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Specification for

Flexible steel conduit and adaptors for the protection of electric cable

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British Compressed Air Society	Institution of Mechanical Engineers*
British Electrical and Allied Manufacturers' Association	Institution of Mechanical Engineers (Automobile Division)
British Electricity Authority and Area Boards*	Institution of Production Engineers
British Engineers' Association	Locomotive Manufacturers' Association
British Internal Combustion Engine Manufacturers' Association	Machine Tool Trades' Association*
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The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following industrial organizations, were directly represented on the committee entrusted with the preparation of this standard:

Association of Supervising Electrical Engineers	Society of Motor Manufacturers and Traders
Cable Makers' Association	Individual manufacturers of conduit and adaptors
Electrical Contractors' Association	
Federation of British Rubber Manufacturers' Associations	

This British Standard, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 2 October 1952

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Foreword

This standard makes reference to the following British Standards:—

BS 31, *Steel conduits and fittings for electrical wiring.*

BS 309, *Whiteheart malleable iron castings.*

BS 310, *Blackheart malleable iron castings.*

BS 1400, *Copper alloy ingots and castings.*

BS 1449, *Steel plate, sheet and strip.*

This British Standard forms part of the revision of BS 731, “*Flexible steel conduit for cable protection and flexible steel tubing to enclose flexible drives*”, which was issued in 1937. In the course of revision it was decided to separate those parts of the standard dealing with flexible steel conduit for cable protection and flexible steel tubing to enclose flexible drives. Part 2 of this revised standard, covering flexible steel tubing to enclose flexible drives, will be published in the near future.

This revised standard provides for three types of flexible steel conduit suitable for insulated cables and for two types of adaptors. In addition to standardizing dimensions, the standard specifies mechanical requirements and tests for the finished conduit, and prescribes suitable qualities of materials for use in the manufacture of flexible steel conduit and adaptors for cable protection.

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 obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, 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.

1 Scope

This British Standard specifies requirements for flexible steel conduit of the types given at a) below, and for adaptors of the types given at b) below.

a) Conduit.

Type A. Flexible steel conduit — unpacked.

Suitable for use as a mechanical protection to insulated electric cables exposed to normal atmospheric conditions.

Type B. Flexible steel conduit — asbestos

packed. Suitable for use as a mechanical protection to insulated electric cables likely to be exposed to damp conditions or where the temperature precludes the use of rubber.

Type C. Flexible steel conduit — rubber

packed. Suitable for use as a mechanical protection to insulated electric cables likely to be exposed to gas or water or dust-laden atmospheres.

b) Adaptors.

i) Clamp type.

ii) Solid type.

Section 1. Conduit

2 Construction

Type A. Flexible steel conduit — unpacked. This shall be of the square-locked type made by helically coiling a formed steel strip. (See Figure 1.)

Type B. Flexible steel conduit — asbestos packed.

This shall be of the square-locked type made by helically coiling a formed steel strip, and shall be provided with a continuous packing of asbestos yarn inserted between the coils. (See Figure 1.)

Type C. Flexible steel conduit — rubber packed. This shall be of the square-locked type made by helically coiling a formed steel strip, and shall be provided with a continuous rubber thread inserted between the coils. (See Figure 1.)

3 Material

a) **Steel strip.** The strip used in the manufacture of the conduit shall be of mild steel, bright, cold rolled and annealed, at least equivalent in quality to Grade En.2 as specified in BS 1449, "*Steel plate, sheet and strip*". The strip shall be electro-galvanized, electro-tinned or otherwise provided with an equally effective protective coating before being formed into tubing, the thickness of the coating being not less than 0.00010 in.

NOTE 1 The electro-deposition is neither designed nor intended to be other than a protection to the material during manufacture, handling, storage and transport. The onus of protecting the tube in service is on the user, who should adopt methods suited to the particular conditions prevailing.

NOTE 2 In view of the deleterious effect of copper on rubber, it is recommended that the strip used for Type C conduit should not be copper-plated either before or after the forming process.

b) **Asbestos packing.** The packing shall consist of a commercial grade asbestos yarn of the chrysotile variety. The yarn shall have an organic content not exceeding 15 per cent, and shall be of a suitable count and of a size sufficient to ensure reasonable and satisfactory tightness.

c) Rubber thread.

i) *Composition.* The thread, which shall be square or round in section, shall be made from first grade natural rubber suitably compounded and vulcanized, and shall have a specific gravity not exceeding 1.02.

Accelerators and antioxidants shall be allowed but the mix shall not contain any waste, reclaim, or rubber substitute (vulcanized oils).

The use of a suitable type of synthetic rubber shall be permitted as an alternative for all or part of the natural rubber.

ii) *Elongation test.* The thread shall be tested as described in Appendix A and the full extended length of the test piece shall be not less than 18 in. and not more than 32 in.

iii) *Accelerated ageing test.* The thread shall pass satisfactorily the accelerated ageing tests described in Appendix B.

4 Dimensions

The dimensions and pitch of the conduit shall be in accordance with Table 1. The conduit shall be supplied in such lengths as may be specified by the purchaser or his representative.

5 Workmanship

The interior of flexible steel conduit shall be free from burrs or sharp edges that might cause abrasion to the insulation on the cable, and free from obstructions that might interfere with the easy introduction of the maximum size of cable for which the conduit is normally intended.

The conduit shall be reasonably uniform in diameter.

When the conduit is cut to length, the ends shall be cut square and free from burrs or sharp edges that would interfere with the assembly of the conduit with the parts with which it is used.