

ISO/FDIS 12736-2:2023(E)

ISO/TC 67/SC 2

Date: 2023-01-2504-19

PetroleumOil and natural gas industries including lower carbon energy — Wet thermal insulation systems for pipelines and subsea equipment — Part 2: Qualification processes for production and application procedures

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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 a patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. 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 including lower carbon energy*, Subcommittee SC 2, *Pipeline transportation systems*, 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 including lower carbon energy*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 12736-2, together with ISO 12736-1 and ISO 12736-3, cancels and replaces ISO 12736:2014.

The main changes are as follows:

- clearer delineation between commercial projects and validation;
- introduction of material classes;
- elimination of system specific qualification testing tables;

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- introduction of detailed thermal conductivity testing requirements;
- introduction of project specific functional tests;
- addition of Annexes A and B with guidelines for using this document and design of systems.

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A list of all parts in the ISO 12736 series can be found on the ISO website.

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.

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Introduction

~~Annex A further clarifies the intended use of this document~~

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Oil and natural gas industries including lower carbon energy — Wet thermal insulation systems for pipelines and subsea equipment — Part 2: Qualification processes for production and application procedures

1 Scope

This document specifies requirements for project specific product and process qualification of wet thermal insulation systems applied to pipelines in a factory setting and subsea equipment in the ~~petroleum~~oil and ~~natural~~ gas industries.

This document ~~does~~is not ~~apply~~applicable to:

- pre-fabricated insulation;
- thermal insulation in the annulus of a steel pipe-in-pipe system;
- maintenance works on existing installed wet thermal insulation systems;
- project qualification of anticorrosion coatings or the requirements for application thereof.

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 48-4, Rubber, vulcanized or thermoplastic — Determination of hardness — Part 4: Indentation hardness by durometer method (Shore hardness)

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

ISO 1133-~~(all parts)~~-1, *Plastics — Determination of the melt mass-flow rate (MFR) and ~~the~~ melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method*

ISO 1133-2, Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 2: Method for materials sensitive to time-temperature history and/or moisture

ISO 1183-~~1~~, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method*

ISO 1183-~~3~~, *Plastics — Methods for determining the density of non-cellular plastics — Part 3: Gas ~~Pyknometer Method~~pycnometer method*

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

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ISO 2884-2, *Paints and varnishes — Determination of viscosity using rotary viscometers — Part 2: Disc or ball viscometer operated at a specified speed*

ISO 3104, *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 3219, *(all parts), Rheology*

ISO 3451-1:2019, *Plastics — Determination of ash — Part 1: General Methods/methods*

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

ISO 8301, *Thermal insulation — Determination of steady-state thermal resistance and related properties — Heat flow meter apparatus*

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 8502-4, *Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part-4: Guidance on the estimation of the probability of condensation prior to paint application*

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

ISO 12736-1, *Petroleum and natural gas industries — Wet thermal insulation systems for pipelines, flow lines, equipment and subsea structures — Part 1: Validation of materials and insulation systems*

ISO 80000-1, *Quantities and units — Part 1: General*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12736-1 and the following apply.

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

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1 3.1
agreed
specified in the purchase order

Note 1 to entry: To be discussed by the *system provider* (3.44)(3.44) and *system purchaser* (3.45)(3.45) with input from *end user* (3.11)(3.11) as required.

3.2 3.2
application procedure specification
APS

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quality specification document, or group of specifications, describing procedures, method, equipment, tools, etc. used for *system* (3.44)(3.44) application

3.3 3.3**batch**

quantity of *material* (3.25)(3.25) produced in a continuous manufacturing operation using raw materials of the same source or grade

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3.4 3.4**bend**

permanently curved or angled section of tubular pipe

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3.5 3.5**blown foam**

insulation *material* (3.25)(3.25) formed by incorporating a gas phase into a polymer matrix

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3.6 3.6**certificate of analysis**

document provided by the manufacturer that indicates results of specific tests or analysis, including test methodology, performed on a specified lot of the manufacturer's product and corresponding conformity ranges

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3.7 3.7**chamfer**

~~Exposed~~ *exposed* pre-shaped termination of a *system* (3.43)(3.43) to be interfaced with.

Note 1 to entry: ~~chamfer~~ *Chamfer* geometry (e.g. angle, shape) and tolerances are project specific.

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3.8 3.8**construction joint**

interface (3.19)(3.19) where both *systems* (3.43)(3.43) are identical

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3.9 3.9**cool down time**

time taken for a fluid contained within a *pipeline* (3.27)(3.27) or *subsea equipment* (3.44)(3.44) to reach a pre-determined temperature from specific start temperatures (internal and external) when flow is stopped

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3.10 3.10**cutback**

length of item left uncoated at each end for joining purposes

Note 1 to entry: Welding is an example of joining purposes.

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3.11 3.11**end user**

company that owns and/or operates the *pipeline* (3.27)(3.27) or *subsea equipment* (3.44)(3.44)

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3.12 3.12**factory applied**

applied in a permanent facility

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