Corrosion-resistant Alloy Seamless Products for Use as Casing, Tubing, Coupling Stock, and Accessory Material

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This American National Standard is under the jurisdiction of the API Subcommittee on Tubular Goods (SC 5). This standard is modified from the English version of ISO 13680:2020. ISO 13680:2020 was prepared by Technical Committee ISO/TC 67 (Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries), SC 5 (Casing, tubing and drill pipe).

In this American National Standard, certain technical modifications have been made. These technical modifications from the ISO Standard have been incorporated directly into the API (US) national adoption. The modifications are detailed in Annex J (Identification/explanation of modifications).

In this American National Standard, the following editorial deviations have been made throughout the document:

— Omitting “tubular” in the API title as compared to the ISO title

— Change spelling of words common to the US (e.g. color, not colour)

— Addition of a “—” into empty table cells.

— Addition of a period at the end of abbreviation for inch (e.g. in., not in)

— Substitution of a decimal point for a decimal comma (e.g. 4.5, not 4,5)

— Substitution of a comma for a space in numbers ≥ 10,000 (e.g. 12 547, not 12 547)

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 5, *Casing, tubing and drill pipe*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 13680:2010), which has been technically revised. The main changes compared to the previous edition are as follows:

— change of title and scope so that it includes accessory material and group 5;

— deletion of Annex F;

— addition of new Annex F, Annex H and Annex I;

— update of warning statement;

— complete revision of the technical content.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Information marked as "NOTE" is for guidance in understanding or clarifying the associated requirement. "Notes to entry" used in Clause 3 provide additional information that supplements the terminological data and can contain provisions relating to the use of a term.

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WARNING—It is the purchaser's responsibility to specify the product specification level (PSL), corrosion-resistant alloy (CRA) group, category, grade, delivery conditions and any other requirement in addition to those specified herewith to ensure that the product is adequate for the intended service environment. The ISO 15156:2020 series should be considered when making specific requirements for H_2S-containing environments; see Annex G. It is the product user's responsibility to ensure that the product is suitable for the intended application with consideration of all environmental degradation threats during both normal operation and system upsets. There are other sources of hydrogen besides H_2S-containing environments, which are not addressed by the ISO 15156:2020 series.

1 Scope

This document specifies the technical delivery conditions for corrosion-resistant alloy seamless products for casing, tubing, coupling stock and accessory material (including coupling stock and accessory material from bar) for two product specification levels:

— PSL-1, which is the basis of this document;

— PSL-2, which provides additional requirements for a product that is intended to be both corrosion and cracking resistant for the environments and qualification method specified in Annex G and in the ISO 15156:2020 series.

At the option of the manufacturer, PSL-2 products can be provided in lieu of PSL-1.

NOTE 1 The corrosion-resistant alloys included in this document are special alloys in accordance with ISO 4948-1 and ISO 4948-2.

NOTE 2 For the purpose of this document, NACE MR0175 is equivalent to the ISO 15156:2020 series.

NOTE 3 Accessory products can be manufactured from coupling stock and tubular material, or from solid bar stock or from bored and heat heat-treated bar stock as covered in Annex F.

This document contains no provisions relating to the connection of individual lengths of pipe.

This document contains provisions relating to marking of tubing and casing after threading.

This document is applicable to the following five groups of products:

a) group 1, which is composed of stainless alloys with a martensitic or martensitic/ferritic structure;

b) group 2, which is composed of stainless alloys with a ferritic-austenitic structure, such as duplex and super-duplex stainless alloy;

c) group 3, which is composed of stainless alloys with an austenitic structure (iron base);

d) group 4, which is composed of nickel-based alloys with an austenitic structure (nickel base);

e) group 5, which is composed of bar only (Annex F) in age-hardened (AH) nickel-based alloys with austenitic structure.

NOTE 4 Not all PSL-1 categories and grades can be made cracking resistant in accordance with the ISO 15156:2020 series and are, therefore, not included in PSL-2.