SLOVENSKI STANDARD
SIST EN ISO 17781:2017

01-november-2017

Petrokemična industrija ter industrija za predelavo nafte in zemeljskega plina - Preskusne metode za kontrolo kakovosti mikrostrukture avstenitno-feritnega (dupleksnega) nerjavnega jekla (ISO 17781:2017)

Petroleum, petrochemical and natural gas industries - Test methods for quality control of microstructure of austenitic/ferritic (duplex) stainless steel (ISO 17781:2017)

Erdöl-, petrochemische und Erdgasindustrie - Werkstofftestanforderungen für nichtrostenden Duplexstahl (ISO 17781:2017)

Industries du pétrole, de la pétrochimie et du gaz naturel - Méthodes d'essai de contrôle de la qualité de la microstructure des aciers inoxydables (duplex) austénitiques/ferritiques (ISO 17781:2017)

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77.140.20	Visokokakovostna jekla	Stainless steels

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EUROPEAN STANDARD

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Petroleum, petrochemical and natural gas industries - Test methods for quality control of microstructure of ferritic/austenitic (duplex) stainless steels (ISO 17781:2017)

Industries du pétrole, de la pétrochimie et du gaz naturel - Méthodes d'essai de contrôle de la qualité de la microstructure des aciers inoxydables (duplex) austénitiques/ferritiques (ISO 17781:2017)

Erdöl-, petrochemische und Erdgasindustrie - Prüfverfahren für die Qualitätslenkung von Microstrukturen von austenitisch/ferritisch nichtrostendem Duplexstahl (ISO 17781:2017)

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN ISO 17781:2017) has been prepared by Technical Committee ISO/TC 67 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” in collaboration with Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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Endorsement notice

The text of ISO 17781:2017 has been approved by CEN as EN ISO 17781:2017 without any modification.

INTERNATIONAL STANDARD

ISO 17781

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Petroleum, petrochemical and natural gas industries — Test methods for quality control of microstructure of ferritic/austenitic (duplex) stainless steels

Industries du pétrole, de la pétrochimie et du gaz naturel — Méthodes d'essai de contrôle de la qualité de la microstructure des aciers inoxydables (duplex) austénitiques/ferritiques

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Foreword

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This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*.

Introduction

The aim of this document is to establish common test methods for quality control of microstructure of ferritic/austenitic (duplex) stainless steels for the oil and gas industry, enabling the manufacturers to apply the same test procedures for their clients.

Duplex stainless steels have a dual phase microstructure consisting of ferrite and austenite. Ideally, these phases are present in equal proportions; although in alloys which are commercially available, the ferrite phase volume fraction can vary between 35 % and 65 % for products in the solution annealed condition. They are characterized by high-chromium (19 % to 33 %) and low-nickel contents compared with austenitic stainless steels.

Duplex stainless steels are prone to precipitation of intermetallic phases, carbides and/or nitrides possibly causing embrittlement and reduced corrosion resistance. The formation of intermetallic phases such as Sigma, σ, and Chi, χ, occurs depending on exposure time in the approximate temperature range 590 °C to 1 000 °C (1 094 °F to 1 832 °F) and decomposition of ferrite to Alpha Prime occurs in the range 300 °C to 540 °C (572 °F to 1 004 °F).

The microstructure of components or fabrication welds is affected by amongst others the thermal-mechanical history associated with hot working, solution annealing and with subsequent forming and welding. The destructive test methods with acceptance criteria specified herein are considered relevant to verify that exposure time at above stated temperature ranges have been within acceptable limits and to ensure that desired corrosion resistance and mechanical properties are obtained in final products.

