

Specification for

Non-circular steel wire for mechanical springs

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Iron and Steel Standards Policy Committee (ISM/-) to Technical Committee ISM/26, upon which the following bodies were represented:

- Aluminium Federation
- Bicycle Association of GB
- British Cable Makers' Confederation
- British Rubber Manufacturers' Association Ltd.
- British Steel Industry
- Federation of Wire Rope Manufacturers of Great Britain
- Forestry Commission
- Health and Safety Executive
- National Centre of Tribology
- Sheffield Stainless Steel Manufacturers' Association
- Society of Chain Link Fencing Manufacturers
- Society of Motor Manufacturers and Traders Ltd.
- Spring Research and Manufacturers' Association
- Stainless Steel Fabricators' Association of Great Britain
- Stainless Steel Wire Industry Association
- Welding Manufacturers' Association (BEAMA Ltd.)
- Woven Wire Association
- Zinc Development Association

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Foreword

This British Standard has been prepared under the direction of the Iron and Steel Standards Policy Committee.

The use of non-circular wire for mechanical springs is increasing and the Technical Committee ISM/26 considered there was a need to prepare a British Standard.

This standard specifies the requirements for non-circular wire up to 12.0 mm characteristic dimension in carbon, alloy and stainless steels.

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.

Specification

1 Scope

This British Standard specifies the requirements for steel wires of non-circular section supplied in coils or straight lengths, suitable for the manufacture of mechanical springs. It covers flattened, rectangular, square and trapezoidal (also termed keystone or tapered) section wires with square or rounded edges, and special cross section wires, up to a maximum characteristic dimension of 12.0 mm. The standard covers grades of carbon steel in the annealed, prehardened and tempered, cold drawn or cold rolled conditions including music wire, grades of alloy steel in the annealed and prehardened and tempered conditions, and grades of cold drawn or rolled stainless steel.

In addition to the definitive requirements, this standard also requires the items detailed in clause 4 to be documented. For compliance with this standard, both the definitive requirements and the documented items have to be satisfied.

NOTE. The grades of steel wire specified in this standard have been selected from those specified in BS 1429, BS 2056, BS 2803, and BS 5216.

2 References

2.1 Normative references

This British Standard incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this British Standard only when incorporated in it by updating or revision.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

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

3.1 flattened wire

A wire having a cross section with two parallel sides (see figure 1a) which are much longer than the other rounded sides.

3.2 rectangular section wire

A special case of flattened wire, having a cross section with two sets of parallel sides at right angles to each other, but with one set longer than the other (see figure 1b).

3.3 square section wire

A wire having a cross section with two sets of parallel sides of equal length at right angles to each other (see figure 1c).

3.4 trapezoidal section wire

A wire having a cross section with two parallel sides, one shorter than the other, and with the other two sides of equal length (see figure 1d). The special feature of this wire is that, when coiled into a spring such that the shorter minor characteristic dimension is located on the inside of the coil, the cross section of the material takes on either an approximately square or rectangular cross section.

3.5 characteristic dimension

The dimensions of a wire which best identify the shape, e.g. for rectangular wire the major characteristic dimension is the width and the minor characteristic dimension the thickness, for trapezoidal wire the height is the major characteristic dimension and the two parallel faces are minor characteristic dimensions.

3.6 cast

The cast of wire characterized by the diameter of the free laying unrestrained wap of wire taken from a coil or reel.

NOTE 1. For the purposes of this standard, the term 'reel' is synonymous with the term 'spool'.

NOTE 2. For coil, ends can be together (closed cast), or apart (open cast).

NOTE 3. See also BS 2056 and/or BS 5216.