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**Petroleum and natural gas  
industries — External coatings for  
buried or submerged pipelines used  
in pipeline transportation systems —**

**Part 3:  
Field joint coatings**

*Industries du pétrole et du gaz naturel — Revêtements externes  
des conduites enterrées ou immergées utilisées dans les systèmes de  
transport par conduites —*

*Partie 3: Revêtements des joints soudés sur site*

Please see the administrative notes on page iii

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Reference number  
ISO/FDIS 21809-3:2015(E)

## ISO/CEN PARALLEL PROCESSING

This final draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO-lead** mode of collaboration as defined in the Vienna Agreement. The final draft was established on the basis of comments received during a parallel enquiry on the draft.

This final draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel two-month approval vote in ISO and formal vote in CEN.

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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](http://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](http://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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword, Supplementary information](#)

The committee responsible for this document is ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 2, *Pipeline transportation systems*.

This second edition cancels and replaces the first edition (ISO 21809-3:2008), which has been technically revised. It also incorporates the Amendment ISO 21809-3:2008/Amd 1:2011.

ISO 21809 consists of the following parts, under the general title *Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems*:

- *Part 1: Polyolefin coatings (3-layer PE and 3-layer PP)*
- *Part 2: Single layer fusion-bonded epoxy coatings*
- *Part 3: Field joint coatings*
- *Part 4: Polyethylene coatings (2-layer PE)*
- *Part 5: External concrete coatings*

Multilayer fusion bonded epoxy coatings is to form the subject of future part 6.

Coating repairs on rehabilitation is to form the subject of future part 11.

## Introduction

Users of this part of ISO 21809 are to be aware that further or differing requirements can be needed for individual applications. This part of ISO 21809 is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor is to identify any variations from this part of ISO 21809 and provide details.

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# Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems —

## Part 3: Field joint coatings

### 1 Scope

This part of ISO 21809 specifies requirements for field joint coating of seamless or welded steel pipes for buried and submerged sections of pipeline transportation systems used in the petroleum, petrochemical and natural gas industries as defined in ISO 13623. This part of ISO 21809 specifies the qualification, application and testing of the corrosion protection coatings applied to steel surfaces left bare after the joining of pipes and fittings (components) by welding.

This part of ISO 21809 defines and codifies in [Table 1](#) the different types of field joint coatings for pipelines.

This part of ISO 21809 does not address requirements for additional mechanical protection, for thermal insulation or for joint infills of concrete weight-coated pipes.

NOTE Field joints of pipes and fittings coated in accordance with this part of ISO 21809 are considered suitable for further protection by means of cathodic protection.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 34-1, *Rubber, vulcanized or thermoplastic — Determination of tear strength — Part 1: Trouser, angle and crescent test pieces*

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 62, *Plastics — Determination of water absorption*

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics*

ISO 527-3, *Plastics — Determination of tensile properties — Part 3: Test conditions for films and sheets*

ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

ISO 1431-1, *Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static and dynamic strain testing*

ISO 1523, *Determination of flash point — Closed cup equilibrium method*

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

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ISO 2178, *Non-magnetic coatings on magnetic substrates — Measurement of coating thickness — Magnetic method*

ISO 2781, *Rubber, vulcanized or thermoplastic — Determination of density*

ISO 2808, *Paints and varnishes — Determination of film thickness*

ISO 2811-1, *Paints and varnishes — Determination of density — Part 1: Pycnometer method*

ISO 3251, *Paints, varnishes and plastics — Determination of non-volatile-matter content*

ISO 3303-1, *Rubber- or plastics-coated fabrics — Determination of bursting strength — Part 1: Steel-ball method*

ISO 3417, *Rubber — Measurement of vulcanization characteristics with the oscillating disc curemeter*

ISO 3801, *Textiles — Woven fabrics — Determination of mass per unit length and mass per unit area*

ISO 4591, *Plastics — Film and sheeting — Determination of average thickness of a sample, and average thickness and yield of a roll, by gravimetric techniques (gravimetric thickness)*

ISO 4593, *Plastics — Film and sheeting — Determination of thickness by mechanical scanning*

ISO 4624, *Paint and varnishes — Pull-off test for adhesion*

ISO 4625-1, *Binders for paints and varnishes — Determination of softening point — Part 1: Ring-and-ball method*

ISO 5893, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Specification*

ISO 7619-1, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 1: Durometer method (Shore hardness)*

ISO 8501-1, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings*

ISO 8501-3, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 3: Preparation grades of welds, edges and other areas with surface imperfections.*

ISO 8502-3, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)*

ISO 8502-6, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part 6: Extraction of soluble contaminants for analysis — The Bresle method*

ISO 8502-9, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part 9: Field method for conductometric determination of water-soluble salts*

ISO 8503-1, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 1: Specifications and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces*

ISO 8503-2, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel — Comparator procedure*

- ISO 8503-4, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 4: Method for the calibration of ISO surface profile comparators and for the determination of surface profile — Stylus instrument procedure*
- ISO 8503-5, *Preparation of steel substrates before application of paints and related products — Surface roughness characteristics of blast-cleaned steel substrates — Part 5: Replica tape method for the determination of the surface profile*
- ISO 8504-2, *Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 2: Abrasive blast-cleaning*
- ISO 8504-3, *Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 3: Hand- and power-tool cleaning*
- ISO 10474, *Steel and steel products — Inspection documents*
- ISO 11124 (all parts), *Preparation of steel substrates before application of paints and related products — Specifications for metallic blast-cleaning abrasives*
- ISO 11126 (all parts), *Preparation of steel substrates before application of paints and related products — Specifications for non-metallic blast-cleaning abrasives*
- ISO 11357-1, *Plastics — Differential scanning calorimetry (DSC) — Part 1: General principles*
- ISO 11357-2, *Plastics — Differential scanning calorimetry (DSC) — Part 2: Determination of glass transition temperature and glass transition step height*
- ISO 11357-3, *Plastics — Differential scanning calorimetry (DSC) — Part 3: Determination of temperature and enthalpy of melting and crystallization*
- ISO 11357-6, *Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT)*
- ISO 13623, *Petroleum and natural gas industries — Pipeline transportation systems*
- ISO 21809-2, *Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems — Part 2: Single layer fusion-bonded epoxy coatings*
- ISO 80000-1:2009, *Quantities and units — Part 1: General*
- EN 10204, *Metallic products — Types of inspection documents*
- ASTM D70,<sup>1)</sup> *Standard Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method)*
- ASTM D92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester*
- ASTM D127, *Standard Test Method for Drop Melting Point of Petroleum Wax, Including Petrolatum*
- ASTM D149, *Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies*
- ASTM D257, *Standard Test Methods for DC Resistance or Conductance of Insulating Materials*
- ASTM D695, *Standard Test Method for Compressive Properties of Rigid Plastics*
- ASTM D937, *Standard Test Method for Cone Penetration of Petrolatum*
- ASTM D938, *Standard Test Method for Congealing Point of Petroleum Waxes, Including Petrolatum*
- ASTM D1000, *Standard Test Methods for Pressure — Sensitive Adhesive — Coated Tapes Used for Electrical and Electronic Applications*

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