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Irish Standard
I.S. EN ISO 23936-1:2009

Petroleum, petrochemical and natural gas industries - Nonmetallic materials in contact with media related to oil and gas production - Part 1: Thermoplastics (ISO 23936-1:2009)

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN ISO 23936-1

April 2009

ICS 75.180.01

English Version

Petroleum, petrochemical and natural gas industries - Non-metallic materials in contact with media related to oil and gas production - Part 1: Thermoplastics (ISO 23936-1:2009)

Industries du pétrole, de la pétrochimie et du gaz naturel - Matériaux non-métalliques en contact avec les fluides relatifs à la production d'huile et de gaz - Partie 1: Matières thermoplastiques (ISO 23936-1:2009)

Erdöl-, petrochemische und Erdgasindustrie - Nichtmetallische Werkstoffe mit Medienkontakt bei der Öl- und Gasproduktion - Teil 1: Thermoplaste (ISO 23936-1:2009)

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Foreword

This document (EN ISO 23936-1:2009) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum 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 AFNOR.

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of an identical text or by endorsement, at the latest by October 2009, and conflicting national standards shall be withdrawn at the latest by October 2009.

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INTERNATIONAL STANDARD

ISO 23936-1

First edition
2009-04-15

Petroleum, petrochemical and natural gas industries — Non-metallic materials in contact with media related to oil and gas production —

Part 1: Thermoplastics

Industries du pétrole, de la pétrochimie et du gaz naturel — Matériaux non-métalliques en contact avec les fluides relatifs à la production d'huile et de gaz —

Partie 1: Matières thermoplastiques

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 23936-1 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*.

ISO 23936 consists of the following parts, under the general title *Petroleum, petrochemical and natural gas industries — Non-metallic materials in contact with media related to oil and gas production*:

— *Part 1: Thermoplastics*

Elastomers, thermosets, fibre-reinforced composites, and other non-metallic materials are to form the subjects of future parts 2, 3, 4 and 5.

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Introduction

Non-metallic materials are used in the petroleum and natural gas industries for pipelines, piping, liners, seals, gaskets and washers, among others. Specifically, the use of piping and liners will considerably increase in the future. The purpose of ISO 23936 is to establish requirements and guidelines for systematic and effective planning, for the reliable use of non-metallic materials to achieve cost effective technical solutions, taking into account possible constraints due to safety and/or environmental issues.

ISO 23936 will be of benefit to a broad industry group ranging from operators and suppliers to engineers and authorities. It covers relevant generic types of non-metallic material (thermoplastics, elastomers, thermosetting plastics) and includes the widest range of existing technical experience. This is particularly important because the subject has not been summarized before in a technical standard. Coatings are excluded from the scope of ISO 23936.

ISO 23936 was initiated during work on ISO 15156-1, ISO 15156-2 and ISO 15156-3, which give the requirements and recommendations for the selection and qualification of low-alloy steels, corrosion-resistant alloys and other alloys for service in equipment used in environments containing H_2S in oil and natural gas production and natural gas treatment plants, where failure of such materials could pose a risk to the health and safety of the public and personnel or to the environment. A fourth part of ISO 15156 was originally envisaged to cover, likewise, the selection and qualification of non-metallic materials in the same environment. However, at a later stage it was decided that due to the differences in the corrosion mechanisms of metallic and non-metallic materials it would be too limiting to solely consider hydrogen sulfide as the corrosive component for non-metallic materials, because in oil and gas production services other systems parameters must also be considered as being corrosive and deteriorating for non-metallic materials.

It was therefore decided to produce a stand-alone International Standard, covering all systems parameters that are considered relevant in the petroleum and natural gas industries to the avoidance of corrosion damages to non-metallic equipment. ISO 23936 supplements, but does not replace, the materials requirements of the appropriate design codes, standards or regulations.

ISO 23936 applies to the qualification and selection of materials for equipment designed and constructed using conventional design criteria for technical application of non-metallic materials. Designs utilizing other criteria are excluded from its scope. ISO 23936 is not necessarily suitable for application to equipment used in refining or downstream processes and equipment.

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Petroleum, petrochemical and natural gas industries — Non-metallic materials in contact with media related to oil and gas production —

Part 1: Thermoplastics

CAUTION — Non-metallic materials selected using the parts of ISO 23936 are resistant to the given environments in the petroleum and natural gas industries, but not necessarily immune under all service conditions. ISO 23936 allocates responsibility for suitability for the intended service in all cases to the equipment user.

1 Scope

ISO 23936 as a whole presents general principles and gives requirements and recommendations for the selection and qualification, and gives guidance for the quality assurance, of non-metallic materials for service in equipment used in oil and gas production environments, where the failure of such equipment could pose a risk to the health and safety of the public and personnel or to the environment. It can be applied to help to avoid costly corrosion failures of the equipment itself. It supplements, but does not replace, the material requirements given in the appropriate design codes, standards or regulations.

This part of ISO 23936 addresses the resistance of thermoplastics to the deterioration in properties that can be caused by physical or chemical interaction with produced and injected oil and gas-field media, and with production and chemical treatment. Interaction with sunlight is included; however, ionizing radiation is excluded from the scope of this part of ISO 23936.

Furthermore, this part of ISO 23936 is not necessarily suitable for application to equipment used in refining or downstream processes and equipment.

The equipment considered includes, but is not limited to, non-metallic pipelines, piping, liners, seals, gaskets and washers.

2 Normative references

The following referenced documents are indispensable for the application 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 178, *Plastics — Determination of flexural properties*

ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test*

ISO 306, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST)*

ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles*

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

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