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

Part 2: Elastomers



AS ISO 23936.2:2022

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Preface

This Standard was prepared by the Standards Australia Committee ME-092, Materials, equipment, structures and related services for petroleum, petrochemical and natural gas industries.

The objective of this document is to describe general principles and give requirements and recommendations for the selection and qualification of non-metallic materials for service in equipment used in oil and gas production environments.

This document also describes the requirements and procedures for qualification of elastomeric material used in equipment for oil and gas production.

This document is identical with, and has been reproduced from, ISO 23936-2:2011, *Petroleum, petrochemical and natural gas industries — Non-metallic materials in contact with media related to oil and gas production — Part 2: Elastomers*.

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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.

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.

ISO 23936-2 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*

— *Part 2: Elastomers*

The following parts are planned:

— *Part 3: Thermosets*

— *Part 4: Fibre-reinforced composite*

— *Part 5: Other non-metallic materials*

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Introduction

ISO 23936 is intended to be of benefit to a broad industry group, ranging from operators and suppliers to engineering companies and authorities. ISO 23936 covers relevant generic types of non-metallic material (thermoplastics, elastomers, thermosetting plastics, fibre-reinforced plastics, etc.) and draws upon a wide range of existing technical experience, which has never before been summarized in a technical standard.

ISO 23936 does not cover polymeric coatings such as thermal insulation and paint that are applied to the outside of components but that are not in contact with oilfield fluids.

The evaluation and qualification process described in this part of ISO 23936 is intended to ensure that the user of non-metallic materials has sufficient understanding and knowledge of the applicable materials to obtain acceptable performance in the specified environment, and that the user can rely on stable quality to meet given specifications. A quality system is useful to ensure compliance with the requirements of this part of ISO 23936.

Successful qualification of a manufacturer and a specific material is intended to be valid for other projects and different operators. The consideration of qualification of a manufacturer is at the discretion and determination of the purchaser, normally on the basis of documentation provided by the manufacturer, as required in this part of ISO 23936 or any specific additional documentation.

The purchaser is responsible for ensuring (if necessary, with external competence) that the manufacturers selected are qualified.

This part of ISO 23936 is based on NORSOK standard M-710.

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

Part 2: Elastomers

1 Scope

ISO 23936 describes general principles and gives requirements and recommendations for the selection and qualification 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 avoid 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 describes the requirements and procedures for qualification of elastomeric material used in equipment for oil and gas production.

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 34-1:2010, *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 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

ISO 815-1, *Rubber, vulcanized or thermoplastic — Determination of compression set — Part 1: At ambient or elevated temperatures*

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

ISO 2921, *Rubber, vulcanized — Determination of low-temperature retraction (TR test)*

ISO 3601-3:2005, *Fluid power systems — O-rings — Part 3: Quality acceptance criteria*

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

ISO 13628-10:2005, *Petroleum and natural gas industries — Design and operation of subsea production systems — Part 10: Specification for bonded flexible pipe*

ASTM D297, *Standard Test Methods for Rubber Products — Chemical Analysis*

ASTM D395, *Standard Test Methods for Rubber Property — Compression Set*

ASTM D412, *Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers — Tension*

ASTM D624, *Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers*

ASTM D1414, *Standard Test Methods for Rubber O-Rings*

ASTM D1415, *Standard Test Method for Rubber Property — International Hardness*

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