DILLINGER HÜTTE GTS

CUSTOMER INFORMATION

COMMENTS RELATING TO CHANGES IN EN 10025 PART 1-6, EDITION 2004
HOT ROLLED PRODUCTS OF STRUCTURAL STEELS

Revision 0, May 2005, 1+4 pages

Key words: EN 10025

The following comments have been prepared by a German technical working group of the "Walzstahlvereinigung" with contribution of Dillinger Hütte GTS. The new edition of EN 10025 was published in November 2004, and summarizes in different parts the most important steel grades used in steel construction and mechanical engineering. Thus EN 10025 (1990 + A1 1993), EN 10113 (1993), EN 10155 (1993) and EN 10137-2 (1995) have all been replaced. This new edition satisfies the requirements for a Harmonized European Standard and thus is the prerequisite for the implementation of the European Construction Products Directive on relevant steel products. It forms the basis for a CE conformity proof. We refer to our special customer information.

These comments are intended for our customers in the fabrication and distribution sector.

You will find the main changes compared to the replaced standards in the enclosed annex or on www.heavyplate.com.

We hope to contribute to the prompt application of this standard.

For further information, we are entirely at your disposal.

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Changes in the EN Standards for hot rolled products of structural steels
New edition November 2004

With the exception of part 6 only covering flat products, the new EN 10025 is valid for long and flat products.

Preceding EN standard	new EN standard
EN 10025:1990+A1:1993	EN 10025-2:2004-11
EN 10113-2:1993	EN 10025-3:2004-11
EN 10113-3:1993	EN 10025-4:2004-11
EN 10155:1993	EN 10025-5:2004-11
EN 10137-2:1995	EN 10025-6:2004-11
General Delivery Conditions for all parts of the new standard:	EN 10025-1:2004-11

With the exception of a few remarks concerning long products**,** the following comments are **covering flat products, only.** Consequently, no further reference is made to the new steel grade S450J0 according to EN 10025 part 2, which was defined for long products, only.

The following comments are covering the **basic rules of the standard** but not all available **options**. All indicated limits for chemical composition refer to the cast analysis.

Note: The transition to the new short designations of EN 10025:2004-11 can lead to changes concerning the material numbers.

Note: As in all new EN standards the unit N/mm² is now replaced by MPa. This means:

1 MPa = 1 N/mm²

EN 10025-1:2004-11
Hot rolled products of structural steels
Part 1: General technical delivery conditions

This part summarizes all **general requirements of the different parts of the preceding standards:** EN 10025, EN 10113-1 (on behalf of EN 10113-2 and EN 10113-3), EN 10155 and EN 10137-1 (on behalf of EN 10137-2).

The European Commission has introduced the CPD (Construction Products Directive 89/106/EEC). In order to meet the essential requirements of the CPD, **annexes B** and **ZA**, by which the new EN 10025 will become **a Harmonized European Standard,** have been added to part 1 of EN 10025.

Annex B (normative) relates to the evaluation of conformity pointed out in paragraph 14 of the standard.

Annex ZA (informative) contains:
1. Elements of the CPD which are relevant to EN 10025.
2. The rules steel manufacturers have to respect for the attestation of the conformity of products.

Note: In the future all structural steel products defined in the CPD will have to fulfil the requirements of Harmonized Standards and will have to be delivered with **CE-marking**. The delivery with CE-marking has to be explicitly ordered. Proof is furnished in an accompanying document.

EN 10025-2:2004-11
Hot rolled products of structural steels
Part 2: Technical delivery conditions for non-alloy structural steels

Main changes compared to the preceding EN 10025:

1. **Steel production** by the open hearth (Siemens-Martin) process is no longer permitted.
   Rimming steel is not allowed either. Consequently, the designations for this pouring practice (G1 and G2 for steel grade S235JR) are no longer applicable.

2. The **delivery condition** is generally at the discretion of the manufacturer if no specific delivery condition is ordered. This means that the steel manufacturer can deliver in the following conditions:
   - **as rolled** (+ AR) or
   - **normalized** (+N, normalized or normalizing rolled)

   The delivery condition has to be mentioned in the certificate (Example: S355J2+N).
   Note: Only for long products and continuously rolled products is TM (+M, thermomechanically rolled) a permitted delivery condition .
   Besides that freedom for the manufacturer the purchaser has the option to order the steel product in a normalized or as rolled condition. In that case the symbol “+N” or “+AR” has to be indicated together with the steel grade at the time of order. The product has to be marked with “+N” or “+AR” respectively. Depending on steel grade and plate thickness technical restrictions may prevent from a realisation of this requirement. It is recommended**,** to inquire of the steel manufacturer about this respect.

   An option to order the TM delivery condition does not exist.

   With the now "speaking" delivery condition designations the former designations “G3” or “G4” respectively are obsolete.

3. The **steel grade S185** and the **engineering steels E295, E335 and E360** which have no toughness values defined are neither allowed to be labelled with CE marking nor may be used in corresponding steel constructions (as in the past). Therefore the comments on part 1 are not valid.

4. For steel grades intended for **galvanising** three classes with limited Si contents (≤ 0.03 %, 0.14 – 0.25 % and ≤ 0.35 %) have been introduced. Ordering the first two classes will lead to an increase of the allowable carbon equivalent (CEV).

5. **Maximum values for the carbon equivalent CEV** are now mandatory and no longer optional.

6. The maximum allowable **Cu content** has been increased to 0.55 % (compared to the ancient 0.40 % limit for distinction between alloyed and unalloyed steels according to EN 10020).

7. The maximum values for **P and S** have been reduced for all structural steel grades.

8. For all steel grades of the J2 or K2 type the **maximum plate thickness** has been increased from 250 mm to 400 mm, for S185 from 100 mm to 250 mm. The definition of steel grades having an improved suitability for cold forming is increased from 20 mm to 30 mm.

9. For the steel grades **S355** the **minimum tensile strength** has been reduced from 490 to **470 MPa** for the thickness range from 3 to 100 mm in order to be in line with the normalized fine grain steels of part 3 and the TM rolled qualities of part 4.

   Therefore it is now possible for the design engineers to calculate up to 40 mm thickness with only one constant Rm-value of 470 MPa irrespective whether they intend to use the steel grades S355... according to EN 10025 part 2, part 3, part 4 or part 5.

10. For the steel grades S235 **the minimum tensile strength** for all thickness ranges from 3 mm upwards is increased by 10 to 20 MPa compared to the former values.

EN 10025-3:2004-11
Hot rolled products of structural steels
Part 3: Technical delivery conditions for normalized / normalized rolled weldable fine grain structural steels

Main changes compared to the preceding EN 10113-2:

1. For steel grades intended for **galvanising** three classes with limited Si contents (≤ 0.03 %, 0.14 – 0.25 % and ≤ 0.35 %) have been introduced. Ordering the first two classes will lead to an increase of the allowable carbon equivalent (CEV).

2. **Maximum values for the carbon equivalent CEV** are now mandatory and no longer optional. For the S460 grades CEV- values are now defined, too .

3. The maximum **Cu** contents have been increased from 0.35 % to 0.55 % for S275 and S355 grades and reduced from 0.70 % to 0.55 % for S420 and S460 grades.

4. The maximum values for **P and S** have been reduced.

5. The **maximum plate thickness** has been increased for the steel grades S275, S355 and S420 from 150 mm to 250 mm and for the S460 grade from 100 to 200 mm.
   For the S460 grade mechanical properties are now defined for all thickness ranges.

EN 10025-4:2004-11
Hot rolled products of structural steels
Part 4: Technical delivery conditions for thermomechanically rolled weldable fine grain structural steels

Main changes compared to the preceding EN 10113-3:

1. For steel grades intended for **galvanising** three classes with limited Si contents (≤ 0.03 %, 0.14 – 0.25 % and ≤ 0.35 %) have been introduced. Ordering the first two classes will lead to an increase of the allowable carbon equivalent (CEV).

2. **Maximum values for the carbon equivalent CEV** are now mandatory and no longer optional. For S420 and S460 grades in thicknesses greater than 40 mm CEV-values are now defined, too.

3. For all steel grades the maximum allowable **Cu** content is aligned to the steel grades in part 2 and part 3 of the standard. The maximum allowable **Ni** content now amounts to 0.50 % for S355 and to 0.80 % for S420 and S460.

4. The maximum values for **P and S** have been reduced.

5. For all qualities the **maximum plate thickness** is increased from 63 mm to 120 mm.

6. The **minimum tensile strength** values have been increased for all steel grades in thickness ranges up to 40 mm, for example to 470 MPa for S355 grades.

   Therefore it is now possible for the design engineers to calculate until 40 mm thickness with only one constant Rm-value of 470 MPa irrespective whether they intend to use the steel grades S355... according to EN 10025 part 2, part 3, part 4 or part 5.

EN 10025-5:2004-11
Hot rolled products of structural steels
Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

Main changes compared to the preceding EN 10155:

1. The **delivery condition** is generally at the discretion of the manufacturer if no specific delivery condition is ordered. That means that the steel manufacturer can deliver in the following conditions:
   - **as rolled** (+ AR) or
   - **normalized** (+N, normalized or normalizing rolled)

   The delivery condition has to be mentioned in the certificate (Example: S355J0W+N).

   Besides that freedom for the manufacturer the purchaser has the option to order the steel product in a normalized or as rolled condition. In that case the symbol "+N" or "+AR" respectively has to be indicated together with the steel grade at the time of order. The product has to be marked with "+N" or "+AR" respectively. Depending on steel grade and plate thickness technical restrictions may prevent from a realisation of this requirement. It is recommended **,** to inquire of the steel manufacturer about this respect.

   With the now "speaking" delivery condition designations the former designations "G1" and "G2" respectively are obsolete.

2. **Maximum values for the carbon equivalent CEV** are now mandatory and no longer optional.

3. The maximum values for **P and S** have been reduced (with the exception of P for the Phosphorus alloyed grades S355J0WP/J2WP).

4. The **maximum plate thickness** has been increased from 100 mm to 150 mm for all grades with the exception of the Phosphorus alloyed S355J0WP/J2WP grades which remain limited to 12 mm.

5. For S355 grades the **minimum tensile strength** values have been reduced and for S235 grades increased – same as for part 2 of the standard.

EN 10025-6:2004-11
Hot rolled products of structural steels
Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition

Main changes compared to the preceding EN 10137-2:

1. For steel grades intended for **galvanising** three classes with limited Si contents (≤ 0.03 %, 0.14 – 0.25 % and ≤ 0.35 %) have been introduced. Ordering the first two classes will lead to an increase of the allowable carbon equivalent CEV.

2. **Maximum values for the carbon equivalent CEV** are now defined and mandatory.

Note: Part 3 of the preceding EN 10137: "Delivery conditions for high yield strength steels in the precipitation hardened condition" is discontinued because of application being missing in Europe.