



INTERNATIONAL STANDARD ISO 15156-3:2020
TECHNICAL CIRCULAR 1

Published 2021-12-09

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

• МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

• ORGANISATION INTERNATIONALE DE NORMALISATION

Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production —

Part 3:
Cracking-resistant CRAs (corrosion-resistant alloys) and other alloys

TECHNICAL CIRCULAR 1

Industries du pétrole et du gaz naturel — Matériaux pour utilisation dans des environnements contenant de l'hydrogène sulfuré (H₂S) dans la production de pétrole et de gaz —

Partie 3: ARC (alliages résistants à la corrosion) et autres alliages résistants à la fissuration

CIRCULAIRE TECHNIQUE 1

Technical Circular 1 to ISO 15156-3 was prepared by the ISO 15156 Maintenance Agency on behalf of Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*.

ICS 75.180.01

Ref. No. ISO 15156-3:2020/Cir.1:2021(E)

Published by the ISO 15156 Maintenance Agency (DIN-Germany)

Foreword

The establishment of the ISO 15156 Maintenance Agency was confirmed by the ISO Technical Management Board in June 2007. A copy of the TMB Vote-Form Number: 34/2007 giving the rules of procedure for the maintenance agency can be obtained from the ISO TMB Secretariat. It is also available from the ISO 15156 website at www.iso.org/iso15156maintenance.

ISO 15156 series has, since publication, been amended by a number of Technical Corrigenda and Technical Circulars and consists of the following parts, under the general title *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production*:

- *Part 1: General principles for selection of cracking-resistant materials (2020)*
 - *Technical Circular 1, ISO 15156-1:2020/Cir.1:2021(E) (2021-12-09)*
- *Part 2: Cracking-resistant carbon and low alloy steels, and the use of cast irons (2020)*
 - *Technical Circular 1, ISO 15156-2:2020/Cir.1:2021(E) (2021-12-09)*
- *Part 3: Cracking-resistant CRAs (corrosion-resistant alloys) and other alloys (2020)*
 - *Technical Circular 1, ISO 15156-3:2020/Cir.1:2021(E) (2021-12-09)*

As applicable, subsequent publications resulting in new editions of an individual part of ISO 15156, effectively replace the corresponding set of documents shown above. Information on the latest status of these documents can be obtained from www.iso.org/iso15156maintenance.

Changes to ISO 15156-3:2020 introduced by this Technical Circular 1, ISO 15156-3:2020/Cir.1:2021(E), are shown in the document below in blue.

Replace Table 1 with the following:

Table 1 — List of equipment

This document is applicable to materials used for the following equipment	Exclusions
Drilling, well construction, and well-servicing equipment	Equipment exposed only to drilling fluids of controlled composition ^a Drill bits Blowout preventer (BOP) shear blades ^b Drilling riser systems Work strings Wireline and wireline equipment ^c Surface and intermediate casing
Wells, including subsurface equipment, gas-lift equipment, wellheads, and christmas trees	Sucker rod pumps and sucker rods ^d Electric submersible pumps Other artificial lift equipment Slips
Flowlines, gathering lines, field facilities, and field processing plants	Crude-oil storage and handling facilities operating at a total absolute pressure below 0,45 MPa (65 psi)
Water-handling equipment	Water-handling facilities operating at a total absolute pressure below 0,45 MPa (65 psi) Water injection and water disposal equipment
Natural-gas treatment plants	—
Transportation pipelines for liquids, gases, and multiphase fluids	Lines handling gas prepared for general commercial and domestic use Stabilized crude oil (gas-free) pipelines containing less than 0,5 % water. See footnote ^e for additional requirements.
For all equipment above	Components loaded only in compression
^a See ISO 15156-2:2020, A.2.3.2.3 for more information. ^b See ISO 15156-2:2020, A.2.3.2.1 for more information. ^c Wireline lubricators and lubricator connecting devices are not excluded. ^d For sucker rod pumps and sucker rods, reference can be made to NACE MR0176. ^e Pipeline steels with SMYSs up to 483 MPa (70 ksi) are acceptable for service with stabilized crude containing less than 0,5 % water by volume and pH > 5,6 (typical). Fabrication and field weld hardness below 350 HV is acceptable if made in accordance with ISO 13847, API 1104 or CSA Z662 for non-sour service welds. For new pipelines, equipment users shall continue to consider HIC per ISO 15156-2:2020, Clause 8.	

Replace Clause 2 with the following:

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 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

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

ISO 11960, *Petroleum and natural gas industries — Steel pipes for use as casing or tubing for wells*

ISO 13847, *Petroleum and natural gas industries — Pipeline transportation systems — Welding of pipelines*

ISO 15156-1:2020, *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production — Part 1: General principles for selection of cracking-resistant materials*

ISO 15156-2:2020, *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production — Part 2: Cracking-resistant carbon and low alloy steels, and the use of cast irons*

API 1104, *Welding of Pipelines and Related Facilities*¹⁾

ASTM A747/A747M²⁾, *Standard Specification for Steel Castings, Stainless, Precipitation Hardening*

ASTM E29, *Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications*

ASTM E562, *Standard Test Method for Determining Volume Fraction by Systematic Manual Point Count*

CSA Z662, *Oil and gas pipeline systems*³⁾

EFC Publication 17⁴⁾, *Corrosion resistant alloys for oil and gas production: guidelines on general requirements and test methods for H₂S service*

NACE CORROSION/95 Paper 47, *Test methodology for elemental sulfur-resistant advanced materials for oil and gas field equipment*

NACE TM0177:2016, *Laboratory testing of metals for resistance to sulfide stress cracking and stress corrosion cracking in H₂S environments*

SAE AMS-2430⁵⁾, *Shot Peening*

¹⁾ www.api.org

²⁾ www.astm.org

³⁾ www.csagroup.org

⁴⁾ www.efcweb.org