

Specification for

The packaging of covered winding wires for electrical purposes

Co-operating organizations

The Packaging Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

- Association of Steel Drum Manufacturers
- British Jute Trade Federal Council
- British Paper and Board Makers' Association
- British Paper Bag Federation
- British Paper Box Federation
- British Plastics Federation
- British Tin Box Manufacturers' Federation
- Chemical Industries Association
- Collapsible Tube Manufacturers' Association
- Crown Agents for Oversea Governments and Administrations
- Department of the Environment
- Department of Trade and Industry
- Envelope Makers' and Manufacturing Stationers' Association
- Fibreboard Packing Case Manufacturers' Association
- Food Manufacturers' Federation Incorporated
- Glass Manufacturers' Federation
- Institute of Packaging
- Institute of Weights and Measures Administration
- Institution of Production Engineers
- Packaging Films Manufacturers' Association
- Paintmakers Association of Great Britain Ltd
- Research Association for the Paper and Board Printing and Packaging Industries (PIRA)
- Soap and Detergent Industry Association
- Society of Motor Manufacturers and Traders Ltd
- Timber Container Confederation

The following organizations were directly represented on the committee entrusted with the preparation of this British Standard:

- Association of Electrical Machinery Trade
- British Railways Board
- Covered Conductors Association
- Electronic Engineering Association
- High Conductivity Copper Group
- Telephone Engineering and Manufacturing Association
- Woven Wire Association
- Manufacturers and users of reels and packages

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Foreword

This British Standard has been prepared under the authority of the Packaging Standards Committee at the request of the Covered Conductors Association.

Although complete international agreement has been reached on a series of preferred sizes for wires, there has been only limited agreement for reels and drums. This is mainly because the majority of these items are returnable, thus representing a very high capital investment, and also because of problems connected with associated machinery. Accordingly, the committee responsible for the preparation of this British Standard considered it appropriate to retain all the existing ranges of reels and drums without change of physical size (although expressed in metric units), with the addition of the V 05, V 100 and V 200 sizes in Table 2. The range of wire diameters quoted are the preferred sizes recommended in the relevant British Standards.

The general trend of development has been towards the adoption of bulk packages in the form of cylindrical containers, known in the trade as “paks”, and long traverse reels for end pay-off, known in the trade as long traverse vertical or L.T.V. reels.

An increase in the use of very fine winding wires has resulted in the use of Nos. 101 and 102 reels, and these reels, which also comply with BS 1888, “*Precision reels for bare and oxidized resistance wires (0.010–0.125 mm diameter inclusive)*”, have therefore also been included in this standard.

In view of the quite separate forms of packaging in common use, the standard has been subdivided appropriately and Clause 5 has been devoted to the correct usage of the packages specified in Clauses 2 to 4.

This standard is one of a series of standards for reels and drums for wires for electrical purposes, the others being:

BS 1559, “*Reels and wooden drums for bare wire, stranded conductors and trolley wire, for use in the United Kingdom*”, BS 1888, “*Precision reels for bare and oxidized resistance wires (0.010–0.125 mm diameter inclusive)*”, and BS 2565, “*Drums for covered winding wires and strips for electrical purposes*”.

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 9 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 reels, bulk packaging reels and bulk packaging containers for covered solid round winding wires, as supplied by the wire coverers to the electrical industry. It does not provide for the new reels and packages purchased by the wire coverers.

Requirements are included for the marking of reels, and the filling, packing and labelling of reels and containers. Recommendations are also made for the sizes of wire to be used with the various reels and containers.

Clause 2 of this standard deals with reels for use with all covered winding wires, but the bulk packaging reels and bulk packaging containers dealt with in Clauses 3 and 4 are intended for use with enamelled wires only. Clause 5 describes the methods to be adopted in using the reels and containers dealt with in Clauses 2, 3 and 4. Table 7 gives information concerning recommended minimum quantities of non-preferred wire sizes.

2 Reels for covered, round winding wires

2.1 Materials and construction. Reels shall be so constructed and made from such materials that they satisfy the conditions set out in 2.2 and 2.3. The materials used shall not have a deleterious effect on the wire or its covering.

Reels shall consist of a cylindrical centre section (the barrel) supported between two end disks (the flanges) as illustrated in Figure 1.

The flanges and barrel shall be smooth, and the flanges free from protruding material capable of damaging the wire or the hands of the winding operator. Bolts, screws, nails, etc., if used in the construction of the reels, shall be countersunk so that the heads are below the surface of the flange.

2.2 Dimensions and tolerances. Reel sizes shall be denoted by the reference numbers shown in Table 1 and the dimensions and tolerances of the reels shall be in accordance with Table 1.

Where there is a central boss, it shall be flush with the rim.

The inner and outer edges of reel flanges shall be rounded to a radius of not less than 1 mm for reels up to and including 152 mm diameter and not less than 2 mm for reels above 152 mm diameter.

The bore of reels 152 mm diameter and smaller shall be coned to an included angle of $60 \pm 1^\circ$ and to a depth of from 3 mm to 5 mm.

2.3 Eccentricity and flange run out. The eccentricity of all reels, when measured in the manner described below, shall be not more than that given in Column 7 of Table 1. The run out of the inside faces of each flange of reels 152 mm diameter and smaller shall nowhere exceed the total tolerance on traverse given in Column 3 of Table 1.

2.3.1 Reels of 152 mm diameter and smaller. The reels shall be placed horizontally between centres of 60° included angle, as shown in Figure 2, and shall be rotated slowly. The eccentricity shall be measured by a suitable indicator dial-gauge, placed in contact with the external surface of the barrel, as shown in Figure 2. The eccentricity of the reel is equivalent to half the measurement shown by the gauge. The run out of the inside faces of the flanges shall be measured by an appropriate indicator gauge, as shown in Figure 2.

2.3.2 Reels of diameter greater than 152 mm. The reels shall be either pushed on to a well-fitting horizontal spindle or placed horizontally between centres of 60° included angle and rotated slowly. The eccentricity shall be measured by a suitable indicator dial-gauge in contact with the external surface of the barrel, as shown in Figure 2 and Figure 3. The eccentricity of the reel is equivalent to half the measurement shown by the gauge.

2.4 Marking. Each reel shall be marked with the reference number given in Column 1 of Table 1. The mark shall normally appear on the flange of the reels but, for the smaller sizes of reels, it may be printed on the barrel.

3 Reels for bulk packaging of solid, round, enamelled winding wires

3.1 Materials and construction. The reels with prefix "V" that are intended primarily for end take-off shall be so constructed and made from such materials that they satisfy the conditions set out in 3.2 and 3.3. The materials used shall not have a deleterious effect on the wire or its covering.

Reels shall consist of a cylindrical or conical centre section (the barrel) supported between two end disks (the flanges) as illustrated in Figure 4. In certain instances the top flange will be slightly smaller than the bottom flange.

The flanges and barrel shall be smooth, and the flanges free from protruding material capable of damaging the wire or the hands of the winding operator. Bolts, screws, nails, etc., if used in the construction of the reels, shall be countersunk so that the heads are below the surface of the flange.