EN 10025: 2004 Grade Designation Systems

EN 10025: 2004 is the new European standard for structural steel. The following explains new grades, properties and nearest equivalent grades from former standards including EN 10025: 1993. The grade designation system is also explained.

History of the standard

The European Committee for Iron and Steel Standardisation is responsible for producing the European Standards (ENs) for structural steels. The first of these standards, EN 10025: 1990, partly superseding BS 4360: 1986, which was reissued as BS 4360: 1990.

In 1993, a second edition of EN 10025 was made available together with EN 10113: Parts 1, 2 & 3 and EN 10155. In June 1994, EN 10210: Part 1 was published and at the same time BS 4360 was officially withdrawn. The balance of the BS 4360 steels not affected by these ENs were re-issued in new British Standards BS 7613 and BS 7668. In 1996, with the publication of EN 10137, BS 7613 was withdrawn. BS 7668 will remain until an EN for atmospheric corrosion resistant hollow sections is available. In 2004 the standard EN 10025 was revised to address the provisions of EU Construction Products Directive (89/106/EEC). It is now published in six parts to bring together almost all the Structural Metallic Products' into one comprehensive standard.

The new standard EN 10025: 2004

The new standard is published in six parts and draws together earlier standards to produce one standard for the majority of structural steel products. The parts are:

Part 1 – General technical delivery conditions.

Part 2 – Technical delivery conditions for non-alloy structural steels.
Supersedes EN 10025: 1993

Part 3 – Technical delivery conditions for normalised/normalized rolled weldable fine grain structural steels.
Supersedes EN 10113: Parts 1 & 2: 1993

Part 4 – Technical delivery conditions for thermomechanically rolled weldable fine grain structural steels.
Supersedes EN 10113: Parts 1 & 3: 1993

Part 5 – Technical delivery conditions for structural steels with improved atmospheric corrosion resistance – also known as weathering steels.
Supersedes EN 10155: 1993

Part 6 – Technical delivery conditions for flat products of high yield strength structural steel in the quenched and tempered condition.
Supersedes EN 10137: Parts 1 & 2: 1996

The designation systems used in the new standard are similar but not identical to EN 10025: 1993 and very different to the familiar BS 4360 designations so the guide below has been prepared to assist purchasers, specifiers, designers and users of steel.

Symbols used in EN 10025: Part 2: 2004

Non-alloy structural steels

S… Structural Steel

E… Engineering Steel

.235… Minimum yield strength (R_{eH}) in MPa @ 16mm

..JR... Longitudinal Charpy V-notch impacts 27 J @ +20°C

..JO… Longitudinal Charpy V-notch impacts 27 J @ 0°C

..J2... Longitudinal Charpy V-notch impacts 27 J @ -20°C

..K2.. Longitudinal Charpy V-notch impacts 40 J @ -20°C

…+AR Supply condition as rolled

…+N Supply condition normalised or normalised rolled

Customer Options

…C.. Grade suitable for cold forming

…Z.. Grade with improved properties perpendicular to the surface

Examples: S235JR+AR, S355K2C+N

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EN 10025: 2004 Grade Designation Systems

Symbols used in EN 10025: Part 3: 2004

Normal/normalised rolled weldable fine grain structural steels

S… Structural Steel

.275. Minimum yield strength (R_{eH}) in MPa @ 16mm

..N.. Longitudinal Charpy V-notch impacts at a temperature not lower than -20°C

.NL.. Longitudinal Charpy V-notch impacts at a temperature not lower than -20°C

Customer Options

..Z… Grade with improved properties perpendicular to the surface

Examples: S275N, S420NL Z35

Symbols used in EN 10025: Part 4: 2004

Thermomechanically rolled weldable fine grain structural steels

S… Structural Steel

.275. Minimum yield strength (R_{eH}) in MPa @ 16mm

..M.. Longitudinal Charpy V-notch impacts at a temperature not lower than -20°C

.ML.. Longitudinal Charpy V-notch impacts at a temperature not lower than -20°C

Customer Options

..Z… Grade with improved properties perpendicular to the surface

Examples: S355M, S460ML Z25

Symbols used in EN 10025: Part 5: 2004

Structural steels with improved atmospheric corrosion resistance – also known as weathering steels

S… Structural Steel

.355.. Minimum yield strength (R_{eH}) in MPa @ 16mm

..JO… Longitudinal Charpy V-notch impacts 27 J @ 0°C

..J2... Longitudinal Charpy V-notch impacts 27 J @ -20°C

..K2.. Longitudinal Charpy V-notch impacts 40 J @ -20°C

…W… Immproved atmospheric corrosion resistance

…P.. Greater phosphorus content (grade S355 only)

…+AR Supply condition as rolled

…+N Supply condition normalised or normalised rolled

Customer Options

…Z.. Grade with improved properties perpendicular to the surface

Examples: S235JOW+AR, S355K2W+N Z25

Symbols used in EN 10025: Part 6: 2004

Flat products of high yield strength structural steels in the quenched and tempered condition

S… Structural Steel

.460... Minimum yield strength (R_{eH}) in MPa @ 16mm

..Q.. Longitudinal Charpy V-notch impacts at a temperature not lower than -20°C

..QL1.. Longitudinal Charpy V-notch impacts at a temperature not lower than -20°C

Customer Options

..Z… Grade with improved properties perpendicular to the surface

Examples: S275N, S420NL Z35

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