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SPECIFICATION FOR ADHESIVE, BITUMEN EMULSION

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Indian Standard

SPECIFICATION FOR ADHESIVE, BITUMEN EMULSION

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Indian Standard

SPECIFICATION FOR ADHESIVE, BITUMEN EMULSION

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 14 August 1974, after the draft finalized by the Adhesives Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard deals with adhesive for paper products primarily based upon bitumen, refined tar pitch, with or without modifying materials, which is intended for sealing paper bags, cartons, preparation of bituminized paper and for bonding hessian with kraft paper or polyethylene.

0.3 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard covers the requirements and methods of sampling and test for adhesive, bitumen emulsion.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definition given in IS : 3434-1965† shall apply.

3. REQUIREMENTS

3.1 Description — The material shall be in the form of homogeneous stable emulsion of bitumen in water.

3.2 Consistency — The material shall be supplied in such a condition that stirring easily produces a smooth uniform solution, suitable for application by brush on kraft paper.

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*Rules for rounding off numerical values (*revised*).

†Glossary of terms for adhesives and pressure sensitive adhesive tape.

3.3 Touch Dry Time — The material shall dry in not more than one hour to a tacky surface of such a condition that there is no tendency of the film to lift on touching with a finger, when tested as prescribed in Appendix A.

3.4 Stability — The adhesive solution shall be such that there shall be no separation of phases during and on completion of test, prescribed in Appendix B.

3.5 Adhesive Strength — Adhesive strength of bonded kraft paper when tested according to the method given in Appendix C shall be not less than the strength of the kraft paper.

3.6 Chemical Requirements — The adhesive shall also comply with the chemical requirements given in Table 1.

TABLE 1 CHEMICAL REQUIREMENTS

Sl. No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass	48 to 52	Appendix D
ii)	Ash, percent by mass, *Max*	5	Appendix E

3.7 Keeping Quality — The bitumen emulsion should not show any sign of gelling or emit foul smell when stored in sealed containers at room temperature for a minimum period of six months or as otherwise agreed to between the purchaser and the supplier.

4. PACKING AND MARKING

4.1 Packing — The material shall be securely packed as agreed to between the purchaser and the supplier.

4.2 Marking — The packages shall be marked legibly and indelibly with the following information:

a) Name of the material;

b) Manufacturer's name and recognized trade-mark, if any;

c) Date by which the material become unusable;

d) Weight or volume of the material in the package;

e) Directions for storage, if any;

f) Batch number or month and year of manufacture; and

g) Time taken, if any, for attaining the full bond strength.

4.2.1 The manufacturer shall also furnish written instructions on the lines as given below, giving the manner in which the adhesive shall be used:

a) Preparation of surfaces;

b) Method(s) of application, such as single or double spread;

c) Maximum and minimum open and closed assembly times; and

d) Recommended pressure in kg/cm^2 and duration and temperature in °C to be applied for bonding the two components.

4.2.2 The packages may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard convery 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 ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING

5.1 Representative test samples of the material shall be prepared as prescribed in Appendix F.

6. TESTS

6.1 For carrying out tests prescribed in **3**, the adhesive shall be prepared according to the instructions of the manufacturer.

6.2 Tests shall be conducted as prescribed in Appendix A to Appendix E of this standard.

APPENDIX A

(Clauses 3.3 *and* 6.2)

METHOD FOR THE DETERMINATION OF TOUCH DRY TIME

A-1. PROCEDURE

A-1.1 Spread approximately 0·5 g of the material into a thin uniform film as quickly as possible by a brush on a 50 × 40 × 1 mm clean dry tin or glass plate.

A-1.2 Examine the film of the material by touching with a finger without exerting any pressure. Note down the time when the material dries to a non-tacky film.

APPENDIX B

(*Clauses* 3.4 *and* 6.2)

METHOD FOR THE DETERMINATION OF STABILITY

B-1. PROCEDURE

B-1.1 Take approximately 25 ml of the material in a dry clean glase test tube (150 × 25 mm) provided with cork stopper. Immerse the tube in a mixture of ice and water for 3 hours at 10° ± 2°C and then keep in an oven at 50° ± 1°C for 3 hours. During and on completion of the tests, there shall be no separation of phases.

APPENDIX C

(*Clauses* 3.5 *and* 6.2)

METHOD FOR THE DETERMINATION OF ADHESION STRENGTH

C-1. PROCEDURE

C-1.1 Apply approximately 0·5 g of the material in a thin uniform film by means of painting brush to exactly 100 × 25 mm of kraft paper pieces (*see* IS : 1397-1967*) of 250 × 25 mm and 155 × 25 mm size. Allow the films of both the pieces to dry to tacky surface and then join together in such a manner that treated the faces of the two strips are superimposed on each other with the free ends of the strips in the same direction. Place the specimen on a smooth hard base and roll a 30 mm diameter metallic roller or a 10 kg mass on the cemented surface five times. Allow the specimen to age for 48 hours at room temperature without any applied pressure.

C-1.2 At the end of this period fix the free end of the smaller strip to the upper jaw and turn back the end of the other strip and fix to the lower jaw of an Adhesion Testing Machine, which is capable of giving a constant rate of traverse of the lower jaw at a rate of 50 mm/min (by movement of the lower jaw only through which the load is applied). Pull the pieces apart. The sample passes the test if the joint does not give way before the paper strips break.

APPENDIX D

[*Clauses* 3.6 *and* 6.2, and *Table* 1, *Sl No.* (i)]

METHOD FOR THE DETERMINATION OF MOISTURE

D-1 PROCEDURE

D1.1 Weigh approximately 10 g of the well mixed material into a flat-bottomed, circular metal or glass dish about 75 mm in diameter.

*Specification for kraft paper (*first revision*).

Spread the material into a thin film, evaporate to dryness on a water-bath and then heat the dish to constant mass in an electric oven at 100° ± 1°C.

D-2. CALCULATION

$$\text{Moisture, percent by mass} = \frac{(M - M_1) \times 100}{M}$$

where

M = mass in g of the sample, and

M_1 = mass in g of the material on heating.

APPENDIX E

[*Clauses* 3.6 *and* 6.2, and *Table* 1, *Sl No.* (ii)]

METHOD FOR THE DETERMINATION OF ASH CONTENT

E-1. PROCEDURE

E-1.1 Weigh approximately 10 g of the well mixed sample in a tared porcelain/silica dish. Heat and ignite by playing the flame of the bunsen burner on the surface of the material. Allow the material to burn away quietly. Transfer the dish to a muffle furnace adjusted to a temperature of 500° to 550°C. Allow it to remain till the carbonaceous matter is consumed. Heat the dish to constant mass, cool in a desiccator and weigh.

E-2. CALCULATION

$$\text{Ash content, percent by mass} = \frac{M_1 \times 100}{M}$$

where

M_1 = mass in g of the residue, and

M = mass in g of the sample.

APPENDIX F

(*Clause* 5.1)

SAMPLING OF ADHESIVES

F-1. GENERAL REQUIREMENTS OF SAMPLING

F-1.1 Samples shall not be taken in an exposed place.

F-1.2 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

F-1.3 Samples shall be placed in suitable, clean, dry and air-tight glass containers.

F-1.4 Each sample container after filling shall be sealed air-tight and marked with full identification particulars, such as sample number, the date of sampling, the batch of manufacture of material and other important particulars of the consignment.

F-1.5 Samples shall be protected from excessive variations of temperature.

F-2. SCALE OF SAMPLING

F-2.1 Lot — All the containers of one size in a single consignment of the material, containing material of the same batch of manufacture, shall constitute a lot.

F-2.1.1 Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of the specification.

F-2.2 The number of containers (n) to be selected from a lot shall depend on the size of the lot (N) and shall be in accordance with col 1 and 2 of Table 2.

F-2.2.1 The containers shall be selected at random and in order to ensure the randomness of selection, a random number table shall be used. In case such a table is not available, the following procedure may be adopted:

Starting from any container, count them in one order as 1, 2, 3, ... up to r and so on, where r is the integral part of N/n (N being the lot size and n the number of containers to be selected). Every rth container thus counted shall be withdrawn to give sample for test.

F-3. PREPARATION OF TEST SAMPLES AND REFEREE SAMPLE

F-3.1 To ensure that the sample taken from each container is representative, the contents shall be mixed thoroughly by shaking or by stirring or both.

F-3.2 After the contents are thoroughly mixed, a small representative portion of the material shall be drawn with the help of a suitable sampling implement from each of the containers selected according to **F-2.2** (the approximate quantity of material to be drawn from a container shall be thrice the quantity required for the tests indicated in **3**).

F-3.3 In case a thorough mixing by shaking or stirring cannot be attained, small representative portions of the material shall be drawn from different parts of the container with the help of a suitable sampling instrument so as to give representative sample for the container.

TABLE 2 NUMBER OF CONTAINERS TO BE SELECTED FOR SAMPLING

(*Clause* F-2.2)

LOT SIZE	NUMBER OF CONTAINERS TO BE SELECTED
N	*n*
(1)	(2)
Up to 20	3
21 ,, 40	4
41 ,, 80	5
81 ,, 120	6
121 ,, 200	8
201 and above	10

NOTE — In the case of very small lots where the selection of three containers may be uneconomical, the number of containers to be selected and the criterion for judging the conformity of the lot to the specification shall be as agreed to between the purchaser and the supplier.

F-3.4 The material drawn from each container shall be divided into three equal parts, each forming an individual sample. One set of the individual samples representing *n* containers selected shall be marked for the purchaser, another for the supplier and the third for the referee.

F-3.5 All the samples shall be transferred to separate containers. These containers shall then be sealed air-tight and labelled with full identification particulars given in **F-1.4.**

F-3.6 The referee sample consisting of a set of *n* individual samples representing *n* containers selected shall bear the seals of both the purchaser and the supplier. They shall be kept at a place agreed to between the purchaser and the supplier, and shall be used in case of any dispute between the two.

F-4. NUMBER OF TESTS

F-4.1 Tests for the determination of all the requirements of the specification given in **3** shall be performed on each of the individual samples separately.

F-5. CRITERIA FOR CONFORMITY

F-5.1 A lot shall be declared as conforming to the requirements of this specification if the different test results obtained meet the corresponding requirements given in this standard.

INDIAN STANDARDS

ON

ADHESIVES AND PRESSURE SENSITIVE ADHESIVE TAPES

IS:

425-1953 Shellac adhesives for steam flange joints

848-1957 Synthetic resin adhesives for plywood (phenolic and aminoplastic)

849-1957 Cold setting casein glue for wood

851-1957 Synthetic resin adhesives for construction work in wood

852-1969 Animal glue for general wood-working purposes (*first revision*)

1508-1960 Extenders for use in synthetic resin adhesives (urea-formaldehyde) for plywood

2249-1953 Adhesives (liquid) for leather beltings

2257-1970 Paper adhesives, liquid gum and office paste type (*first revision*)

2448 (Part I)-1963 Adhesive insulating tapes for electrical purposes: Part I Tapes with cotton textile substrates

2560-1963 Rubber-based adhesives for tyres and tubes, non-curing

2561-1963 Rubber-based adhesives for the automobile industry

2562-1963 Rubber-based adhesives for tyres and tubes, curing

2880-1971 Pressure sensitive adhesive cellulose type (*first revision*)

2886-1964 Labelling paste for automatic machines

3116-1965 Sealing compound for lead-acid batteries

3434-1965 Glossary of terms for adhesives and pressure sensitive adhesive tapes

3447-1965 Shellac jointing or gasket compound

3676-1966 Pressure sensitive adhesive PVC tapes

3687-1966 Pressure sensitive adhesive cloth tapes

3988-1967 Guar gum

4185-1967 Gummed paper tapes

4663-1968 Permanent rubber-based adhesives for footwear industry

5025-1969 Gum karaya

6367-1971 Dextrin for adhesive industry

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Chemicals, organic (miscellaneous)
Coal and coke
Coal carbonization products
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Cosmetics and toilet goods
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Dye intermediates
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Oils & fats, oleaginous seeds and fruits
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Paper and its products
Paper and pulp board packaging materials
Perfumery materials, natural and synthetic
Petroleum and petroleum products
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