



**उत्पाद मैनुअल
सड़कों के लिए बिटुमेन पायस
(धनायिक टाइप)
IS 8887: 2018 के अनुसार**

**PRODUCT MANUAL
FOR Bitumen Emulsion for Roads
(Cationic Type) ACCORDING TO IS
8887: 2018**

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 8887:2018
	शीर्षक Title	: Bitumen Emulsion for Roads (Cationic Type)
	संशोधनों की संख्या No. of amendments	: 3
2.	नमूना दिशानिर्देश Sampling Guidelines	
a)	कच्चा माल Raw material	: Raw materials used for the manufacture of Bitumen Emulsion for Roads shall conform to Cl. 4.1 of the IS 8887:2018. Conformity may be established through supplier's test certificate of raw material, or test report of BIS recognized/empanelled lab or NABL accredited lab or in-house testing. No testing is required if the material is ISI Marked. 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	: Please refer to Annex-A
c)	नमूने का परिमाण	: 6 liters Note: This section indicates the quantity of the sample of the

	Sample Quantity	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 (in case of market surveillance, effort may be made to procure the required 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 –B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	: Please refer Annex - C
5.	एक दिन में संभावित परीक्षण Possible tests in a day	: All tests except Storage Stability 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 ready reference 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 8887 : 2018 with the following scope:	
	Name of the product	Bitumen Emulsion for Roads (Cationic Type)
	Grade	RS1, RS2, MS, SS-1, SS-2

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN,9, BAHADUR SHAH ZAFAR MARG,NEW
DELHI-11000

Annex- A

GROUPING GUIDELINES

1. Each grade intended to be covered in the scope of the licence is to be tested.
2. Scope of licence shall be restricted based on the manufacturing and testing facilities available.
3. During operation of licence, samples of each variety covered in the scope of licence, shall be tested in rotation, to the extent possible

ANNEX – B

LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests Used In With Clause Reference	Test Equipment/Chemical
1	Residue on 600 micron IS Sieve, Table 1 SI No i)	600 Micron IS Sieve —A circular sieve approximately 100 mm diameter and 40 mm height. Metal or Glass Dish —A small metal or glass dish about 110 mm in diameter (such as a clock glass) Oven —A well ventilated oven thermostatically controlled to 100 to 110°C Balances —250 g accurate to 0.01 g and 10 kg capacity accurate to 1 g. Container— A clean, weighed, 1.5-litre container. Distilled water, Xylene and Acetone
2	Viscosity by Saybolt Furol Viscometer, Table 1 SI No ii)	Saybolt Furol Viscometer as per Annex A of IS 3117, Thermostatically controlled bath, Oil tube, Thermometers
3	Coagulation of emulsion at low temperature, Table 1 SI no iii)	Water Bath, thermostatically controlled, Glass boiling tube, 600 micron IS sieve, Beaker Distilled water, Xylene and Acetone
4	Storage stability after 24, Table 1 SI no iv)	Cylinders —Two 500-ml glass cylinders, with pressed or moulded glass bases and cork or glass stoppers, having an outside diameter of 50 ± 5 mm and having 5 ml graduations. Glass Pipette —50 -ml siphon glass tube pipette. Balance —500 g capacity accurate to 0.1 g. Glass Beakers—Three glass breakers of 600 or 1000 ml capacity, made of borosilicate glass. Glass Rods, with flame polished ends, 6.5 ± 0.5 mm diameter and 175 ± 5 mm in length. Oven —Thermostatically controlled, capable of maintaining temperature of $163 \pm 2.8^\circ\text{C}$.
5	Particle charge, Table 1 SI No v)	Current Source —A 12 battery. Rheostat, of 2 000 Ohm capacity. Ammeter of preferable range of 20 mA or any suitable ammeter to accurately measure 4 mA. Stainless Steel Plates —Two, 25×75 mm size. Glass Container, of 500 ml capacity
6	Coating ability and water resistance, Table 1 SI No vi)	Mixing Pan— A whole enamelled kitchen pan with handle, of approximately 3-litre capacity. Mixing Blade —A putty knife with a 30×90 mm steel blade with rounded corners. A 254 mm kitchen-mixing spoon may be used as an alternative. Sieve —Standard sieve of 19 mm and 4.75 mm conforming to IS 460 (Part 2). Constant Head Water Spraying Apparatus —An

		apparatus for applying tap water in a spray under a constant head of 775 mm. The water shall spray from the apparatus in a low velocity. Thermometer —It shall be of the mercury in glass type nitrogen filled Balance, capable of weighing 1000g within ± 0.1 g., Pipette, of 10ml capacity Tap water of note over 250 ppm hardness for spraying
7	Stability to mixing with cement, Table 1 SI no vii)	Sieve —A 1.40 mm IS Sieve approximately 100 mm in diameter and 40 mm in height and 150 micron IS Sieve approximately 200 mm in diameter. Metal Dish—A round-bottomed metal utensil of approximately 500-ml capacity. Steel Rod— A steel rod with rounded ends 13 mm in diameter. Balance —250 g capacity accurate to 0.1 g. Graduated Cylinder of 100 ml capacity. Shallow Pan of 100-mm diameter and of about 50-ml capacity. Oven —A well-ventilated oven controlled at 110°C. Ordinary Portland cement conforming to IS 269
8	Miscibility with water, , Table 1 SI no viii)	500 ml beaker, thermometer, distilled water, measuring cylinder
9	Determination Of Residue By Evaporation, Table 1, SI No. (ix) (1)	Glass Beakers—Low form of 1 000 ml capacity made of borosilicate glass. Glass Rods, with flame polished 6.5 ± 0.5 mm in diameter and 175 ± 0.5 mm in length. Balance —500 g capacity accurate to 0.1 g. Oven —Thermostatically controlled at a temperature of $163 \pm 2.8^\circ\text{C}$.
10	Determination Of penetration, Table 1, SI No. (ix) (2)	Container:A metal or glass cylindrical, flat bottom container, Needle:A straight, highly polished, cylindrical, stainless steel rod, with conical and parallel portions co-axial Water Bath – thermostatically controlled Transfer Dish - A small dish or tray provided with some means which ensure a firm bearing and prevent the rocking of the container and of such capacity as will ensure complete immersion of the container during the test. Penetration Apparatus - Any apparatus which will allow the needle to penetrate without appreciable friction, and which is accurately calibrated to yield results in tenths of millimeter ,Thermometer Time Device
11	Determination Of Ductility, Table 1, SI No. (ix) (3)	Ductility apparatus consisting of ductility mould, water bath (Thermostatically controlled), testing machine (for pulling the briquette of bituminous material apart), and thermometer (A suitable thermometer/digital temperature probe with least count 0.1 °C may be used)

12	Solubility in trichloroethylene, Table 1 SI No. (ix) (4)	Method A as per IS 1216 (for Asphaltic Bitumen) Apparatus: Balance, Oven, Gooch Crucible, Conical Glass Flask - of 200- ml capacity Solvent: Carbon Disulphide-re distilled grade, conforming to IS:71, Trichloroethylene – conforming to IS : 245
13	Distillation in percent volume of distillate recovered at 360°C, Table 1, SI No. (x)]	METHOD A (FOR CUTBACK BITUMEN) as per IS 1213 Distillation Flask - 500 ml, side arm having dimensions as specified. Thermometer - of high distillation, total immersion Type/ Digital electronic thermometer Distillation apparatus assembly as specified in ISS
14	Water content, Table 1, SI No. (xi)	Dean and stark assembly: Flask - of 500 ml capacity made of heat resistant glass, well annealed and as free as possible from striae and similar defects. (A metal flask may be used) Condenser - made of heat resistant glass, well annealed and as free as possible from striae and similar defects, with shape, dimensions and tolerances as specified in ISS. Receiver - made of heat resistant glass, well annealed and as free as possible from striae and similar defects, provided with ground glass joints with the dimensions and tolerances as given in Table 1 A 100-ml Graduated Cylinder Heater - Any suitable gas burner or electric heater may be used. Solvent -Blend of 20 percent by volume of industrial grade toluene and 80 percent by volume of industrial grade xylene, or Petroleum spirit with a boiling range of 100 to 120°C

ANNEX – C

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: the product of the same grade, produced in a single batch shall constitute a control unit

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 as given in the Schedule of the license shall be marked legibly and indelibly on the container transporting Bitumen Emulsion for Roads, provided always that the material so marked conforms to each requirement of the specification

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

3.2 If material is supplied in tank cars, tank trucks, container ships etc. the Standard Mark as given in Schedule of the licence and Licence Number (i.e. CM/L) shall be incorporated on a test certificate to be provided along with each tank car/tank truck/container ship as per the format at Appendix-1 enclosed, provided always that the product thus marked conforms to all the requirement of the specification. Packing shall be done as per provisions of Indian Standard and the marking details as per IS 8887:2018 shall also be indicated on the test certificate.

3.3 **Additional Marking requirements:** Additionally, the following may be indicated on the container transporting Bitumen Emulsion for Roads.

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				Recommended Levels of Control		
Cl.	Requirement	Test Methods	Clause Reference	No. of Sample	Frequency	Remark
6.1,	Homogeneity	6.1	IS 8887	Firm to have adequate in-process controls to check compliance of this parameter as per the Indian Standard.However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
6.2 & Table 1	i) Residue on 600 micron IS Sieve (Percent by mass)	Annex B	-do-	One	Each control unit	---
	ii) Viscosity by Say bolt Furol Viscometer At 25° C At 50° C	---	IS 3117	One	-do-	---
	iii) Coagulation of emulsion at low temperature	Annex C	IS 8887	One	-do-	Applicable only when ambient temp. is below 15°C
	iv) Storage stability after 24 hrs.	Annex D	-do-	One	-do-	---
	v) Particle charge	Annex E	-do-	One	-do-	---
	vi) Coating ability and water resistance	Annex F	-do-	One	-do-	Applicable to MS grade only
	vii) Stability to mixing with cement (% Coagulation)	Annex G	-do-	One	Each control unit	Applicable to SS -2 grade only
	viii) Miscibility with water	Annex H	-do-	One	do-	---
	ix) Test on Residue a. Residue by evaporation, percent by mass b. Penetration 25°C/100g/5 Sec c. Ductility 27°C/cm d. Solubility in trichloroethylene % by mass	Annex J	-do-	One	do-	a., b., c., Not applicable for SS-1 Grade Value of Solubility is determined on distillation residue at 3600 C for SS- 1 Grade
	x) Distillation in percent volume of distillate recovered at 360°C	6.2 & Table 1	-do-	One	-do-	Applicable to SS-I grade only
	xi) Water content % by mass	6.2 & Table 1	-do-	One	-do-	-do-

Appendix- 1

XYZ COMPANY
(Registered Office Address and works address) TEST
CERTIFICATE
Bitumen Emulsion for Roads (Cationic Type), grade: as per IS 8887: 2018

BIS
Standard
Mark

TEST CERTIFICATE No.

Date.....

To M/s _____

We certified that the material described below fully conforms to **IS 8887:2018**. The properties of the product, as tested in accordance with the Scheme of Inspection and Testing contained in the BIS Certification Marks License No. CM/L _____ are as indicated below against each order No.

(PLEASE REFER TO IS 8887:2018 FOR DETAILS OF SPECIFICATION REQUIREMENTS)

TEST RESULTS

Month and year of mfg.										
Batch No.										
Quantity										
Date of expiry										
	Requirements									
Residue on 600 micron IS Sieve										
Viscosity by Saybolt Furol Viscometer										
Coagulation of emulsion at low temperature										
Storage stability										
Particle charge										
Coating ability and water resistance										
Stability to mixing with cement,										
Miscibility with water										
Determination of Residue By Evaporation										
Determination of penetration										
Determination of ductility										
Determination of solubility										
Distillation in percent volume of distillate										
Water content										

REMARKS Tanker No./
Container No.

FOR XYZ Company