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SIST EN 10137-2:1997

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EUROPEAN STANDARD

EN 10137-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

September 1995

ICS 77.140.10; 77.140.50

Descriptors: iron and steel products, metal plates, wide flats, steels, structural steels, high yield strength steels, delivery conditions, quenching (cooling), tempering, chemical composition, grades, quality, classifications, designation, mechanical characteristics, inspection, tests, marking

English version

Plates and wide flats made of high yield strength structural steels in the quenched and tempered or precipitation hardened conditions - Part 2: Delivery conditions for quenched and tempered steels

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Tôles et larges plats en aciers de construction à haute limite d'élasticité à l'état trempé et revenu ou durci par précipitation - Partie 2: Conditions de livraison des aciers à l'état trempé et revenu

Blech und Breitflachstahl aus Baustählen mit höherer Streckgrenze im vergüteten oder im ausscheidungsgehärteten Zustand - Teil 2: Lieferbedingungen für vergütete Stähle

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by the Technical Committee ECISS/TC 10 "Structural steel - Qualities", the secretariat of which is held by NNI.

This European Standard shall be given the status of a National Standard, either by publication of an identical text or by endorsement, at the latest by Mars 1996, and conflicting national standards shall be withdrawn at the latest by Mars 1996.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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1 Scope

Part 2 of this European Standard, in addition to Part 1, specifies requirements for plates and wide flats of high yield strength alloy special steels.

The grades and qualities are given in tables 1 (chemical composition) and 2 and 3 (mechanical properties) and are supplied in the quenched and tempered condition as given in 7.2.

The steels specified in this European Standard are applicable to hot-rolled plates and wide flats with a minimum nominal thickness of 3 mm and a maximum nominal thickness ≤ 150 mm for grades S460, S500, S550, S620 and S690, a maximum nominal thickness ≤ 100 mm for grade S890 and a maximum nominal thickness ≤ 50 mm for grade S960, in steels which, after quenching and tempering, have a specified minimum yield strength of 460 N/mm² to 960 N/mm².

2 Normative references

The normative references as given in EN 10137-1 shall apply.

3 Definitions

The definitions given in EN 10137-1 shall apply.

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4 Information to be supplied by the purchaser

4.1 General

The information to be supplied by the purchaser shall be in accordance with EN 10137-1.

4.2 Options

The options given in EN 10137-1 and clause 11 shall apply.

5 Dimensions, mass and tolerances

5.1 Dimensions and tolerances

The dimensions and tolerances shall be in accordance with EN 10137-1.

5.2 Mass of steel

The calculated mass of steel shall be determined in accordance with EN 10137-1.

6 Classification and designation

6.1 Classification

6.1.1 Classification

The steel grades of Part 2 of this European Standard are alloy special steels according to EN 10020.

6.1.2 Qualities

All the grades in Part 2 of this European Standard can be delivered in the following qualities as specified at the time of the enquiry and order:

- (no symbol) with specified minimum values of impact energy at temperatures not lower than - 20 °C;
- L with specified minimum values of impact energy at temperatures not lower than - 40 °C;
- L1 with specified minimum values of impact energy at temperatures not lower than - 60 °C (with the exclusion of S960).

6.2 Designation

The designation shall comply with EN 10137-1.

NOTE: For a list of corresponding former national designations and the former designation from EURONORM 137 (1983) see Annex A, table A.1.

7 Technical requirements

7.1 Steel manufacturing process

The steel manufacturing process shall be in accordance with EN 10137-1. See clause 11, option 1.

7.2 Delivery condition

Unless otherwise agreed at the time of the enquiry and order the products shall be supplied in the quenched and tempered condition (Q).

NOTE: Direct quenching after hot-rolling followed by tempering is considered equivalent to conventional quenching and tempering.

7.3 Chemical composition

7.3.1 The chemical composition determined by ladle analysis shall comply with the specified values of table 1.

7.3.2 The values for permissible deviations of the product analysis from the specified limits of the ladle analysis are as specified in table 1 of EN 10137-1. The manufacturer shall inform the purchaser at

the time of the enquiry and order which of the alloying elements appropriate to the steel grade required will be deliberately added to the material to be delivered.

7.3.3 The product analysis shall be carried out when specified at the time of the enquiry and order.
See clause 11, option 2.

7.4 Mechanical properties

7.4.1 General

Under the inspection and testing conditions as specified in clause 8 and in the delivery condition as specified in 7.2 the mechanical properties shall comply with the values given in tables 2 and 3.

7.4.2 Impact energy

The verification of the impact energy values shall be carried out in accordance with EN 10137-1.

See clause 11, option 3.

See clause 11, option 4.

7.4.3 Improved deformation properties perpendicular to the surface

If agreed at the time of the enquiry and order the requirements of EN 10137-1 shall apply.
See clause 11, option 5.

7.5 Technological properties

7.5.1 Weldability

Weldability shall be in accordance with EN 10137-1.

7.5.2 Formability

NOTE: Recommendations regarding hot and cold forming are laid down in ECSC IC 2.

7.5.2.1 Hot forming

The products shall comply with tables 2 and 3 if hot forming is carried out after delivery (see 7.4.1). Hot forming is only permitted up to the stress relief annealing temperature. For higher temperatures the manufacturer shall be consulted.

7.5.2.2 Cold forming

If specified at the time of the enquiry and order plates and wide flats ordered and supplied in the quenched and tempered condition with a nominal thickness ≤ 16 mm are suitable for flanging without cracking with the indicative values for the inside bend radii for cold forming as given

in Annex B.
See clause 11, option 6.

7.5.3 Other requirements

If specified at the time of the enquiry and order the grade S460 shall be suitable for hot-dip zinc-coating and shall comply with the relevant product quality requirements.
See clause 11, option 7.

7.6 Surface finish

The surface finish shall be in accordance with EN 10137-1. Unless otherwise agreed previously with the purchaser repair by welding is not allowed. If agreed the welding shall be performed before final heat treatment and according to a qualified procedure.
See clause 11, option 14.

7.7 Internal soundness

The internal soundness shall be in accordance with EN 10137-1.
See clause 11, option 8.

8 Inspection and testing

8.1 General

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The products shall be supplied in accordance with 8.1 of EN 10137-1.
See clause 11, option 9.

8.2 Sampling

Sampling shall be in accordance with EN 10137-1.

8.3 Test units

The test unit shall be in accordance with EN 10137-1.
See clause 11, option 10.
See clause 11, option 11.

8.4 Verification of chemical composition

The verification of the chemical composition shall be in accordance with EN 10137-1.
See clause 11, option 2.

8.5 Preparation of samples and test pieces

The preparation of samples and test pieces shall be in accordance with EN 10137-1.