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Structural steels with improved atmospheric corrosion resistance

*Aciers de construction à résistance améliorée à la corrosion
atmosphérique*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4952 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 3, *Steels for structural purposes*.

This third edition cancels and replaces the second edition (ISO 4952:2003), which has been technically revised.

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Structural steels with improved atmospheric corrosion resistance

1 Scope

1.1 This International Standard specifies the chemical and mechanical characteristics, the methods of manufacture, the acceptance conditions and the marking of structural steel products with improved atmospheric corrosion resistance.

This International Standard applies to plates hot-rolled on reversing mills, having a thickness of 4 mm and over, wide flats, bars, and hot-rolled sections, generally used in the delivery condition and which, as a rule, form part of the bolted, riveted or welded structures in metal constructions¹⁾ and which have an improved atmospheric corrosion resistance.

1.2 This International Standard does not include the following steels, certain of which are covered by other International Standards:

- general-purpose structural steels (ISO 630);
- steels for boilers and pressure purposes (ISO 9328-2);
- steels for heat treatment;
- continuously hot-rolled steel sheet of structural quality with improved atmospheric corrosion resistance (ISO 5952);
- steel plates for forming and deep drawing.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

ISO 377, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing*

ISO 404:1992, *Steel and steel products — General technical delivery requirements*

ISO 2566-1, *Steel — Conversion of elongation values — Part 1: Carbon and low alloy steels*

1) For precautions to be taken when welding, the guide for the welding and weldability of C-Mn and C-Mn micro-alloy steels published by Sub-commission IX-G of the International Welding Institute may be helpful (document IIS/IIW 843-87), as well as the notes given in Annex C of this International Standard.

ISO 4948-1, *Steels — Classification — Part 1: Classification of steels into unalloyed and alloy steels based on chemical composition*

ISO 6892, *Metallic materials — Tensile testing at ambient temperature*

ISO/TR 9769, *Steel and iron — Review of available methods of analysis*

ISO 10474, *Steel and steel products — Inspection documents*

ISO 14284, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition*

3 Terms and definitions

For the purposes of this document the following term and definition apply.

3.1 steel with improved atmospheric corrosion resistance
steel in which a certain number of alloying elements, such as P, Cu, Cr, Ni, etc., have intentionally been added in order to increase its resistance to atmospheric corrosion, by forming an auto-protective oxide layer of the base metal

4 General requirements

4.1 Steelmaking process

Unless otherwise agreed at the time of order, the steelmaking method is left to the discretion of the manufacturer; however, it shall be stated to the purchaser if so requested at the time of delivery.

4.2 Method of deoxidation

With the exception of qualities A and B, the steels shall be from casts with the addition of elements capable of producing a fine grain.

Steel of qualities A and B shall be supplied as non-rimming steel.

4.3 Delivery condition

4.3.1 The products are usually delivered as-rolled, except for S415W and S460W, which are delivered in the thermomechanically rolled or quenched and tempered conditions. Other delivery conditions may be agreed at the time of the order.

4.3.2 Flat products of quality D are delivered as-rolled, normalized (normalizing rolling), in the thermomechanically rolled, quenched and tempered condition, or in an equivalent condition.

4.4 Surface condition

The products shall have a smooth surface corresponding to the rolling process used; they shall not have any defects that are prejudicial to their subsequent processing or appropriate use.

By agreement, alternative requirements may be specified such as ISO 7788 for plates and wide flats, ISO 20723 for sections and ISO 9443 for bars. Other and/or more requirements than those reported in International Standards may be specified as well.