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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 33293-2016

**Determination of shrinkage and expansion of well cement
formulations at atmospheric pressure**

常压下油井水泥收缩与膨胀的测定

(English Translation)

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Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the re-drafting method to amend the use of ISO 10426-5.:2004 "oil and gas industry cementing cement and materials No. 5 Part. Determination of shrinkage and expansion of oil well cement at atmospheric pressure ".

This standard has a structural change compared to ISO 10426-5.:2004, with 5.2.1.4 added, and 3.3 in ISO 10426-5.:2004.

There are technical differences between this standard and ISO 10426-5.:2004, and the terms involved in these differences have passed through the margin the vertical single line (|) of the position is marked.

The technical differences between this standard and ISO 10426-5.:2004 are as follows.

--- modified "1 Scope" because ISO 10426-5.:2004 "1 scope" discussion in general, does not include specific test methods, not meet the requirements of our standard preparation (see Chapter 1);

--- on the normative reference documents, this standard has made a technical differences in the adjustment to meet China's technical conditions, adjust the situation the situation is reflected in Chapter 2, "Normative references", as follows.

Replace GB 10426-2..2003 (see Chapter 2) referenced in ISO 10426-5.:2004 with GB/T 19139;

- Added the reference document "GB/T 10238 Oil Well Cement" (see Chapter 2).

- "3.3hydrationshrinkage" term for ISO 10426-5.:2004 was removed because "3.3hydrationshrinkage" ISO 10426-5.:2004 "Introduction" appears, and this standard removed the "Introduction", so the standard to remove "3.3hydrationshrinkage" (see ISO 10426-5.:2004, 3.3);

--- "5.2.1.4 modified syringe" has been added, since a syringe is required in the test and

can be adapted to this standard (see 5.2.1.4).

This standard has made the following editorial changes.

- the standard name is changed to "atmospheric pressure under the cement shrinkage and expansion of the determination";
- Deleted the preface and introduction of ISO 10426-5.:2004;
- The amount of USC units in ISO 10426-5.:2004 is deleted, all SI units are used;
- Deleted ISO 10426-5.:2004 in the USC unit formula, this standard are used SI unit formula.

This standard is proposed by the National Petroleum and Natural Gas Standardization Technical Committee (SAC/TC355).

The drafting unit of this standard. China Petroleum & Chemical Corporation Petroleum Engineering Technology Research Institute.

1 Scope

This standard specifies the measurement method of the shrinkage and expansion of oil well cement under normal pressure water bath condition, and the oil well cement Method for determination of shrinkage and expansion.

This standard is applicable to the measurement of shrinkage and expansion of cement in oil well under normal pressure.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 10238 Oil well cement (ISO 10426-1.:2009, MOD) GB/T 19139 Test method for oil well cement (ISO 10426-2.:2003, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

Volume bulge bulkexpansion the appearance or size of the cement sample increases.

Volume shrinks bulkshrinkage the appearance or size of the cement sample is reduced.

4.1 General

This standard for cement slurry tests may require pure cement or cement mixes, solid and liquid admixtures, and mixed water samples. Should be used the best available sampling technology to ensure that laboratory test conditions, materials and the scene as close as possible. Common samplers should be matched GB/T 19139.

4.2 Method

According to the provisions of GB/T 19139 implementation.

5.1 General

The annular expansion die is a test instrument used only to measure the linear volume shrinkage or expansion performance of a cement system. The purpose of this test method