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Petroleum and natural gas industries — Completion fluids and materials —

Part 2: Measurement of properties of proppants used in hydraulic fracturing and gravel-packing operations

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

Partie 2: Mesurage des propriétés des matériaux de soutènement utilisés dans les opérations de fracturation hydraulique et de remplissage de gravier

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Contents

Page

Foreword ... v

Introduction ... vi

1 Scope ... 1

2 Normative references ... 1

3 Abbreviations ... 1

4 Standard proppant sampling procedure ... 2
4.1 General ... 2
4.2 Particle segregation ... 2
4.3 Equipment ... 2
4.4 Number of required samples — Bulk ... 4
4.5 Sampling —Bulk material ... 5
4.6 Sampling — Bagged material ... 5

5 Sample handling and storage ... 5
5.1 Sample reduction ... 5
5.2 Sample splitting ... 5
5.3 Sample and record retention and storage ... 5

6 Sieve analysis ... 6
6.1 Purpose ... 6
6.2 Description ... 6
6.3 Equipment and materials ... 6
6.4 Procedure ... 6
6.5 Calculation of the mean diameter, median diameter and standard deviation ... 7
6.6 Sieve calibration ... 9

7 Proppant sphericity and roundness ... 11
7.1 Purpose ... 11
7.2 Description ... 12
7.3 Apparatus capability ... 12
7.4 Procedure ... 12
7.5 Alternate method for determining average sphericity and roundness ... 13

8 Acid solubility ... 13
8.1 Purpose ... 13
8.2 Description ... 13
8.3 Equipment and materials ... 14
8.4 Procedure ... 14

9 Turbidity test ... 15
9.1 Purpose ... 15
9.2 Description ... 16
9.3 Equipment and materials ... 16
9.4 Equipment calibration ... 16
9.5 Procedure ... 16

10 Procedures for determining proppant bulk density, apparent density and absolute density ... 17
10.1 Purpose ... 17
10.2 Description ... 17
10.3 Bulk density ... 17
10.4 Apparent density ... 19
10.5 Absolute density ... 21

11 Proppant crush-resistance test 21
11.1 Purpose 21
11.2 Description 21
11.3 Equipment and materials 22
11.4 Sample preparation 22
11.5 Crush-resistance procedure 23
12 Loss on ignition of resin-coated proppant 25
12.1 Objective 25
12.2 Apparatus and materials 25
12.3 Loss-on-ignition procedure for whole-grain proppant 25
Annex A (informative) **Formazin solution preparation 27**
Bibliography 28

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 13503-2 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*.

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

This part of ISO 13503 is a compilation and modification of API RP 56 [1], API RP 58 [2] and API RP 60 [3].

The procedures have been developed to improve the quality of proppants delivered to the well site. They are for use in evaluating certain physical properties used in hydraulic fracturing and gravel-packing operations. These tests should enable users to compare the physical characteristics of various proppants tested under the described conditions and to select materials useful for hydraulic fracturing and gravel-packing operations.

The procedures presented in this part of ISO 13503 are not intended to inhibit the development of new technology, material improvements or improved operational procedures. Qualified engineering analysis and judgment are required for their application to a specific situation.

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

Annex A of this part of ISO 13503 is for information only.

Petroleum and natural gas industries — Completion fluids and materials —

Part 2:
Measurement of properties of proppants used in hydraulic fracturing and gravel-packing operations

1 Scope

This part of ISO 13503 provides standard testing procedures for evaluating proppants used in hydraulic fracturing and gravel-packing operations.

NOTE "Proppants" mentioned henceforth in this part of ISO 13503 refer to sand, ceramic media, resin-coated proppants, gravel-packing media and other materials used for hydraulic fracturing and gravel-packing operations.

The objective of this part of ISO 13503 is to provide a consistent methodology for testing performed on hydraulic fracturing and/or gravel-packing proppants.

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.

ASTM E11, *Standard Specification for Wire Cloth and Sieves for Testing Purposes*

3 Abbreviations

API	American Petroleum Institute
ASTM	American Society for Testing and Materials
ASG	apparent specific gravity
FTU	formazin turbidity unit
HCl	hydrochloric acid
HF	hydrofluoric acid
LOI	loss on ignition
NTU	nephelometric turbidity unit