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BSI Group
389 Chiswick High Road
London, W4 4AL
United Kingdom

T: +44 20 845 086 9001
F: +44 20 8996 7400
cservices@bsigroup.com
bsigroup.com

British Standards Limited
Registered in England no: 07864997
Registered address: 389 Chiswick High Road
London, W4 4AL, United Kingdom

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BRITISH STANDARD SPECIFICATION

FOR

SOLID BITUMINOUS FILLING COMPOUNDS

FOR

CABLE BOXES

ON SYSTEMS UP TO AND INCLUDING 11 000 VOLTS.

LONDON:
Published by the British Standards Institution,
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CONTENTS.

		PAGE
	Co-operating Organisations	3
	Foreword	4
1.	Scope	5
2.	General	6
3.	Solubility	6
4.	Softening Point	6
5.	Pouring Temperature	6
6.	Electric Strength (Proof) Test	7
7.	Mineral Matter (Ash)	7
8.	Freedom from Injurious Sulphur	7
9.	Adhesiveness	7
10.	Penetration	7
11.	Contraction and Depth of Pipe	8
12.	Segregation Test for Type 1 Compound	8

APPENDICES.

A.—Method for Determination of Solubility in Carbon Disulphide or Carbon Tetrachloride	9
B.—Method for Determination of Softening Point (Ring-and-ball Method)	11
C.—Method for Determination of Pouring Temperature	16
D.—Method of Performing Electric Strength (Proof) Test	21
E.—Methods for Determination of Mineral Matter (Ash)	23
F.—Method for Determination of Presence of Injurious Sulphur	24
G.—Method for Determination of Adhesiveness	25
H.—Method for Determination of Penetration	27
J.—Method for Determination of Contraction and Depth of Pipe	30
K.—Segregation Test for Type 1 Compound	32

CO-OPERATING ORGANISATIONS.

The Electrical Industry Committee,† under whose supervision this British Standard was prepared, consists of representatives from the following Government Departments and Scientific and Industrial Organisations :—

*Admiralty.
Central Electricity Board.
Electricity Commissioners.
*General Post Office.
H.M. Office of Works.
*Home Office.
*National Physical Laboratory.
*War Office.
Association of Consulting Engineers.
*British Electrical and Allied Manufacturers' Association.
*British Electrical and Allied Industries Research Association.
*Cable Makers' Association.
Electrical Contractors' Association (Incorporated).
Electric Lamp Manufacturers' Association.
*Incorporated Association of Electric Power Companies.
*Incorporated Municipal Electrical Association.
Institution of Electrical Engineers.
*London Electricity Supply Association.
*Provincial Electric Supply Association.
*Railway Companies of Great Britain.
Tramways, Light Railways, and Transport Association.

The Government Departments and Scientific and Industrial Organisations marked with an asterisk in the above list, together with the following, were directly represented on the Committees entrusted with the preparation of this British Standard :—

Air Ministry.
Government Laboratory.
Asphalt Roads Association Ltd.
British Plastics Federation Ltd.
National Federation of Associated Paint, Colour and Varnish Manufacturers of the United Kingdom.

† The Electrical Industry Committee is the British National Committee of the International Electrotechnical Committee.

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FOREWORD.

This British Standard was prepared on the basis of data supplied by the British Electrical and Allied Industries Research Association and by the Cable Makers' Association. The methods of test herein described are, as far as practicable, the same as those described in B.S. 688—1936, Bituminous Filling Compounds for Electrical Apparatus (excluding those used for Cable Boxes).

In order to keep abreast of progress in the Industries concerned, the British Standards are subject to periodical review.

Suggestions for improvements, addressed to the British Standards Institution, 28 Victoria Street, London, S.W.1, will be welcomed at all times. They will be recorded, and in due course brought to the notice of the Committees charged with the revision of the Publications to which they refer.

NOTE.—*The Institution desires to call attention to the fact that this Specification is intended to include the technical provisions necessary for the supply of the material herein referred to, but does not purport to include all the necessary provisions of a contract.*

BRITISH STANDARD SPECIFICATION FOR SOLID BITUMINOUS FILLING COMPOUNDS FOR CABLE BOXES ON SYSTEMS UP TO AND INCLUDING 11 000 VOLTS.

Scope.

1. This Specification applies to compounds of a bituminous nature, suitable for use as filling compounds which are subjected to electrical stress in service in cable boxes used with lead-covered cables insulated with impregnated paper, varnished-cambric or impregnated jute fibre, for voltages not exceeding 11 kV. It does not, however, prescribe oil-resisting compounds.

The compounds covered by this Specification are designated according to the amount of mineral matter contained therein, as follows :—

Type 1. *Natural Bitumen Base Compound*, free from coal tar derivatives, with mineral matter not exceeding 37 per cent, and specific gravity not less than 1·02 and not exceeding 1·5 at 15·5°C.

Type 2. *Petroleum Residue Base Compound*, free from coal tar derivatives, with mineral matter not exceeding 0·5 per cent, and specific gravity not less than 1·02 at 15·5°C.

NOTE.—Compliance of a compound with the provisions of this Specification must not be held to imply that such compound is necessarily suitable for each and every type of cable, cable joint box or condition of service.

The Cable Manufacturer and the Manufacturer of the joint box should be consulted as to the type of compound appropriate.

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General.

2. The compound shall be suitable for the type of cable with which it is to be used, the conditions of service of such cable, the design, construction, and interior fittings of the cable box, and the position of erection of such cable box. The compound shall be stable and shall not emit excessive fumes when heated to the temperature at which 50 millilitres flow, in 25 seconds, from the pouring temperature apparatus described in Appendix C.

The compound shall have no injurious effects on fibrous materials such as cotton, paper and the like, on copper, brass, iron and lead, at temperatures reached during installation and under the conditions of service.

Solubility.

3. The solubility of the compound shall be determined either in carbon disulphide or carbon tetrachloride or both as required by the Purchaser, by the method described in Appendix A. The insoluble content shall be the subject of agreement between the Purchaser and Supplier, and shall in no case exceed the appropriate value given below :—

Type 1	40 per cent.
Type 2	0·5 per cent.

Softening Point.

4. The softening point * of the compound shall be the subject of agreement between the Purchaser and the Supplier, and shall be determined by the ring-and-ball method as described in Appendix B.

The softening point of the compound shall not vary from the agreed value by more than plus or minus 3°C.

Pouring Temperature.

5. The pouring temperature of the compound shall be the subject of agreement between the Purchaser and the Supplier, and shall be determined by the method described in Appendix C. The pouring temperature shall be between the temperatures required for 50 millilitres of compound to flow, in 25 and 50 seconds respectively, from the pouring temperature apparatus described in Appendix C.

NOTE.—The pouring temperature is approximately 75°C. to 90°C. above the softening point, but this figure should only be regarded as a rough guide.

* The softening point is sometimes referred to as the "melting point" or the "dropping point."

Electric Strength (Proof) Test.

6. The compound shall be tested as described in Appendix D and shall withstand for one minute, without puncture, the appropriate test voltage given below :—

Type 1	15 000 volts.
Type 2	20 000 volts.

NOTE.—Owing to the inherent difficulties in the method of test, the compound shall be deemed to comply with the requirements of the above Clause if it passes two out of three successive tests.

Mineral Matter (Ash).

7. The amount of mineral matter (ash) in the compound shall be the subject of agreement between the Purchaser and the Supplier, and shall be not more than the appropriate value given below. Determination of the mineral matter (ash) content shall be by the appropriate method described in Appendix E.

Type 1	37 per cent.
Type 2	0·5 per cent.

Freedom from Injurious Sulphur.

8. The compound shall be tested as described in Appendix F and the copper shall not be appreciably blackened.

Adhesiveness.

9. When the Purchaser requires the adhesiveness of the compound to be determined, it shall be tested as described in Appendix G.

Adhesion of the compound to the base plate shall occur over an area of not less than 90 per cent of that part of the plate which has been exposed to the molten compound.

Penetration.

10. The penetration of a needle into the compound shall be determined by the method described in Appendix H. The depth of penetration shall be the subject of agreement between the Purchaser and Supplier, provided that it be not less than 7 tenths of a millimetre. Subject to this restriction, the depth of penetration

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