
British Standard

Terms used in the iron and steel industry

Part 2. Glossary of terms used in classifying and
defining steel industry products by shape and dimensions

Termes utilisés dans l'industrie sidérurgique

Partie 2. Glossaire des termes utilisés pour la classification et la définition des produits
en acier par formes et dimensions

Begriffe der Stahl- und Eisenindustrie

Teil 2. Begriffe zur Klassifizierung und zur Beschreibung von Erzeugnissen der Stahlindustrie
nach Form und Abmessungen

Foreword

This Part of BS 6562 has been prepared under the direction of the Iron and Steel Standards Committee. It supersedes BS 2094 : Part 3 : 1954, BS 2094 : Part 4 : 1954 and BS 2094 : Part 8 : 1956, which are withdrawn.

This Part of BS 6562 has been prepared following the publication by the Commission of the European Communities of Euronorm 79—1982 'Definition and classification of steel products by shape and dimensions' and is technically equivalent to Part 1 of the Euronorm ('Steel industry products'), except for those definitions of Euronorm 79 : Part 1 which have not been adopted by the Statistical Office of the European Communities (SOEC). Where this is the case, the definitions adopted by SOEC have been used in the main and notes have been inserted pointing out the differences in the Euronorm classifications and definitions. Another difference from Euronorm 79 : Part 1 is the inclusion of definitions for tubes.

The definitions in this standard contain more explanatory matter than is customary in a British Standard glossary. This information has been retained (as explanatory notes) so that the text will align with that of Euronorm 79 : Part 1 wherever possible.

The term 'steel industry products' used in the title and in the text of this standard has been adopted from Euronorm 79 : Part 1 and indicates that the group of products classified and defined are the principal products obtainable from major steelworks. With four exceptions, the products classified and defined are the products included in the Treaty of Paris 1951 that set up the European Coal and Steel Community (Treaty Products). The exceptions are forged semi-finished products, forged finished products in lengths, tubes and cold rolled narrow strip less than 500 mm wide.

Part 1 of BS 6562 'Glossary of heat treatment terms' has already been published. Euronorm 79 : Part 2 'Other steel products' defines a number of non-treaty products and will be the basis of another Part of BS 6562.

In this Part of BS 6562, steel industry products are classified and defined according to:

- (a) their stage of manufacture;
- (b) their shape and dimensions;
- (c) their appearance.

NOTE 1. In all cases, dimensions given are nominal dimensions.

The products are generally classified and defined independently of their end uses or manufacturing processes but it has sometimes been necessary to make reference to these criteria.

The products classified and defined are grouped into four main categories according to their stage of manufacture:

- (1) crude products (see 100 01 to 100 03);
- (2) semi-finished products (see 200 01 to 200 10);
- (3) finished products (see 310 01 to 390 05);
- (4) end products (see 400 01 to 400 11).

A further distinction, according to stage of manufacture, is made between hot rolled finished products and cold rolled finished products.

According to surface condition, a distinction is made between products which have not undergone any surface treatment and products which have been surface treated.

Where two terms are considered equivalent, they are given together in the same type face. Alternative terms are given below the preferred term with their status indicated, e.g. 'deprecated'. These terms are not individually numbered but are included in the index with a reference to the preferred term. Defined terms used in other definitions are shown in *italics*.

NOTE 2. Appendix A is largely based on the annex to Euronorm 79—1982 and gives equivalent designations for products in German, French, Italian, Dutch and Spanish for information purposes only. Tubular products are not included in Euronorm 79—1982 but have been incorporated in appendix A of this standard.

NOTE 3. The titles of the publications referred to in this standard are listed on the inside back cover.

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

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Glossary

1 Crude products

No.	Term	Definition
100 01	crude product	Product that is either in the liquid state (<i>liquid steel</i>) or solid in the form of <i>ingots</i>. EXPLANATORY NOTES. This definition does not include products obtained by continuous casting which are classified among the <i>semi-finished products</i> in this standard because of their shape and dimensions, even though their crystalline structure is similar to that of <i>ingots</i>. In the production statistics of the European Coal and Steel Community (ECSC), continuously cast products are included with <i>ingots</i> and <i>liquid steel</i> for castings in the definition of crude products; in contrast ECSC deliveries statistics treat continuously cast products as <i>semi-finished products</i> as in this standard.
100 02	liquid steel	Steel in the liquid state ready for pouring and obtained directly from the melting of raw materials.
100 03	ingot	Solid product obtained by pouring <i>liquid steel</i> into a mould of a shape appropriate to the subsequent processing into <i>semi-finished products</i> or <i>finished products</i>, usually by hot rolling or forging. EXPLANATORY NOTES. The shape generally resembles a truncated pyramid or truncated cone; the side surfaces may be corrugated and the corners more or less rounded. Depending on their subsequent conversion requirements, and without altering their classification as ingots, they may: (a) have been totally or partially dressed, for example by tool or torch, to remove surface defects; or (b) have been shortened (top or bottom cropping) or have been cut into lengths to facilitate the envisaged conversion; or (c) have undergone both operations. According to the cross section they are classified as ingots or slab ingots, as follows. (1) Ingots have a cross section which may be square, rectangular (the width being less than twice the thickness), polygonal, round, oval or shaped according to the profile to be rolled. (2) Slab ingots have rectangular cross section, the width being equal to or greater than twice the thickness. Ingots produced by the vacuum arc or electroslag process are obtained by melting steel electrodes which have previously been cast, forged or rolled.

2 Semi-finished products

200 01	semi-finished product	Product obtained by continuous casting, continuous casting and rolling or by rolling or forging of <i>ingots</i> and generally intended for conversion into <i>finished products</i> by rolling or forging. EXPLANATORY NOTES. The cross section of semi-finished products can be of various shapes. Most of the products are defined by 200 02 to 200 10 but there are others including those of polygonal cross section. The cross-sectional dimensions are constant along the length with tolerances usually wider than those of the corresponding <i>finished products</i> and the corners more or less rounded.
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No.	Term	Definition
200 01 (concluded)		The side faces are sometimes slightly convex or concave and may retain rolling or forging marks, except when they are partially or totally dressed, for example, by tool, torch or grinding. Forged semi-finished products are not included in the ECSC Treaty.
200 02	square bloom	<i>Semi-finished product</i> with sides generally greater than 120 mm.
200 03	square billet	<i>Semi-finished product</i> with sides generally equal to or greater than 50 mm and less than or equal to 120 mm. EXPLANATORY NOTE. The designations 'blooms' and 'billets' originate from the time when the type of mill on which each of these products was rolled depended essentially on the cross section of the product to be reduced. Today, blooms can be rolled on so called billet mills and vice versa.
200 04	rectangular bloom	<i>Semi-finished product</i> with cross-sectional area greater than 14 400 mm ² and with a ratio of width to thickness greater than 1:1 and less than 2:1.
200 05	rectangular billet	<i>Semi-finished product</i> with cross-sectional area equal to or greater than 2500 mm ² and less than or equal to 14 400 mm ² and with a ratio of width to thickness greater than 1:1 and less than 2:1.
200 06	slab	<i>Semi-finished product</i> of thickness equal to or greater than 50 mm and with a width to thickness ratio equal to or greater than 2:1.
200 07	flat slab	<i>Slab</i> with a width to thickness ratio greater than 4:1.
200 08	sheet bar	<i>Semi-finished product</i> of width equal to or greater than 150 mm and of a thickness greater than 6 mm and less than 50 mm.
200 09	round billet	<i>Semi-finished product</i> with diameter equal to or greater than 75 mm. EXPLANATORY NOTE. Round billets are not defined or classified as <i>semi-finished products</i> in Euronorm 79 : Part 1—1982.
200 10	blanks for sections	<i>Semi-finished products</i> intended for the manufacture of sections and preformed for that purpose. The cross-sectional area of these products is generally greater than 2500 mm ² .

3 Finished products

31 General

310 01	finished product	Product that is generally manufactured by rolling and normally not further hot worked in the steelworks. EXPLANATORY NOTE. The cross section is constant. This is usually defined by a product standard which fixes the normal size ranges and the tolerances on shape and dimensions. The surface is generally smooth but reinforcing bars or floor plates, for example, may have a regularly raised or indented pattern.
310 02	hot rolled finished product	Product generally obtained by hot rolling of <i>semi-finished products</i> and more rarely by hot rolling of <i>crude products</i> .
310 03	cold rolled finished product	Product generally obtained by cold rolling of <i>hot rolled finished products</i> .

No.	Term	Definition
310 04	product not surface treated	Product that has not undergone any surface treatment other than a simple protective coating against corrosion or mechanical damage in handling or storage or to facilitate its use. EXPLANATORY NOTE. The simple protective coating may be produced, for example, by one of the following methods. (a) Passivation (with chromic or phosphoric acid). The product is electrochemically or chemically coated with a layer of chromate or phosphate. As distinct from surface treatment by chromating or phosphating, the layer deposited is so thin as to be hardly discernible by optical means (7 mg/m² to 10 mg/m² per side). (b) Application of an organic coating. The coating itself offers no protection against corrosion but serves as a surface preparation for the subsequent application of other undercoats or coatings forming part of an anti-corrosion system. (c) Application of protective films, e.g. adhesive coating, adhesive paper, lacquer. (d) Application of a film of grease, oil, tar, asphalt, lime or any soluble material.
310 05	surface treated product	Product having a permanent coating which may be applied: (a) on both sides: (1) with equal coating on each side; (2) with different thickness on each side (differential coatings); (b) on one side only.
32 Hot rolled long products		
321 Hot rolled long products (except bars and flats)		
321 01	hot rolled long product	<i>Finished product or hot rolled finished product</i>, with or without surface treatment, with one of a variety of cross sections (see 321 02 to 321 06 and 322 01 to 322 08). EXPLANATORY NOTES. Such products are generally rolled in box passes or in universal rolling mills. When the cross section is rectangular, the dimensional limitations given in 322 03 differentiate <i>flats</i> from <i>wide flats</i>. These products are mostly delivered in straight lengths, rarely in folded bundles, but never in coils. This differentiates them from <i>rod</i>.
321 02	heavy section	Product with cross section resembling the letters 'I', 'H' or 'U' (see figure 1). EXPLANATORY NOTE. Such products have the following characteristics in common: (a) the height <i>h</i> is equal to 80 mm or above; (b) the surfaces of the webs are continued by fillets to the inside faces of the flange; (c) the flanges are generally symmetrical and of equal width (<i>b</i>); (d) the outside faces of the flanges are parallel; (e) the flanges are either of decreasing thickness, from the web to the edge, called 'tapered flanged' or of uniform thickness called 'parallel flanged'.

No.	Term	Definition
321 03	I and H sections universal beam, universal column, joist, <i>deprecated</i>	<i>Heavy sections</i> with cross section resembling the letter 'I' or 'H'. EXPLANATORY NOTES. A distinction is made between: (a) parent sections, with web and flange thickness considered as standard; and (b) thin sections, manufactured with the same series of rolls as those used in producing the corresponding parent section but which, for an approximately equal web height, have thinner web and/or flanges (as a result of adjustment of the vertical or horizontal rolls); and (c) thick sections, manufactured with the same series of rolls as those used in producing the corresponding parent section but which, for an approximately equal web height, have a thicker web and/or flanges (as a result of adjustment of the vertical or horizontal rolls). Among I and H sections a further distinction is made between: (1) narrow and medium flanges (I sections) where the width of the flanges is equal to or less than $0.66 \times$ the nominal height of the section and is less than 300 mm; and (2) broad or very broad flanges (H sections and columns) where the width of the flanges is greater than $0.66 \times$ the nominal height or is 300 mm or over, except <i>sections for colliery arches</i> (sections with flanges wider than $0.8 \times$ the nominal height (I or H sections) are sometimes called 'columns'); and (3) bearing piles (I or H sections) where the thicknesses of web and flanges are identical.
321 04	U section channel	<i>Heavy section</i> with cross section resembling the letter 'U'. EXPLANATORY NOTE. In the normal series, the flanges with sloping internal faces have a maximum width (in mm) of $0.5h + 25$. There are series which are thinner or thicker than the parent series and series with parallel flanges.
321 05	section for colliery arches	<i>Heavy section</i> with cross section resembling the letter 'H' or the Greek letter 'Ω'. EXPLANATORY NOTE. In the first case, such sections are sometimes distinguished from other <i>H sections</i> by a greater slope of the face of the flanges (of about 30 %). They also have a width greater than $0.70 \times$ the nominal height.
321 06	special I, H and U sections	<i>Heavy sections</i> having a height of 80 mm or above with special features of cross section and dimensions. EXPLANATORY NOTE. These sections are generally manufactured in limited quantity. They comprise essentially <i>I, H and U sections</i> having unequal or asymmetric flanges and/or non-standard web thickness and height.

322 Hot rolled long products: bars, flats and other sections

EXPLANATORY NOTES. Rod straightened and cut to length before delivery is included in this category.

Bars intended for the reinforcement or prestressing of concrete are not included in this category (see 350 01).

The term 'merchant bar' is deprecated.

322 01	round	Bar having a circular cross section, the diameter being generally at least 8 mm.
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No.	Term	Definition
322 02	square, hexagon and octagon	Bars having a square, hexagonal or octagonal cross section. The sides are generally at least 8 mm for squares or 14 mm for hexagons and octagons.
322 03	flat	Product of rectangular cross section that is rolled on the four faces. The thickness is generally not less than 5 mm with a width not exceeding 150 mm. The thickness exceeds one-tenth of the width thus distinguishing flats from hot rolled narrow strip (see 380 06). EXPLANATORY NOTE. The Euronorm 79 : Part 1—1982 definition does not include the thickness/width relationship.
322 04	small U section small channel	Product with cross section resembling the letter 'U' and height h less than 80 mm (see figure 1).
322 05	angle	Product with cross section resembling the letter 'L'. EXPLANATORY NOTE. The classification into equal or unequal angles depends on the ratio of the flange widths. The corners of the flanges are rounded.
322 06	T section with equal flanges	Product with cross section resembling the letter 'T' and with equal flanges. EXPLANATORY NOTE. The corners are rounded and the flanges and web are slightly tapered.
322 07	bulb flat	Product with generally rectangular cross section with a bulge along the full length of a longitudinal edge of one of the wider surfaces and a width generally less than 430 mm.
322 08	special sections	Products with special cross sections. EXPLANATORY NOTE. This includes: (a) small <i>I and H sections</i> of height h less than 80 mm; (b) products rolled in lengths usually of small cross section or of very special shape and generally rolled in limited quantities (other than any products referred to in 321 02 to 321 06 and 322 01 to 322 07). This includes, in particular, trapezoids, hollow bits for mine drills, bars for grooved springs, semi-rounds and half flat semi-rounds, Z sections, T sections with unequal flanges, square-edged L, U and T sections.

33 Finished products forged in lengths

330 01	finished products forged in lengths	Products generally formed by forging and not the subject of further hot working in steelworks. EXPLANATORY NOTE. This definition includes certain long products especially <i>rounds</i> and <i>squares</i> . These products show the characteristics of <i>finished products</i> .
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34 Rod

No.	Term	Definition
340 01	rod bar in coil, wire rod, <i>deprecated</i>	Product that is hot rolled, hot wound into irregular coils and delivered in coils. EXPLANATORY NOTES. The cross section may be circular, oval, square, rectangular, hexagonal, half-round or other shape and generally has nominal dimensions of at least 5 mm. Rod has a smooth surface and is generally intended for subsequent conversion. Rod straightened and cut to length before delivery is considered to be classified with bars, flats and other sections (see 322 01 to 322 08). For rod intended for reinforcement and prestressing of concrete, see 350 01.

35 Products for reinforcement and prestressing of concrete

350 01	product for reinforcement and prestressing of concrete	Product for reinforcement or prestressing of concrete, with cross section that is nominally round and with nominal size of at least 5 mm. EXPLANATORY NOTES. Such products may be supplied: (a) as bars in lengths with a smooth surface; (b) as bars in lengths with a deformed surface; (c) as <i>rod</i> in coils with a smooth surface; (d) as <i>rod</i> in coils with a deformed surface. Products supplied in lengths or coils may have undergone a controlled deformation, e.g. drawing or twisting about their longitudinal axis. Products supplied in coils are considered by the SOEC to be within its definition of <i>rod</i>.
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36 Railway materials

360 01	railway materials	Products intended to be used in the construction of railway tracks or other systems of rails. EXPLANATORY NOTES. This includes: (a) hot rolled products used in the construction of railway tracks, e.g. rails, sleepers, fish plates, sole and tie plates, base plates; (b) hot rolled products of a similar shape and use such as: (1) crane rails; (2) live conductor rails; (3) grooved rails; (4) rails for switches and crossings; (5) special rails, e.g. guide rails, brake rails; (6) bridge rails.
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