

Specification for

Steel wire and wire products for fences

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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
- British Steel Industry
- Federation of Wire Rope Manufacturers of Great Britain
- Forestry Commission
- Health and Safety Executive
- 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

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Electricity Supply Industry in England and Wales
- Fencing Industry Association
- Wire Products Association

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Foreword

This British Standard has been prepared under the direction of the Iron and Steel Standards Policy Committee and supersedes BS 4102:1986 which is withdrawn. This edition introduces technical changes but it does not reflect a full review or revision of the standard, which will be undertaken in due course.

The text is identical to that of the 1986 edition but with technical changes being made to Table 8 and Table 9 and minor editorial changes.

Requirements for zinc coatings and plastics coatings are specified and attention is drawn to the following points.

The plastics coatings specified in this standard are those which have been proved in service and are known to give complete protection for at least 10 years, provided the coating is not mechanically damaged.

Bonded plastics coatings are in practical use for welded mesh but the information on the long-term performance of these coatings is considered insufficient to formulate anything other than a suitable basis for their requirements and use is currently restricted to section 6.

Welded mesh may be made by welding bright (non-zinc coated) wire and coating with zinc as a final process, or by welding zinc coated wires. In the latter case the zinc coating is affected in the weld areas. Bearing in mind that all other British Standards for zinc coated steel wires contain specific requirements on continuity of coating, the committee gave careful consideration to the anomalous position of mesh made by welding zinc coated wires.

Field evidence over a number of years indicates that welded mesh made from zinc coated wires gives a comparable life to other zinc coated fencing exposed under the same conditions. The committee was concerned that there should be a test procedure to give a reasonable safeguard of an adequate amount of zinc on the wire, for sacrificial protection of the adjacent weld areas. It was felt that if a test piece containing four welds still had a coating mass in accordance with BS 443, such an assurance was provided for this type of product and service conditions.

Other metallic coatings mainly zinc-aluminium alloys offering improved corrosion resistance are under development. Data available in relation to these coatings in terms of long-term performance and test methods are considered to be insufficient to justify their inclusion in the standard at present.

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 to iv, pages 1 to 14, 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

1.1 Scope

This British Standard specifies requirements for steel wire, bright (non-zinc coated), zinc coated and plastics coated, and fabricated wire fencing materials used in the construction of fences, including those complying with BS 1722.

This standard is divided into six sections, section 1 giving general requirements and sections 2 to 6 giving specific requirements for the various products.

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

1.2 Wire manufacture

The wire shall be manufactured from non-alloy steel rod of a carbon content appropriate to achieve the mechanical properties specified in sections 2 to 6.

The wire shall be as uniform as possible and free from internal and surface defects that could adversely affect its performance. Wire in coil shall be "dead cast" to lie in uniform circles with no significant helical lift.

1.3 Zinc and plastics coatings

1.3.1 General

Except for wires that are coated after being welded (see section 6), the wire shall be zinc coated, plastics coated or zinc and plastics coated as specified in the appropriate section of this standard.

1.3.2 Zinc coatings

Zinc coatings shall comply with BS 443 except that for wire complying with sections 3, 5 and 6 the adhesion wrap test shall be carried out on its own diameter.

1.3.3 Plastics coatings

1.3.3.1 Grade designations. Wire that is both zinc and plastics coated in accordance with this standard shall be designated grade A; bright (non-zinc coated) plastics coated wire complying with this standard shall be designated grade B.

1.3.3.2 Composition of the plastics compound. With the exception of welded wire mesh complying with section 6, plastics coatings shall be applied to wire by extrusion using a compound complying with class 3, type E1 of BS 2571:1990 and with the following additional requirements.

a) The compound shall be manufactured from a composition based on vinyl chloride homopolymer of the suspension or granular type and no copolymer or emulsion polymer shall be included.

b) The vinyl chloride homopolymer shall be mixed with appropriate primary plasticizers, heat and light stabilizers, lubricants and pigments. No extender or filler other than stabilizers or pigments shall be used.

No other material shall be added to the compound.

c) Not more than 5 % of clean, once re-worked material, which shall be of the same composition, shall be added to the virgin material from which the compound is to be manufactured.

d) The softness number of the compound shall be not less than 5 nor greater than 15, when tested as described in BS 2782:Method 365A.

e) The colour fastness to daylight of the compound shall be not less than rating 6, when a sheet of the material formed from the compound by the method described in BS 2571 is tested as described in BS 2782:Method 540A.

1.3.3.3 Surface finish. The surface of extruded plastics coatings shall be smooth, continuous and free from discoloration.

NOTE It is strongly recommended that the colour of the coating is green or black. If other colours are used by agreement it should be recognized that some colours may not meet the requirements for colour fastness and the pigments may not provide sufficient resistance to degradation of the coating by ultraviolet light.

1.3.3.4 Thickness. The thickness of the extruded coatings shall be as specified in the relevant section of this standard.

1.4 Wire diameter tolerances

Two diameter measurements shall be made at right-angles to each other at one cross section. The average of the two measurements shall not differ from the nominal diameter, specified in the relevant section of this standard, by more than the tolerances given in Table 1.

NOTE Where wire has been zinc coated by the hot dip method, thick coatings may not be entirely free from surface irregularities and, provided these are within the generally accepted limits of good practice, they should not be cause for rejection of the wire.

Table 1 — Tolerances on nominal diameters of bright, zinc coated and plastics coated wires

Nominal wire diameter		Tolerances ($\pm$)		
Over	Up to and including	Bright wire	Zinc coated wire	Grade A and B plastics coated wire
mm	mm	mm	mm	mm
—	2.36	0.03	0.05	All sizes
2.36	3.15	0.05	0.08	0.05
3.15	5.00	0.05	0.10	0.05