ISO/FDIS 13503-8:2025(en)

Date:2025-03-04

ISO/TC 67/SC 3

Secretariat: UNI

Date: 2025-03-12

Oil and gas industries including lower carbon energy — Completion fluids and materials — —

Part 8: Measurement of properties of coated proppants used in hydraulic fracturing

Industries du pétrole et du gaz, y compris les énergies à faible teneur en carbone — Fluides de complétion et matériaux —

Partie 8: Mesurage des propriétés des agents de soutènement enrobés utilisés dans la fracturation hydraulique

FDIS stage

Contents

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 67, *Oil and gas industries including lower carbon energy*, Subcommittee SC 3, *Drilling and completion fluids, well cements and treatment fluids.*

A list of all parts in the ISO 13503 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is intended to be used together with ISO 13503-2[1] and ISO 13503-5.[2].

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

This document is only available for evaluating the effectiveness of coated proppants. For sieve analysis, mean diameter, roundness, sphericity, bulk density, absolute density, proppant crush-resistance, and loss on ignition of resin-coated proppant, please refer to ISO 13503-2,; and for conductivity of proppants, refer to ISO 13503-5.

Oil and gas industries including lower carbon energy — Completion fluids and materials — —

Part 8: Measurement of properties of coated proppants used in hydraulic fracturing

1 Scope

This document provides test procedures for evaluating coated proppants used in hydraulic fracturing operation.

This document provides a consistent methodology for tests performed on coated proppants used in hydraulic fracturing operations.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 3.1
coated proppant
solid particle used in hydraulic fracturing that is coated with a layer of resin or other material

3.2 3.2
precured coated proppant
solid particle that can be cured or hardened during the manufacturing process

3.3 3.3
curable coated proppant
solid particle that can be cured or hardened after being placed in the fracture

4 Sampling procedures for coated proppants

4.1 General

Before any sample is taken, consider what tests will be performed, as each test require different volumes. Both the supplier and the customer should obtain the best representative sample possible. Unless the sample is truly representative of a total shipment or container, testing and correlation with specifications or standards is very difficult. It is unlikely that sampling/testing methods in field duplicate the producer's system. The standard procedures included within this document assist in obtaining representative samples. However, there are inherent variations associated with sampling, testing equipment and the procedures that can lead to inconsistent results. A sample that is representative of the load of load-carrying vehicle ~~[~~(23 000 kg~~]~~) or a railcar load ~~[~~(90 000 kg~~]~~) can be an initial source of wide variation when making comparisons. All parties should ensure uniform sampling. The customer and the supplier should agree on sampling and testing methods or techniques.

For the best representation,the sampling should be continuous. Although many proppant suppliers utilize automatic sampling, it is usually impractical at the job site. If sampling is conducted while unloading a container or at the site, consideration should be given to the number or frequency of samples.

If bulk containers are filled from a flowing stream of proppant material, sampling procedures in accordance with 4.5~~4.5~~ should be applied. If bulk containers are filled using sacked proppant material, sampling procedures in accordance with 4.6~~4.6~~ should be applied.

4.2 Particle segregation

Depending on the size, shape, distribution and mechanisms involved, there is usually a certain amount of error or variability involved in sampling due to segregation. The sampling procedures described here are the result of much experience and are designed to minimize the effects of segregation of particles by size.

Particles, such as proppants, naturally find the path of least resistance when moved or when a force is applied. During transfer or movement, particles of differing sizes and mass naturally are separated or segregate. The degree of segregation depends on the mechanisms involved in the transfer or movement.

There are several forces, such as gravity, acting on a stream of particles as it flows. Within a moving stream, fine particles drop through the voids or gaps and coarser particles move to the outside. The fine particles migrate and usually rest close to the area where they land. The heavier, coarser particles bounce or roll much further, stratifying the material by size.

4.3 Equipment

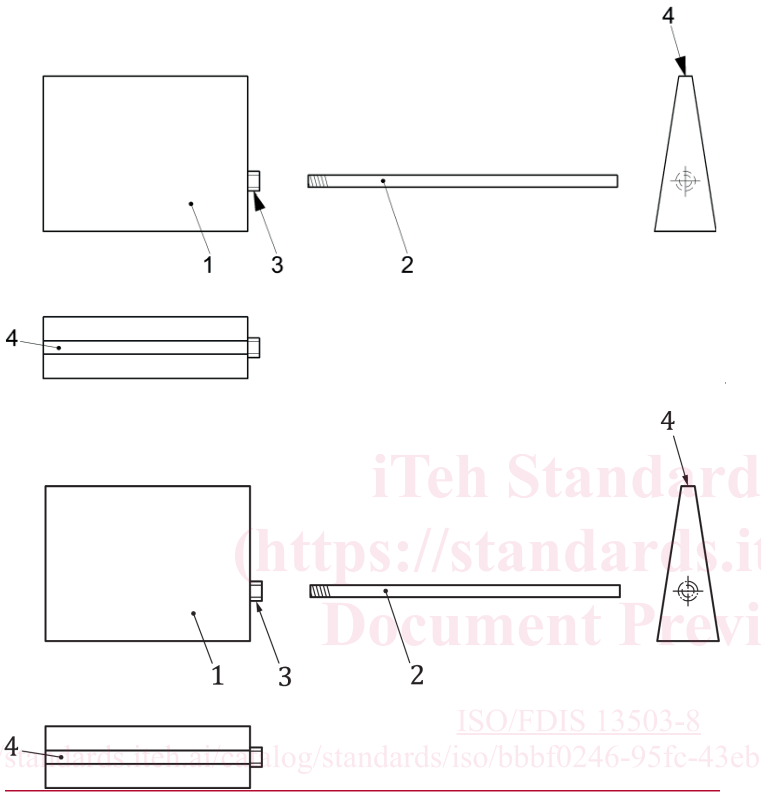
4.3.1 ~~**4.3.1**~~ **Box sampling device,** with a 13 mm slot opening; the length of the 13 mm slot should be longer than the thickness of the stream being sampled. The volume of the sampler should be large enough so as to not overflow while cutting through the entire stream. A box sampling device meeting these criteria is shown in Figure 1~~Figure 1~~.

4.3.2 ~~**4.3.2**~~ **Stand sampling device,** the same number of samples should be obtained by vertically inserting not less than 3/4 of the sampler from top,middle and bottom of the sampling bag; see Figure 2~~Figure 2~~.

4.3.3 ~~**4.3.3**~~ **Sample reducer**, of appropriate size for handling sack-size samples and reducing the material to 1/16 of the original mass; see Figure 3~~**Figure 3**~~.

4.3.4 ~~**4.3.4**~~ **Sample splitter**, of appropriate size; see Figure 4~~**Figure 4**~~.

Dimensions in centimetres



Key

1 sampler body: 15,9 × 20,9 × 6,35

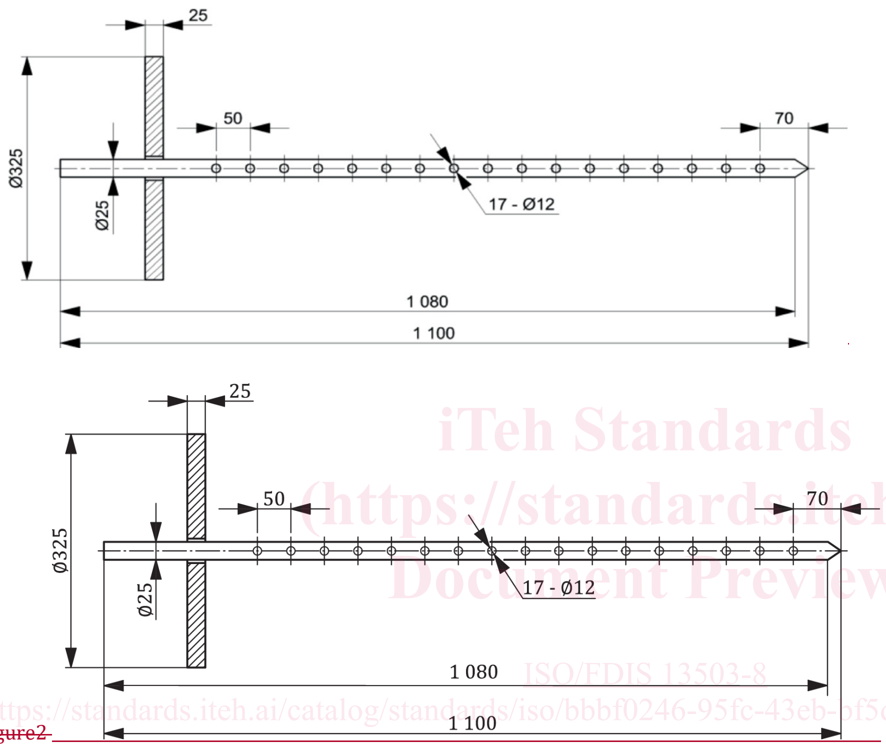
2 handle

3 pipe coupling

4 sample opening: 1,27

Figure 1 — Box sampling device

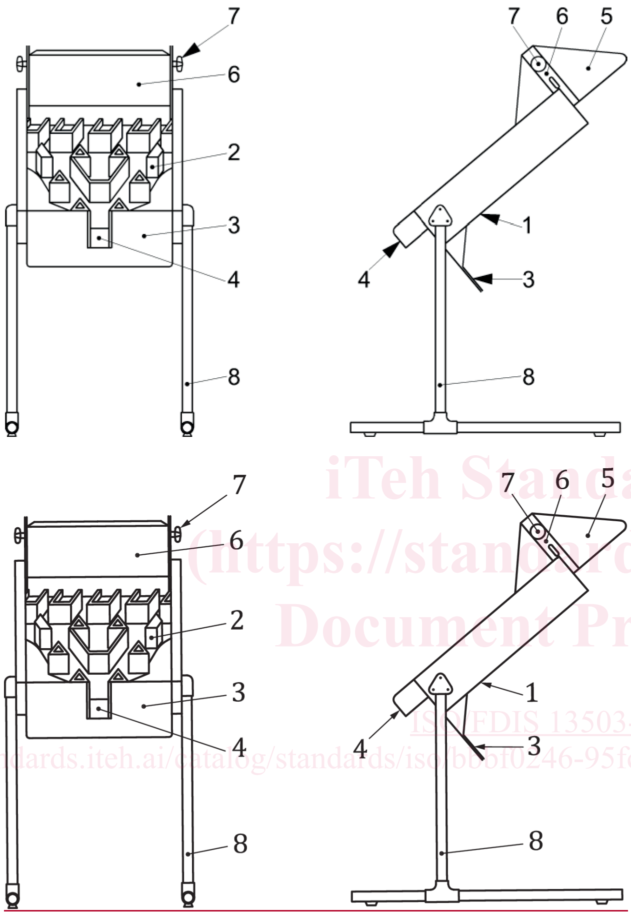
Dimensions in millimetres



~~Figure2~~

Figure 2 — Stand sampling device

Dimensions in centimetres



Key

1 main body: 36,8 × 48,3 ×11,4
2 splitter plate: 5,1 × 5,1 × 5,1
3 discharge tray: 36,8 × 30,5× 0,32
4 discharge chute: 5,7 × 5,7 × 7,6
5 hopper: 36,8 × 24,1 × 15,2
6 gate: 36,8 × 19,1 × 0,32
7 hand knob: 3,8 (diameter)
8 support stand assembly: 71,1 × 38,1 × 68,6

Figure 3 — Sample reducer