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Specification for

**Bitumen-based
hot-applied coating
materials for protecting
iron and steel,
including suitable
primers where required**

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British Tar Industry Association	The Pipeline Industries Guild
Council of Ironfoundry Associations	Individual manufacturers

This British Standard, having been prepared under the direction of the Elements and Components (of Diverse Materials) for Buildings Standards Committee, was published under the authority of the Executive Board and comes into effect on 31 October 1980

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Foreword

This revision of BS 4147 has been prepared under the direction of the Elements and Components (of Diverse Materials) for Buildings Standards Committee. BS 4147 was first published in 1967. A revised edition was published in 1973 to take account of metrication.

Since 1967 much has been learned about the specification and testing of bitumen-and coal-tar-based hot-applied coatings, particularly in connection with the extensive installation of steel pipelines for the transmission of oil, water and gas. This standard takes into account these technical advances.

An international standard covering the selection and application of bitumen- and coal-tar-based protections for steel pipes is in course of preparation, the drafting being done by a committee of CEOCOR (Western European Committee on Corrosion and Protection of Pipelines). After many meetings a draft is nearing completion. It is evident that materials and practices vary widely in the countries represented on the committee, and a common standard will have to allow for the well established practices of the various countries. In this British Standard the aim has been to produce a document which is compatible with the current international standard draft, but which also prescribes closer limits for many properties which experience in the UK has shown to be advantageous.

This standard gives guidance on the commonly accepted uses for the different types and grades of coating materials. Performance tests for bend and peel are introduced for type 2 coating materials. The direct impact test is carried out at 0 °C as well as at 25 °C, since steel pipelines coated with these materials are often handled at low ambient temperatures. A surface profile requirement for the steel plates used in performance tests is also introduced.

It should be emphasized that the protective system can be ineffectual if the coating materials are not correctly applied, or they are applied to an unsatisfactory surface. CP 2010-2 and CP 2010-3 gives guidance on application to steel and iron pipelines.

The use of hot-applied bitumen-based coatings in connection with the protection of steel pipes and fittings against corrosion is mentioned particularly in BS 534. Black bitumen coating solutions for cold application are specified in BS 3416. Hot-applied coal-tar based coating materials for protecting iron and steel are specified in BS 4164, a revised version of which is being published simultaneously with this standard.

Certification. Attention is drawn to the certification facilities described on the inside back cover of this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligation.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This British Standard specifies requirements for hot-applied bitumen-based materials, unfilled or reinforced with inert powdered fillers or with inert fibrous fillers, which are used to protect iron and steel against corrosion. Requirements for primers are included because the performance of hot-applied coating materials depends on the use of suitable primers.

Different types and grades of material are used for different substrates, conditions of application and service. This standard indicates factors which need to be taken into account in selecting the type and grade for a particular use.

2 References

The titles of the publications referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this British Standard, the following definitions apply.

3.1

bitumen

a very viscous liquid or solid, consisting of hydrocarbons and their derivatives, which is soluble in carbon disulphide or trichloroethylene. It is substantially non-volatile and softens gradually when heated. It is black or brown in colour and possesses waterproofing and adhesive properties. It is obtained by refinery processes from petroleum

3.2

hot-applied

of such a consistency at ambient temperature that heating is required before application

3.3

inert filler

finely divided mineral powder or inorganic fibre which is not substantially hygroscopic, not electrically conducting and does not react with other ingredients of the coating material or with the environment in which it will be used

3.4

primer

a material applied as a thin film to metal in order to ensure maximum adhesion of the subsequent protective coating

4 Types of bitumen-based coating material

Bitumen-based coating materials shall be classified as follows:

- type 1: unfilled coating materials;
- type 2: coating materials with inert non-fibrous fillers;
- type 3: coating materials with inert fibrous fillers.

NOTE 1 Bitumen-based coating materials are further sub-divided into a number of grades according to the conditions of application and service. Details of these distinctions are specified in section 3.

NOTE 2 Recommendations on the use of coating materials are given in Appendix M.

5 Types of primer

Three types of primer are available for use with bitumen-based coating materials.

Type A. Bitumen-based primers for cold application. These are available in two grades. Primer of "grade a" is intended for use under the softer coating materials of type 2, "grade a". Primer of "grade b" is intended for use under the harder coating materials.

Type B. Synthetic primer for cold application. This is suitable for all grades of coating materials. It is quick drying and application of the subsequent coating is possible within a shorter time.

Type C. Bitumen primers for hot application. These are available in three grades. They are usually applied by dipping the product in a bath containing the primer in the molten state.

Primers shall be applied in compliance with the manufacturer's instructions and shall, after application of the coating materials, comply with the appropriate performance requirements given in this standard. If primer and coating materials are obtained from different sources, the two in combination shall be capable of complying with the appropriate performance requirements given in this standard.

Section 2. Primers

6 Type A. Bitumen-based primer for cold application

6.1 Composition. Type A primer for cold application shall consist of a homogeneous solution of bitumen in hydrocarbon or other suitable solvent having a consistency suitable for application by spray, brush or other approved method.

The bitumen used as a base for the primer shall have the properties given in Table 1.