

Steel strip intended for the manufacture of springs —

Part 4: Specification for martensitic and austenitic stainless steel

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Cooperating organizations

The Iron and Steel Standards Committee, under whose direction this British Standard was prepared, consists of representatives from the following:

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- British Constructional Steelwork Association
- British Internal Combustion Engine Manufacturers' Association*
- British Ironfounders' Association
- British Railways Board*
- British Shipbuilders
- British Steel Industry*
- British Steel Industry — Wire Section
- Concrete Society Limited
- Council of Ironfoundry Associations
- Department of Industry (National Physical Laboratory)
- Electricity Supply Industry in England and Wales
- Engineering Equipment Users' Association
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- Greater London Council
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- Society of Motor Manufacturers and Traders Limited*
- Steel Casting Research and Trade Association
- Water-tube Boilermakers Association

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

- Agricultural Machine Parts Export Association
- Cold Rolled Sections Association
- Spring Research and Manufacturers' Association
- Individual expert

This British Standard, having been prepared under the direction of the Iron and Steel Standards Committee, was published under the authority of the Executive Board and comes into effect on 30 January 1981

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Contents

	Page
Cooperating organizations	Inside front cover
Foreword	ii
1 Scope	1
2 References	1
3 Definitions	1
4 Designation systems	2
5 Form of supply	3
6 Information to be supplied by the purchaser	3
7 Steelmaking process	3
8 Chemical composition	3
9 Mechanical properties	5
10 Edge conditions	5
11 Skin pass	6
12 Surface finish	6
13 Dimensional tolerances	6
14 Freedom from defects	8
15 Non-metallic inclusions	8
16 Number of tests	8
17 Hardness test	9
18 Bend test	9
19 Retests	10
20 Test certificates	10
21 Inspection	10
22 Packaging and identification	11
Figure 1 — Edge camber	8
Figure 2 — Flatness of strip	9
Figure 3 — Bend test A	10
Figure 4 — Bend test B	11
Table 1 — Chemical composition	4
Table 2 — Permitted variation of product analysis from specified range of cast analysis	4
Table 3 — Hardness values	5
Table 4 — Bend test requirements	5
Table 5 — Tolerances on thickness	6
Table 6 — Tolerances on width in the mill edge condition (E2)	7
Table 7 — Tolerances on width in the sheared or slit edge condition (E3) for all widths up to and including 450 mm; also in the dressed edge condition (E1), where available	7
Table 8 — Tolerances on length of cut lengths	7
Table 9 — Maximum edge camber	7
Table 10 — Maximum deviations from flatness of cut lengths	9
Publications referred to	Inside back cover

Foreword

BS 5770, prepared under the direction of the Iron and Steel Standards Committee, is a revision and extension of the requirements for carbon steel spring materials in the 1956 edition of BS 1449 “*Steel plate, sheet and strip*” which, for the time being, will continue to apply to flat wire for springs. The revision of the requirements for these steels, which have been extended by the introduction of requirements for low alloy and stainless steels, has been prepared under the new number BS 5770 to avoid confusion with BS 1449 in regard to designations and tolerances on dimensions and also to reflect the enlargement of the range of materials specified for use in the manufacture of springs.

BS 5770 comprises four Parts as follows:

- *Part 1: Specification for hot rolled carbon and low alloy steel;*
- *Part 2: Specification for cold rolled carbon and low alloy steel;*
- *Part 3: Specification for pre-hardened and tempered carbon steel;*
- *Part 4: Specification for martensitic and austenitic stainless steel.*

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, 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 Part of this British Standard specifies requirements for cold rolled martensitic and austenitic stainless steel strip intended for the manufacture of springs.

It covers material from 0.1 mm to 5 mm ¹⁾ inclusive in thickness and from 3.15 mm to 450 mm inclusive in width.

It covers austenitic steels 301S21, 302S25 and 316S16 supplied in one of five temper rolled conditions, having any one of four edge conditions and with any one of three surface finishes.

It also covers martensitic steels 420S29 and 420S45 supplied in one of two conditions, having one of four edge conditions, and a single surface finish.

This Part covers strip supplied in any one of five forms.

2 References

The titles of the publications referred to in this Part of this British Standard are listed on the inside back cover.

3 Definitions

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

3.1 Edge conditions

3.1.1

dressed edge (E1)

the edge obtained when the sheared, slit or mill edge has been removed to produce a regular form, usually square or round

3.1.2

mill edge (E2)

the natural edge produced when strip is rolled

3.1.3

sheared or slit edge (E3)

the edge of strip that has been cut to size by guillotine or rotary cutters

3.1.4

sheared or slit and de-burred edge (E5)

an approximately square edge produced by rolling or filing sheared or slit strip, for the purpose of removing the shearing or slitting burr only

3.2 Surface finish

3.2.1

bright finish (BR)

a finish produced by rolling scale free strip between plain smooth rolls. A high degree of lustre is not implied

3.2.2

matt finish (M)

a finish produced by rolling bright strip through specifically roughened rolls as a last operation. This condition has a low degree of lustre

3.2.3

extra bright finish (EBR)

a finish produced by rolling bright strip through specifically polished rolls as a last operation. This condition has a high degree of lustre

¹⁾ 3.55 mm for the austenitic steels 301S21, 302S25 and 316S16.

3.2.4

dull finish (D)

a finish produced by softening cold rolled strip and removing the resultant scale by acid pickling. The surface is normally smooth but has a very low lustre. In the skin passed condition the lustre is lightly improved by cold rolling

4 Designation system

4.1 Symbols for material condition

4.1.1 Grades 301S21, 302S25 and 316S16. The following symbols shall be used to denote the material conditions:

TR 230 = temper rolled to 230–279HV,

TR 280 = temper rolled to 280–329HV,

TR 330 = temper rolled to 330–379HV,

TR 380 = temper rolled to 380HV min.,

TR 500 = temper rolled to 500HV min. (only available for steel 301S21).

NOTE Attention is drawn to the fact that these temper rolled conditions may not be available in all combinations of thickness and width.

4.1.2 Grades 420S29 and 420S45. The following symbols shall be used to denote the material conditions:

A = annealed,

SP = skin passed.

4.2 Symbols for surface finishes

4.2.1 Grades 301S21, 302S25 and 316S16. The following symbols shall be used to denote the surface finishes:

BR = bright finish,

M = matt finish,

EBR = extra bright finish.

4.2.2 Grades 420S29 and 420S45. The following symbol shall be used to denote the surface finish:

D = dull finish.

4.3 Symbols for edge conditions. The following symbols shall be used to denote the edge conditions:

E1 = dressed edge,

E2 = mill edge,

E3 = sheared or slit edge,

E5 = slit and de-burred edge.

4.4 Symbols for tolerances on thickness. The following symbols shall be used to denote the thickness tolerances (see 13.1 and Table 5);

T1 = normal tolerance,

T2 = precision tolerance.

4.5 Symbols for tolerances on edge camber. The following symbols shall be used to denote the edge camber tolerances (see 13.4 and Table 9):

C1 = normal tolerance,

C2 = precision tolerance.