
**Petroleum and natural gas industries —
Downhole equipment — Packers and
bridge plugs**

*Industries du pétrole et du gaz naturel — Équipement de fond de trou —
Garnitures d'étanchéité (packers) et bouchons mécaniques d'isolation de
fond*



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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14310 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum and natural gas industries*, Subcommittee SC 4, *Drilling and production equipment*.

Annex A forms a normative part of this International Standard.

Introduction

This International Standard has been developed by users/purchasers and suppliers/manufacturers of packers and bridge plugs intended for use in the petroleum and natural gas industry worldwide. This International Standard is intended to give requirements and information to both parties in the selection, manufacture, testing and use of packers and bridge plugs. Further, this International Standard addresses supplier/maker requirements which set the minimum parameters with which suppliers/manufacturers shall comply to claim conformity with this International Standard.

This International Standard has been structured with grades of increased requirements both in quality control and design validation. These variations allow the user/purchaser to select the grade required for a specific application.

The three quality control grades provide the user/purchaser the choice of requirements to meet a specific preference or application. Quality control grade Q3 is the minimum grade of quality offered by this product standard. Quality control grade Q2 provides additional inspection and verification steps, and quality control grade Q1 is the highest grade provided. Additional quality upgrades can be specified by the user/purchaser as supplemental requirements.

Six standard design validation grades (V1 to V6) and one special design validation grade (V0) provide the user/purchaser the choice of requirements to meet a specific preference or application. Design validation grade V6 is the minimum grade and represents equipment where the validation method has been defined by the supplier/maker. The complexity and severity of the validation testing increases as the grade number decreases.

Design validation grade V6 and quality control grade Q3 represent equipment designed and manufactured consistent with minimum industry practice. These grades are sufficient for a number of applications; however, some applications could require and justify the higher grades of quality control and design validation defined by this International Standard.

Users of this International Standard should be aware that requirements above those outlined in this International Standard may be needed for individual applications. This International Standard is not intended to inhibit a supplier/maker from offering, or the user/purchaser from accepting, alternative equipment or engineering solutions. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the supplier/maker should identify any variations from this International Standard and provide details.

Petroleum and natural gas industries — Downhole equipment — Packers and bridge plugs

1 Scope

This International Standard provides requirements for packers and bridge plugs for use in the petroleum and natural gas industry. Application of this International Standard is limited to those products meeting the definition of a packer or bridge plug intended for petroleum and natural gas industry subsurface operations.

This International Standard applies only to product applications within a conduit. Installation and maintenance of these products is outside the scope of this International Standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 2859-1:1999, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality limit (AQL) for lot-by-lot inspection*

ISO 3601-1, *Fluid power systems — O-rings — Part 1: Inside diameters, cross sections, tolerances and size identification code*

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

ISO 9000:2000, *Quality management systems — Fundamentals and vocabulary*

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

NACE MR0175, *Sulfide Stress Cracking Resistant Metallic Materials for Oilfield Equipment*

3 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply. Quality control terms not defined herein are defined in ISO 9000.

3.1

assembly

product comprised of more than one component

3.2

bridge plug

mechanical device installed in and used for blocking fluid (liquid or gas) communication in the conduit and not installed in a designed receptacle

3.3

casing

pipe extending from the surface and intended to line the walls of a drilled well