conforms to every requirement of the specification. In addition, each container of viscosity grade bitumen shall be legibly and indelibly

marked with the following:

- a) Name of manufacturer and recognized trade mark, if any;
- b) Name of the material;
- c) Grade;
- d) Volume or Net weight of the material in the container;
- e) Batch number;
- f) 'Made in India', if required;
- g) Month and year of the manufacturer
- h) Date of expiry;
- i) Licence No. (CM/L... ..)

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements:** Additionally, the following shall also be marked on container.

- a) "For BIS certification details please visit www.bis.gov.in"

4. 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
(Recommended Levels of Control by BIS- For Guidance only)

(1)				(2)		
Test Details				Levels of Control		
Cl.	Requirement	Test Method		No. of Sample	Frequency	Remarks
		Clause	Reference			
6.1	Homogeneity	6.1	IS 73:2013	one	Every control unit	-----
6.2	(i) Penetration at 25°C, 100g, 5 s, 0.1mm	6.2 Table 1	IS 1203	one	Every control unit	-----
	(ii) Absolute Viscosity at 60°C	6.2 Table 1	IS 1206 (Part 2)	One	Every control unit	-----
	(iii) Kinematic Viscosity at 135°C cSt,	6.2 Table 1	IS 1206 (Part 3)	One	Every control unit	-----
	(iv) Flash Point (Cleveland open cup), °C	6.2 Table 1	IS 1448 [P: 69]	One	Every control unit	-----
	(v) Solubility in Trichloroethylene or Toulene, percent	6.2 Table 1	IS 1216	One	Every control unit	-----
	(vi) Softening Point (R&B) °C	6.2 Table 1	IS 1205	One	Every control unit	-----

	(vii) Tests on residue from rolling thin film oven test a) Viscosity ratio at 60°C	6.2 Table 1	IS 15799 IS 1206 (Part 2)	One	Every 7 th control unit	-----
	Tests on residue from rolling thin film oven test b) Ductility at 25°C		IS 15799 IS 1208 (Part 1)			