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Steel names based on letter symbols

Désignations des aciers fondées sur des lettres symboles



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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.

The main task of ISO technical committees is to prepare International Standards. In exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the necessary support within the technical committee cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development, requiring wider exposure;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports are accepted for publication directly by ISO Council. Technical reports of types 1 and 2 are subject to review within three years of publication, to decide if they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide is considered no longer valid or useful.

ISO/TR 4949, which is a technical report of type 2, was prepared by Technical Committee ISO/TC 17, *Steel*.

It was decided that it would be more appropriate to publish this document in the form of a Technical Report type 2 for the time being, so that the designation system described could be implemented on an experimental basis before being applied to all International Standards developed by ISO/TC 17.

Annex A of this Technical Report is for information only.

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Introduction

Historical background

The steel designations given in the various International Standards for steels were in the past established by the different sub-committees of ISO/TC 17, independently from one another, though a degree of cooperation and harmonization would have been useful.

Explanation of the system

This International Technical Report is intended to serve as a basis for such cooperation and harmonization.

It covers a designation system which is applicable to all groups of steels and which has been developed taking particularly into consideration mnemotechnical aspects. This means that the designations — hereinafter called “steel names” — give direct information about the main characteristics of the type of steel concerned.

A further designation system for steels, particularly suitable for data processing, namely a numbering system, is in preparation as a part of ISO/TR 7003. The parallel application of both steel names and steel numbers in International Standards and in practice is recommended in order to minimize the danger of confusion between materials as a result of errors in the designation, and also to overcome the difficulties likely to occur when, in the future, it becomes necessary to modify a steel number or name.

The steel names in this system consist, as indicated in tables 1 to 3, of a code-letter for the steel group, a code-number for the main characteristics of the steel and additional code-letters and code-numbers. The sequence of these symbols is always the same. Therefore, it is possible to use any letter of the alphabet for the additional code-letters without using multi-letter codes, except in the case of the codes for the heat-treatment condition (see table 5).

Future procedure

All international and national committees and groups for the standardization of steels are invited to examine in the coming years the feasibility of this new designation system and to apply it where appropriate when new designations are introduced or old ones altered.

In cases where, for some reason, steel designations not in accordance with this system are introduced, care should be taken that the letters B, C, D, E, G, H, L, M, P, R, S, T and X used in this system as the first letters of steel names are not applied in another sense as first letters (see also annex A, which lists all the code-letters in tables 1 to 3 in alphabetical order).

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Steel names based on letter symbols

1 Scope

1.1 This Technical Report establishes a system for the designation of internationally standardized steels on the basis of "steel names". It is felt that such a designation system supplies more direct information about the main characteristics of the type of steel concerned than an designation system based on "steel number" (see ISO/TR 7003, annex A).

1.2 Because steel names are more readily understood, a designation system based on names is preferable in cases where the data-processibility of the designation is of no importance.

1.3 The codes and rules given in this Technical Report are applicable to the formation of "steel names" of steels standardized or registered in national or regional steel standards or steel lists. In such cases, sub-clause 3.1 should be observed.

NOTE — It is intended at a later date to add an assigner code to the steel names to differentiate between steels registered in different countries.

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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1052 : 1982, *Steel for general engineering purposes*.

ISO/TR 7003 : —¹⁾, *Unified format for the designation of metals*.

ISO 7778 : 1983, *Steel plate with specified through-thickness characteristics*.

3 General requirements

3.1 Each particular type of steel shall have only one name and, conversely, a name assigned to an individual steel shall not be assigned to another, even if the steel is withdrawn.

An individual steel is a steel for which a particular set of specifications governing the **essential material characteristics** applies.

The essential characteristics may, for example, be defined on the basis of the specifications for the chemical composition ranges or the requirements on its characteristic properties or, in certain cases, special manufacturing procedures (e.g. remelted roller-bearing steels in comparison to non-remelted steel) or, in special cases, the end use. Where materials may be delivered in different treatment conditions (heat treatment or cold reduction), which will influence the material properties, these treatment conditions shall not be covered in the steel name itself, but in a suffix. Differences in delivery requirements which do not affect the material characteristics (such as the type of marking, the surface appearance and the amount of testing) shall not be a reason to assign a different steel name.

3.2 The steel name shall be as short as possible without contravening the requirements specified in 3.1.

3.3 The steel name shall not normally be changed. If, under exceptional circumstances, a change becomes unavoidable, it shall be done only after ensuring that the change does not contravene the requirements specified in 3.1.

4 Structure of international steel names and symbols used

4.1 The structure of the international steel names and the symbols used shall be as specified in the following tables:

- table 1 for (unalloyed and low-alloy) steels which are primarily characterized by their minimum yield stress;
- table 2 for steels primarily characterized by their application or by properties other than minimum yield stress;

1) To be published.

- table 3 for steels primarily characterized by their chemical composition.

An alphabetical listing of all code-letters used is given in annex A.

5 Codes for treatment condition of the steel

5.1 The codes used for the various treatment conditions of the steel are given in table 5.

6 Responsibilities

6.1 Responsibility for allocation of steel name

When a sub-committee proposes the international standardization of a steel, it should also make a proposal for the designation of this steel in accordance with this Technical Report. The sub-committee making the proposal shall inform the Secretariat of TC 17/SC 2 of its proposal, and sub-committee 2 shall check whether the rules of this Technical Report have been applied correctly and, in particular, that the proposed name is not identical with an already existing name.

6.2 Responsibility for administration of the designation system

The responsibility for the maintenance of lists of international steel names shall be that of the Secretariat of TC 17/SC 2, while the responsibility for the publication and sale of such lists shall be that of the ISO Central Secretariat.