

DIN EN ISO 17782

ICS 75.020

**Erdöl-, petrochemische und Erdgasindustrie –
Herstellerqualifizierung von Sonderwerkstoffen (ISO 17782:2018);
Englische Fassung EN ISO 17782:2018**

Petroleum, petrochemical and natural gas industries –
Scheme for conformity assessment of manufacturers of special materials (ISO 17782:2018);
English version EN ISO 17782:2018

Industries du pétrole, de la pétrochimie et du gaz naturel –
Système d'évaluation de la conformité des fabricants de matériaux spéciaux
(ISO 17782:2018);
Version anglaise EN ISO 17782:2018

Gesamtumfang 67 Seiten

DIN-Normenausschuss Erdöl- und Erdgasgewinnung (NÖG)

Nationales Vorwort

Dieses Dokument (EN ISO 17782:2018) wurde vom Technischen Komitee ISO/TC 67 „Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries“ in Zusammenarbeit mit dem Technischen Komitee CEN/TC 12 „Materialien, Ausrüstungen und Offshore-Bauwerke für die Erdöl-, petrochemische und Erdgasindustrie“ (Sekretariat NEN, Niederlande) erarbeitet.

Für Deutschland hat hieran der Arbeitskreis NA 109-00-01-80 AK „Materialien, Korrosionsüberprüfung, Schweißen und Verbinden sowie zerstörungsfreie Prüfung“ im DIN-Normenausschuss Erdöl- und Erdgasgewinnung (NÖG) mitgearbeitet.

Dieses Dokument enthält unter Berücksichtigung des DIN-Präsidialbeschlusses 1/2004 nur die Englische Fassung von ISO 17782:2018.

Für die in diesem Dokument zitierten internationalen Normen wird im Folgenden auf die entsprechenden Deutschen Normen hingewiesen:

ISO 3834-2	siehe	DIN EN ISO 3834-2
ISO 9000	siehe	DIN EN ISO 9000
ISO 10423:2009	siehe	DIN EN ISO 10423:2010-05
ISO 14343	siehe	DIN EN ISO 14343
ISO 15590-1	siehe	DIN EN 14870-1
ISO 15614-1	siehe	DIN EN ISO 15614-1
ISO/IEC 17000:2004	siehe	DIN EN ISO/IEC 17000:2005-03
ISO/IEC 17025	siehe	DIN EN ISO/IEC 17025

Nationaler Anhang NA (informativ)

Begriffe und Abkürzungen

Die Benummerung der folgenden Begriffe ist identisch mit der Benummerung in der englischen Fassung.

3 Begriffe und Abkürzungen

Für die Anwendung dieses Dokuments gelten die Begriffe nach ISO 9000, ISO/IEC 17000 und die folgenden Begriffe.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- ISO Online Browsing Platform: verfügbar unter <http://www.iso.org/obp>
- IEC Electropedia: verfügbar unter <http://www.electropedia.org/>

3.1 Begriffe

3.1.1

Konformitätsbewertung

Darlegung, dass festgelegte Anforderungen bezogen auf ein Produkt, einen Prozess, ein System, eine Person oder eine Stelle erfüllt sind

[QUELLE: ISO/IEC 17000:2004, 2.1]

3.1.2

Durchlaufofen

Ofen, in dem Zuführung und Wärmebehandlung des Bauteils/Erzeugnisses in einem kontinuierlichen Zyklus erfolgen

3.1.3

Unternehmen

Bauherr oder Organisation, der/die für die Entwicklung und/oder den Betrieb einer Anlage/Einrichtung verantwortlich ist

Anmerkung 1 zum Begriff: Für die Anwendung dieses Dokuments ist das Unternehmen für gewöhnlich eine Erdölgesellschaft.

3.1.4

Durchwärmzeit

Zeit, die erforderlich ist, um eine einheitliche voreingestellte Temperatur in einer gesamten Wärmebehandlungscharge und/oder in allen Querschnittsdicken eines Bauteils sicherzustellen

3.1.5

Wärmesenke

separater Block für die Überwachung der Temperatur während der Wärmebehandlung, bestehend aus derselben allgemeinen Werkstoffsorte wie die wärmebehandelten Teile

3.1.6

hochlegierter austenitischer nichtrostender Stahl

SS

(en: stainless steel)

austenitischer nichtrostender Stahl, typischerweise mit $PREN \geq 40$ oder $[\%Ni + 2(\%Mo)] > 30$ und $\%Mo > 2$; alle Massenanteile sind in Prozent ausgedrückt

BEISPIEL UNS S31254, UNS N08367, UNS N08926, UNS S31266, UNS S32654, UNS S34565, J93254.

3.1.7

Haltezeit

Zeit zwischen dem Punkt, an dem das/die Steuer-Thermoelement(e) (gewöhnlich das/die Thermoelement(e) des Ofens) die Einstelltemperatur erreicht hat/haben, und dem Ende der festgelegten Lagerungszeit

Anmerkung 1 zum Begriff: Siehe auch Anhang C.

Anmerkung 2 zum Begriff: Die Haltezeit setzt sich zusammen aus Durchwärmzeit + Lagerungszeit. Die Haltezeit gilt nicht für Durchlauföfen und halbkontinuierliche Öfen.

3.1.8

Hauptauftragnehmer

Partei, welche als Vertragspartner des Unternehmens, vollständig oder teilweise, die Auslegung, technische Entwicklung, Beschaffung, Konstruktion, Inbetriebnahme oder das Management eines Projekts bzw. den Betrieb und die Instandhaltung einer Einrichtung durchführt

3.1.9

Hersteller

Partei, einschließlich Unterauftragnehmer, welche Tätigkeiten ausführt, die die Werkstoffeigenschaften des Enderzeugnisses beeinflussen

Anmerkung 1 zum Begriff: Ein Hersteller sollte mindestens eine Tätigkeit ausführen, die die Werkstoffeigenschaften innerbetrieblich beeinflussen.

Anmerkung 2 zum Begriff: Diese Tätigkeiten können Umformen, Wärmebehandlung usw. einschließen.

3.1.10

Lochfraßindex

PREN

(en: pitting resistance equivalent number)

Index, der die Beständigkeit von nichtrostendem Stahl gegenüber Lochfraßkorrosion in Zusammenhang mit der chemischen Zusammensetzung angibt

Anmerkung 1 zum Begriff: PREN wird nach einer der folgenden Gleichungen berechnet:

a) $PREN = \%Cr + 3,3 \%Mo + 16 \%N$;

b) $PREN = \%Cr + 3,3 \% (Mo + 0,5 W) + 16 \%N$.

Dabei werden alle Massenanteile in Prozent ausgedrückt.

Anmerkung 2 zum Begriff: Die Anforderung für den Mindestwert des PREN gilt für die anwendbare Werkstoffspezifikation, MDS und/oder Werkstoffnorm, wie vom Käufer bestimmt.

3.1.11**Käufer**

Partei, welche ein Erzeugnis von einem Hersteller kauft

Anmerkung 1 zum Begriff: Unternehmen (Endverbraucher), Hauptauftragnehmer und Verkäufer sind Käufer in dem in diesem Dokument genutzten Zusammenhang.

3.1.12**Qualifizierungsunternehmen**

Organ oder Person, das/die Konformitätsbewertungen durchführt (3.1.13)

3.1.13**Konformitätsbewertung durch eine zweite Seite**

Tätigkeit, durchgeführt von einer Person oder einer Organisation, die gegenüber dem Gegenstand der Konformitätsbewertung ein Interesse als Anwender hat

Anmerkung 1 zum Begriff: Personen oder Organisationen, die eine Konformitätsbewertungstätigkeit als zweite Seite durchführen, können z. B. Käufer oder Nutzer eines Produktes oder potentielle Kunden sein, die sich auf ein Managementsystem eines Anbieters verlassen wollen, oder Organisationen, die deren Interessen vertreten.

[QUELLE: ISO/IEC 17000:2004, 2.3]

3.1.14**halbkontinuierlicher Ofen**

Ofen, für den die der Wärmebehandlung zu unterziehende Charge vor dem Ofen als Los vorbereitet wird und dann kontinuierlich durch den Ofen hindurchgeführt wird

3.1.15**Lagerungszeit**

Zeit, für die der gesamte wärmebehandelte Teil/Abschnitt (an seinen gesamten Querschnitten) innerhalb des festgelegten (Werkstoff-)Lagerungstemperaturbereichs gehalten wird

Anmerkung 1 zum Begriff: Siehe auch Anhang C.

3.1.16**Lagerungsbereich**

Bereich in einem Durchlaufofen/halbkontinuierlichen Ofen für die Wärmebehandlung, in dem der Werkstoff innerhalb des festgelegten Lagerungstemperaturbereichs gehalten wird

3.1.17**SS-Sorte 22Cr-Duplex**

ferritische/austenitische nichtrostende Stahllegierungen mit $30,0 < \text{PREN} < 40,0$ und $\text{Cr} \geq 19 \%$ (Massenanteil)

BEISPIEL UNS S31803 und UNS S32205.

3.1.18**SS-Sorte 25Cr-Duplex**

ferritische/austenitische nichtrostende Stahllegierungen mit $40,0 \leq \text{PREN} < 48,0$ (Massenanteil)

Anmerkung 1 zum Begriff: Diese Legierung wird häufig als „Super-Duplex“ bezeichnet.

BEISPIEL UNS S S32505, UNS S32550, UNS S32750, UNS S32760 und UNS S39274.

3.1.19

Prüfrichtung

Richtung, in die die Prüfung durchgeführt wird, in Abhängigkeit von der Geometrie des zu prüfenden Bauteils

Anmerkung 1 zum Begriff: Für die Anwendung dieses Dokuments gelten die Definitionen nach ASTM A370-14, Abschnitt 5, wobei „axial“ als die parallel zur Hauptachse des Bauteils liegende Längsachse des Probekörpers festgelegt ist.

3.1.20

Konformitätsbewertung durch eine dritte Seite

Tätigkeit, durchgeführt von einer Person oder einer Organisation, die von der Person oder der Organisation, die den Gegenstand der Konformitätsbewertung anbietet, und von Interessen als Anwender dieses Gegenstandes unabhängig ist

Anmerkung 1 zum Begriff: Kriterien für die Unabhängigkeit von Konformitätsbewertungsstellen und Akkreditierungsstellen sind den auf ihre Tätigkeiten zutreffenden internationalen Normen und Leitfäden zu entnehmen (siehe Literaturhinweise in ISO/IEC 17000)].

[QUELLE: ISO/IEC 17000:2004, 2.4]

3.2 Abkürzungen

AOD	Argon-Sauerstoff-Entkohlung (en: argon oxygen decarburization)
API	Amerikanisches Erdölinstitut (en: American Petroleum Institute)
ASTM	Amerikanische Vereinigung für Materialprüfungsnormen (en: American Society for Testing and Materials)
EN	Europäische Norm
HIP	heißisostatisches Pressen (en: hot isostatic pressed)
HV	Vickershärte
MDS	Werkstoffdatenblatt (en: material data sheet)
MOM	Sitzungsprotokoll (en: minutes of meeting)
MPCR	Bericht über die Qualifizierung des Herstellungsverfahrens (en: manufacturing procedure conformity record)
MPS	Zusammenfassung des Herstellungsprozesses (en: manufacturing procedure summary)
NDE	zerstörungsfreie Untersuchung (en: non-destructive examination)
NORSOK	vom norwegischen Technologiezentrum entwickelte Normen
PED	Druckgeräterichtlinie (en: Pressure Equipment Directive)
PREN	Lochfraßindex (en: pitting resistance equivalent number)
PWHT	Wärmebehandlung nach dem Schweißen (en: post-weld heat treatment)
SS	nichtrostender Stahl (en: stainless steel)
UNS	einheitliches Nummerierungssystem (en: unified numbering system)
VOD	Vakuum-Sauerstoff-Entkohlung (en: vacuum oxygen decarburization)
WPQR	Bericht über die Qualifizierung des Schweißverfahrens (en: welding procedure qualification record)
WPS	Schweißanweisung (en: welding procedure specification)

Nationaler Anhang NB (informativ)

Literaturhinweise

DIN EN 14870-1, *Erdöl- und Erdgasindustrie — Im Induktionsverfahren gefertigte Rohrbögen, Fittings und Flansche für Rohrleitungs-Transportsysteme — Teil 1: Im Induktionsverfahren gefertigte Rohrbögen*

DIN EN ISO 3834-2, *Qualitätsanforderungen für das Schmelzschweißen von metallischen Werkstoffen — Teil 2: Umfassende Qualitätsanforderungen*

DIN EN ISO 9000, *Qualitätsmanagementsysteme — Grundlagen und Begriffe*

DIN EN ISO 10423:2010-05, *Erdöl- und Erdgasindustrie — Bohr- und Förderausrüstung — Bohrlochkopf- und Eruptionskreuz-Ausrüstung (ISO 10423:2009); Englische Fassung EN ISO 10423:2009, nur auf CD-ROM*

DIN EN ISO 14343, *Schweißzusätze — Drahtelektroden, Bandelektroden, Drähte und Stäbe zum Lichtbogenschweißen von nichtrostenden und hitzebeständigen Stählen — Einteilung*

DIN EN ISO 15614-1, *Anforderung und Qualifizierung von Schweißverfahren für metallische Werkstoffe — Schweißverfahrensprüfung — Teil 1: Lichtbogen- und Gasschweißen von Stählen und Lichtbogenschweißen von Nickel und Nickellegierungen*

DIN EN ISO/IEC 17000:2005-03, *Konformitätsbewertung — Begriffe und allgemeine Grundlagen (ISO/IEC 17000:2004); Dreisprachige Fassung EN ISO/IEC 17000:2004*

DIN EN ISO/IEC 17025, *Allgemeine Anforderungen an die Kompetenz von Prüf- und Kalibrierlaboratorien*

— Leerseite —

English Version

**Petroleum, petrochemical and natural gas industries -
Scheme for conformity assessment of manufacturers of
special materials (ISO 17782:2018)**

Industries du pétrole, de la pétrochimie et du gaz
naturel - Système d'évaluation de la conformité des
fabricants de matériaux spéciaux (ISO 17782:2018)

Erdöl-, petrochemische und Erdgasindustrie -
Herstellerqualifizierung von Sonderwerkstoffen (ISO
17782:2018)

This European Standard was approved by CEN on 27 September 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 17782:2018) 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 May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 17782:2018 has been approved by CEN as EN ISO 17782:2018 without any modification.

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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 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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*.

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.

Introduction

This document is based on NORSOK M-650, 4th edition, which was developed by the Norwegian petroleum industry to ensure adequate safety, value added and cost effectiveness for petroleum industry developments and operations.

The conformity assessment requirements provide a Scheme for manufacturers to demonstrate their competence and experience to manufacture the relevant material grades and product forms. The intention is that a manufacturing procedure conformity record (MPCR) accepted by one customer should also be acceptable for other customers, within the essential variables of this document.

This document includes the following annexes that are either normative or informative:

- Annex A provides the Manufacturing Procedure Summary front page and examples (informative);
- Annex B contains the Temperature Uniformity Survey with additional requirements to Annex M of ISO 10423:2009 and ASTM A991-10 (normative);
- Annex C provides an example of verification of the heat treatment procedure (informative);
- Annex D contains requirements related to fasteners (normative);
- Annex E contains requirements related to induction bending in the case of testing for qualification of bends without post-bend heat treatment (normative);
- Annex F contains requirements for the assessment of testing laboratories (normative);
- Annex G provides the Manufacturing Procedure Conformity Record front page (normative).

Petroleum, petrochemical and natural gas industries — Scheme for conformity assessment of manufacturers of special materials

1 Scope

This document establishes a procedure for verifying that the manufacturer of special materials for the petroleum, petrochemical and natural gas industries has sufficient competence and experience of the relevant material grades of metal, and the necessary facilities and equipment, to manufacture these materials in the required shapes and sizes with acceptable properties according to the applicable standard, material specification and/or material data sheet specified by the purchaser.

This document is applicable to manufacturers of various materials, product forms and manufacturing processes when specified by the purchaser. This document has been established considering especially, but not exclusively:

- a) duplex stainless steel;
- b) high alloyed austenitic stainless steel;
- c) nickel-based alloys;
- d) titanium and its alloys.

This document is also applicable to the processes of induction bending and strain-hardened products.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3834-2, *Quality requirements for fusion welding of metallic materials — Part 2: Comprehensive quality requirements*

ISO 9000, *Quality management systems — Fundamentals and vocabulary*

ISO 10423:2009, *Petroleum and natural gas industries — Drilling and production equipment — Wellhead and christmas tree equipment*

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

ISO 14343, *Welding consumables — Wire electrodes, strip electrodes, wires and rods for arc welding of stainless and heat resisting steels — Classification*

ISO 15590-1, *Petroleum and natural gas industries — Induction bends, fittings and flanges for pipeline transportation systems — Part 1: Induction bends*

ISO 15614-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys*

ISO/IEC 17000:2004, *Conformity assessment — Vocabulary and general principles*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

ASME Boiler and Pressure Vessel Code, Section II, Materials, Part C, *Specifications for welding rods, electrodes, and filler metals* (also referred to ASME II Part C)

ASME Boiler and Pressure Vessel Code, Section IX: *Welding and Brazing Qualifications* (also referred to ASME IX)

ASTM A370-14, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM A991-10, *Standard Test Method for Conducting Temperature Uniformity Surveys of Furnaces Used to Heat Treat Steel Products*

ASTM E407, *Standard Practice for Microetching Metals and Alloys*

EN 10204, *Metallic products — Types of inspection documents*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 9000, ISO/IEC 17000 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 Terms and definitions

3.1.1

conformity assessment

demonstration that specified requirements relating to a product, process, system, person or body are fulfilled

[SOURCE: ISO/IEC 17000:2004, 2.1]

3.1.2

continuous furnace

furnace in which the item/product to be heat treated is loaded and heat treated in a continuous cycle

3.1.3

company

owner or organization that is responsible for development of and/or operation of an installation/facility

Note 1 to entry: For the purposes of this document, the company is normally an oil company.

3.1.4

equalization time

time used to ensure a uniform pre-set temperature throughout a heat treatment load and/or throughout all section thicknesses of a component

3.1.5

heat sink

separate block used to monitor temperature during heat treatment and made from the same generic type of material as the parts being heat treated

3.1.6

high alloyed austenitic stainless steel (SS)

austenitic stainless steel typically having $PREN \geq 40$ or $[\%Ni + 2(\%Mo)] > 30$ where $\%Mo > 2$, all mass fractions expressed as percent

EXAMPLE UNS S31254, UNS N08367, UNS N08926, UNS S31266, UNS S32654, UNS S34565, J93254.

3.1.7

holding time

time from when the controlling thermocouple(s) [normally the furnace thermocouple(s)] has reached set temperature until the specified soaking time is completed

Note 1 to entry: See also Annex C.

Note 2 to entry: Holding time consists of equalization time + soaking time. Holding time is not applicable to continuous and semi-continuous furnaces.

3.1.8

main contractor

party which carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project, or operation or maintenance of a facility, on a contract awarded by the company

3.1.9

manufacturer

party, including subcontractors, which carries out operations that affect the material properties of the finished product

Note 1 to entry: A manufacturer should have minimum one operation, which affects material properties in-house.

Note 2 to entry: These operations can include forming, heat treatment, etc.

3.1.10

pitting resistance equivalent number

PREN

number indicating the resistance of stainless steel to pitting corrosion and related to chemical composition

Note 1 to entry: PREN is calculated from one of the following equations:

- a) $\text{PREN} = \% \text{Cr} + 3,3 \% \text{Mo} + 16 \% \text{N}$
- b) $\text{PREN} = \% \text{Cr} + 3,3 \% (\text{Mo} + 0,5 \text{ W}) + 16 \% \text{N}$

where all mass fractions are expressed as a percentage.

Note 2 to entry: The requirement for the minimum PREN value applies to the applicable material specification, MDS and/or material standard as specified by purchaser.

3.1.11

purchaser

party which purchases a product from a manufacturer

Note 1 to entry: Company (end user), main contractor and buyer are purchasers in the context used in this document.

3.1.12

Qualifying Company

body or person that performs *conformity assessment activity* (3.1.13)

3.1.13

second-party conformity assessment activity

conformity assessment activity that is performed by a person or organization that has a user interest in the object

Note 1 to entry: Persons or organizations performing second-party conformity assessment activities include, for example, purchasers or users of products, or potential customers seeking to rely on a supplier's management system, or organizations representing those interests.

[SOURCE: ISO/IEC 17000:2004, 2.3]

3.1.14**semi-continuous furnace**

furnace for which the load to be heat treated is prepared as a batch in front of the furnace and then passed in a continuous way through the furnace

3.1.15**soaking time**

time that the entire part/section being heat treated (throughout its cross-sections) remains within the specified soaking (material) temperature range

Note 1 to entry: See also Annex C.

3.1.16**soaking zone**

zone in a continuous/semi-continuous heat treatment furnace where the material is maintained within the specified soaking temperature range

3.1.17**SS type 22Cr duplex**

ferritic/austenitic stainless steel alloys with $30,0 < \text{PREN} < 40,0$ and $\text{Cr} \geq 19 \%$ (mass fraction)

EXAMPLE UNS S31803 and UNS S32205.

3.1.18**SS type 25Cr duplex**

ferritic/austenitic stainless steel alloys with $40,0 \leq \text{PREN} < 48,0$ (mass fraction)

Note 1 to entry: This alloy is often referred to as “super duplex”.

EXAMPLE UNS S32505, UNS S32550, UNS S32750, UNS S32760 and UNS S39274.

3.1.19**test direction**

direction in which testing is carried out as defined relative to the geometry of the component to be tested

Note 1 to entry: For the purposes of this document, the definitions given in ASTM A370-14, section 5, apply, with axial defined as the longitudinal axis of the test specimen located parallel to the main axis of the component.

3.1.20**third-party conformity assessment activity**

conformity assessment activity that is performed by a person or organization that is independent of the person or organization that provides the object, and of user interest in that object

Note 1 to entry: Criteria for the independence of the conformity assessment bodies and accreditation bodies are provided in the International Standards and Guides applicable to their activities [see Bibliography (in ISO/IEC 17000)].

[SOURCE: ISO/IEC 17000:2004, 2.4]

3.2 Abbreviated terms

AOD	argon oxygen decarburization
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
EN	European Standard
HIP	hot isostatic pressed

HV	Vickers hardness
MDS	material data sheet
MOM	minutes of meeting
MPCR	manufacturing procedure conformity record
MPS	manufacturing procedure summary
NDE	non-destructive examination
NORSOK	Industry Standards for the Competitive Standing of the Norwegian Offshore Sector
PED	Pressure Equipment Directive
PREN	pitting resistance equivalent number
PWHT	post-weld heat treatment
SS	stainless steel
UNS	unified numbering system
VOD	vacuum oxygen decarburization
WPQR	welding procedure qualification record
WPS	welding procedure specification

4 Responsibilities

4.1 Purchaser's responsibilities

The purchaser is responsible for ensuring that the manufacturers engaged for a project are qualified within the essential variables of this document. Existing manufacturer's procedure conformity records (MPCRs) shall be reviewed for conformance with this document. Manufacturers unknown to the purchaser should in addition be visited.

Acceptance of an MPCR and the manufacturer chosen are at the discretion and determination of the purchaser.

The purchaser is not exempted from his responsibility for quality surveillance of his subcontractors, even if these fulfil the requirements of this document.

4.2 Manufacturer's responsibilities

The manufacturer is responsible for establishing and maintaining required documentation and carrying out verification and testing in accordance with this document.

A manufacturer conforming to this document assumes the obligation to carry out manufacturing and establish material/test certificates of products in accordance with the qualified Manufacturing Procedure Summary (MPS), including all referenced procedures. If an order requiring conformance with this document is outside the qualified range as defined in 10.2.15, the purchaser shall be informed.

4.3 Qualifying Company's responsibilities

The Qualifying Company shall monitor the conformity assessment activities, review and finally approve the resulting MPCR by signing and stamping the MPCR front page (see Annex G).

The Qualifying Company person signing the MPQR shall have the following,

- a) a relevant education on bachelor level from a university college or equal;
- b) good knowledge of metallurgical aspects of the applicable alloys, which shall be evaluated, including phase and transformation diagrams, effects of hot forming, welding, heat treatment, testing, etc.;
- c) relevant knowledge of the manufacturing process(es) to be evaluated;
- d) in-depth knowledge and understanding of this document;
- e) previous experience with this document or received guidance/supervision from a person with previous qualification experience with this document.

The Qualifying Company shall be independent of the manufacturer.

NOTE Qualification (conformity assessment) experience with NORSOK M-650 Ed. 4 is considered equal to conformity assessment experience with this document.

5 Conformity assessment of manufacturers

5.1 Conformity assessment

The conformity assessment shall be carried out in cooperation with and verified by the Qualifying Company. The conformity assessment shall be carried out as either

- a) a second-party conformity assessment activity (see definition in 3.1.13), or
- b) a third party conformity assessment activity (see definition in 3.1.20), but only where the third party is accepted as a competent Qualifying Company by Company, Main Contractor or Purchaser.

A Qualifying Company can be engaged:

- a) through projects for which the manufacturer has specific orders; that is, through contact between the manufacturer and the Companies, Main Contractors or Purchasers;
- b) through a third party in cases where manufacturer wants to be evaluated without having any specific orders. In such cases the acceptance of the Qualifying Company and of the MPCR shall be by future customers prior to purchase order placement. Acceptance may be indicated by counter signature of the MPCR front page as specified in 5.5.

5.2 Basis for assessment of manufacturers

The manufacturer, including any nominated subcontractors, shall have:

- a) knowledge and relevant manufacturing experience with the type of material to be qualified (see Clause 7);
- b) acceptable manufacturing facilities and equipment (see Clauses 7 and 9);
- c) an established MPS (procedure) covering all manufacturing steps from melting or start material, as defined in Table 1, column "Type of start material", to finished product (see Clause 8);
- d) an established heat treatment procedure (see Clause 9);
- e) a management system that conforms with the requirements of ISO 9001 or equivalent;
- f) satisfactory verification test results in conformance with this document (see Clause 10).

5.3 Evaluation for conformity

The Qualifying Company shall carry out a review and inspection of the manufacturing facilities, equipment, implementation of procedures and documentation, as required by this document, on the premises of the manufacturer and his subcontractors.

The results of the evaluation shall be documented in an evaluation report or minutes of meeting (MOM).

5.4 Review of manufacturing procedure conformity record (MPCR)

A complete MPCR with content in accordance with Clause 11 shall be established for review.

The only way to qualify a manufacturing procedure is to fulfil all the requirements of this document. It is not possible to deviate from this document with respect to being qualified. When all requirements in this document are fulfilled, the MPCR front page (see Annex G) shall be signed off and stamped by the Qualifying Company.

5.5 Statement of conformity

The original MPCR front page (see Annex G), completed with all data indicated in Annex G and signed by the Qualifying Company, is the only valid proof of conformity in accordance with this document.

Where a party authorized by the Company, Main Contractor or Purchaser is used as the Qualifying Company, the Company, Main Contractor or Purchaser who has given the authorization shall co-sign the MPCR front page to confirm their acceptance of the MPCR.

NOTE ISO does not keep any listing of qualified manufacturers who are accepted in accordance with this document.

6 Validity of the manufacturer procedure conformity record (MPCR)

6.1 Term of validity

The manufacturer's MPCR is valid for a maximum of five years starting from the date of signing and stamping of the MPCR front page. For new manufacturers, see 7.1.2.

For renewal of an existing MPCR according to 6.2, the renewal is valid for a maximum of five years starting from the expiry date of the original conformity assessment.

The conformity assessment is valid within the parameters specified in 10.2.

6.2 Renewal of the MPCR

The MPCR from a manufacturer with regular production of the originally conformity assessed products and alloys to a valid MPS is considered renewed without additional testing provided that production testing records are retained that demonstrate continued conformance to the specifications employed for the original conformity assessment. It is a prerequisite that applicable requirements of this document are complied with.

A renewal shall be initiated prior to the expiry date of the existing MPCR. If this is not the case, a complete new conformity assessment shall be carried out.

The following actions shall be executed for a renewal of the conformity assessment:

- a) evaluating and reviewing the manufacturer's and subcontractors' premises according to 5.3 by the Qualifying Company;
- b) reviewing and updating the MPS and referred procedures and making a decision whether retesting is required;