

INTERNATIONAL STANDARD

ISO 11692

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Ferritic-pearlitic engineering steels for precipitation hardening from hot-working temperatures

Aciers pour construction mécanique de type ferrite-perlite apte au durcissement par précipitation à partir des températures de formage à chaud



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Documents



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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.

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.

International Standard ISO 11692 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 4, *Heat treatable and alloy steels*.

Annex A forms an integral part of this International Standard. Annex B is for information only.

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Ferritic-pearlitic engineering steels for precipitation hardening from hot-working temperatures

1 Scope

1.1 This International Standard specifies the technical delivery requirements for billets and bars made of the alloyed steels listed in tables 3 and 5. The steel grades listed in table 3 are characterized by chemical composition requirements and are intended for hot forging. The steel grades listed in table 5 are characterized by tensile requirements and are intended for machining. The products are supplied in the heat-treatment conditions given in table 1, lines 2 to 4, and in one of the surface conditions given in table 2.

1.2 In special cases, variations in these technical delivery requirements or additions to them may form the subject of an agreement at the time of enquiry and order (see annex A).

1.3 In addition to this International Standard, the general technical delivery requirements of ISO 404 are applicable.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 377-1:1989, *Selection and preparation of samples and test pieces of wrought steels — Part 1: Samples and test pieces for mechanical test.*

ISO 377-2:1989, *Selection and preparation of samples and test pieces of wrought steels — Part 2: Samples for the determination of the chemical composition.*

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

ISO 1035-1:1980, *Hot-rolled steel bars — Part 1: Dimensions of round bars.*

ISO 1035-3:1980, *Hot-rolled steel bars — Part 3: Dimensions of flat bars.*

ISO 1035-4:1982, *Hot-rolled steel bars — Part 4: Tolerances.*

ISO 4948-1:1982, *Steels — Classification — Part 1: Classification of steels into unalloyed and alloy steels based on chemical composition.*

ISO/TR 4949:1989, *Steel names based on letter symbols.*

ISO 6506:1981, *Metallic materials — Hardness test — Brinell test.*

ISO 6892:1984, *Metallic materials — Tensile testing.*

ISO 6929:1987, *Steel products — Definitions and classification.*

ISO 9443:1991, *Heat-treatable and alloy steels — Surface quality classes for hot-rolled round bars and wire rods — Technical delivery conditions.*

ISO/TR 9769:1991, *Steel and iron — Review of available methods of analysis.*

ISO 10474:1991, *Steel and steel products — Inspection documents.*

3 Definitions

For the purposes of this International Standard, the definitions for the product forms given in ISO 6929 apply. The term “alloyed steel” is as defined in ISO 4948-1.

4 Ordering and designation

The designation of the product in an order shall cover the following.

- a) The designation of the product form (bar, billet) followed by
 - either the designation of the dimensional standard and the dimensions and tolerances selected from it (see 5.6); or
 - the designation of the drawing or any other document covering the dimensions and tolerances required for the product.
- b) If a surface condition other than “hot worked” or a special surface quality is required
 - the surface condition (see table 2), and
 - the surface quality (see 5.5).
- c) A description of the steel, comprising
 - 1) a reference to this International Standard;
 - 2) the designation of the steel type given in table 3 or 5;
 - 3) the standard designation for the required type of inspection document (see ISO 10474), if an inspection document is required;
 - 4) the symbol and, where necessary, the details of this supplementary requirement (see annex A), if any supplementary requirement shall be complied with.

EXAMPLE

The following are to be ordered.

Hot-rolled round bars

- in accordance with ISO 1035-1;
- with a nominal diameter of 25,0 mm;

- a nominal length of 8 000 mm;
- a tolerance on diameter of $\pm 0,25$ mm (= class S of ISO 1035-4);
- a tolerance on length of $+100^0$ mm (= class L2 of ISO 1035-4);
- all other tolerances as given in ISO 1035-4, for normal cases.

Surface

- as hot worked (symbol HW, see table 2).

Steel

- in accordance with this International Standard, type 38 MnVS 6 (see table 3);
- heat-treatment condition: untreated (symbol TU, see table 1);
- with an inspection certificate 3.1B (see ISO 10474).

Designation

Rounds ISO 1035-1 - 25,0 S × 8 000 L2
Surface HW
Steel ISO 11692 - 38 MnVS 6 TU - 3.1.B

5 Requirements

5.1 Manufacturing process

5.1.1 General

The manufacturing process of the steel and the products is left to the discretion of the manufacturer, with the restrictions given in 5.1.2 to 5.1.4.

5.1.2 Deoxidation

All steels shall be fully killed.

5.1.3 Heat-treatment condition and surface condition on delivery

5.1.3.1 Heat-treatment condition

Products of steels listed in table 3 shall be delivered in the untreated condition or in the condition “treated to improve shearability”. Products of steels listed in table 5 shall be delivered in the precipitation-hardened condition.