
Industrija za predelavo nafte in zemeljskega plina - Tekočine in materiali za zaključna dela - 4. del: Postopek za merjenje stimulacije in izgub tekočine filtrskega zasipa pri statičnih pogojih (ISO 13503-4:2006)

Petroleum and natural gas industries - Completion fluids and materials - Part 4: Procedure for measuring stimulation and gravel-pack fluid leakoff under static conditions (ISO 13503-4:2006)

Erdöl- und Erdgasindustrie - Komplettierungsflüssigkeiten und -materialien - Teil 4: Verfahren zur Messung von Stimulation und Verlust von Filterflüssigkeit aus Kiespackungen unter statischen Bedingungen (ISO 13503-4:2006)

Industries du pétrole et du gaz naturel - Fluides de complétion et matériaux - Partie 4: Mode opératoire pour mesurer la stimulation et la fuite du fluide filtrant dans des conditions statiques (ISO 13503-4:2006)

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Petroleum and natural gas industries - Completion fluids and materials - Part 4: Procedure for measuring stimulation and gravel-pack fluid leakoff under static conditions (ISO 13503-4:2006)

Industries du pétrole et du gaz naturel - Fluides de complétion et matériaux - Partie 4: Mode opératoire pour mesurer la stimulation et la fuite du fluide filtrant dans des conditions statiques (ISO 13503-4:2006)

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EN ISO 13503-4:2006 (E)**Foreword**

This document (EN ISO 13503-4:2006) 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of an identical text or by endorsement, at the latest by April 2007, and conflicting national standards shall be withdrawn at the latest by April 2007.

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INTERNATIONAL STANDARD

ISO 13503-4

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Petroleum and natural gas industries — Completion fluids and materials —

Part 4:

Procedure for measuring stimulation and gravel-pack fluid leakoff under static conditions

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*Industries du pétrole et du gaz naturel — Fluides de complétion et
matériaux —*

*Partie 4: Mode opératoire pour mesurer la stimulation et la fuite du
fluide filtrant dans des conditions statiques*



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Foreword

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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 13503-4 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 3, *Drilling and completion fluids, and well cements*.

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ISO 13503 consists of the following parts, under the general title *Petroleum and natural gas industries — Completion fluids and materials*:

- *Part 1: Measurement of viscous properties of completion fluids*
- *Part 2: Measurement of properties of proppants used in hydraulic fracturing and gravel-packing operations*
- *Part 3: Testing of heavy brines*
- *Part 4: Procedure for measuring stimulation and gravel-pack fluid leakoff under static conditions*
- *Part 5: Procedures for measuring the long-term conductivity of proppants*

Introduction

The objective of this part of ISO 13503 is to provide a standard procedure for measuring fluid loss under static conditions. This standard procedure was compiled on the basis of several years of comparative testing, debate, discussion and continued research by the industry¹⁾.

In this part of ISO 13503, where practical, US Customary (USC) units are included in parentheses for information.

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1) PENNY, G.S. and CONWAY, M.W. Fluid Leakoff, *Recent Advances in Hydraulic Fracturing*, J.L. Gidley, S.A. Holditch, D.E. Nierode and R.W. Veatch Jr. (eds), SPE Monograph 1989.

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Petroleum and natural gas industries — Completion fluids and materials —

Part 4: Procedure for measuring stimulation and gravel-pack fluid leakoff under static conditions

1 Scope

This part of ISO 13503 provides for consistent methodology to measure fluid loss of stimulation and gravel-pack fluid under static conditions. However, the procedure in this part of ISO 13503 excludes fluids that react with porous media.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

base fluid

solution media used to prepare completion fluid

2.2

filtrate

fluid that permeates into the porous medium

2.3

filter cake

build-up of materials on the face or within the matrix of porous medium due to fluid leakoff

2.4

fluid loss

fluid loss is a measure of fluid volume that leaks into a porous medium over time

2.5

gravel-pack fluids

fluids used to place filtration media to control formation sand production from oil and gas wells

2.6

leakoff

entry of fluid into a porous media

2.7

pH

negative of the logarithm (base 10) of the hydrogen ion concentration

2.8

spurt time

time between the initial entry of fluid into porous medium and the onset of square-root-of-time leakoff behaviour