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GB/T 39421-2020

Methods for determining the static gel strength of cement formulations

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Foreword

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

This standard uses the redrafting method to amend and adopt ISO 10426-6.2008 "Cement and Material for Cementing in Oil and Gas Industry No. 6

Part. Determination of Static Gel Strength of Cement Slurry.

Compared with ISO 10426-6.2008, this standard has structural adjustments. The terms and definitions in Chapter 3 are reorganized in the order of appearance.

Sort.

Compared with ISO 10426-6.2008, this standard has technical differences, and the clauses related to these differences have been passed on the outer margins.

The vertical single line ( ) of the position is marked.

The technical differences between this standard and ISO 10426-6.2008 and the reasons are as follows.

---Chapter 1 "Scope" is revised. The "Scope" of ISO 10426-6.2008 is general and not specific enough, and the "Scope of Application" is added;

---Regarding normative references, this standard has made adjustments to technical differences to adapt to my country's technical conditions and adjustments.

Reflected in Chapter 2 "Normative Reference Documents", the specific adjustments are.

* Replace ISO 10426-2.2003 with GB/T 19139 which is modified to adopt international

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standards;

---Modified Chapter 5 "Preparation", adjusted the content in the notes to the main text, and made it more maneuverable;

--- Change the records in 6.2.4, 7.2.7, 7.3.5, 8.2.7, 8.3.5 to 50Pa, 100Pa, 150Pa,.200Pa and 250Pa static glue

"Time of gel strength" is revised to "Record the time to reach 48Pa, 240Pa static gel strength", which is more operability and deleted

The repeated definition of "critical static gel strength time" is changed to "calculate critical static gel strength time";

--- Modify "see 7.2.5" in "7.1 Instrument" to "see 7.2.4 or 7.3.3", and correct the wrong reference;

--- Modify "see 8.2.4" in "8.1 Instrument" to "see 8.2.4 or 8.3.3" to enhance operability.

This standard has made the following editorial changes.

--- Modify the standard name to "Determination Method of Cement Slurry Static Gel Strength";

---Deleted the value of the relevant parameter USC unit in ISO 10426-6.2008, and all adopt the SI unit;

---Delete the USC unit system formula in ISO 10426-6.2008, and all adopt the SI unit system formula;

--- Modify the calculation formula coefficient "0.027" in Appendix A to "0.0025", the original calculation formula coefficient is wrong;

---References are deleted.

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

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

Drafting organizations of this standard. Petroleum Engineering Technology Research Institute of China Petroleum and Chemical Corporation, China Oilfield Services Co., Ltd.

Tianjin PetroChina Boxing Engineering Technology Co., Ltd.

1 Scope

This standard specifies the method for determining the static gel strength of cement slurry and related materials under simulated well conditions.

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This standard applies to the determination of the static gel strength of cement slurry and related materials.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 19139 Oil Well Cement Test Method (GB/T 19139-2012, ISO 10426-2..2003, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Static gel strength

The shear strength (stress) required to drive the gelled fluid from a pipe string or annulus of known length and shape.

Note. The unit of static gel strength is Pa (Pa) or cattle per square meter (N/m2).

3.2

Bottom hole circulating temperature

When circulating, the highest temperature that the bottom hole fluid can reach.

3.3

Bottom hole hydrostatic column pressure

Calculated from the vertical depth of the well and the fluid density in the wellbore.

3.4

Critical static gel strength time

The time required for the cement slurry to develop from the critical static gel strength to the static gel strength of 240Pa.

3.5

Critical static gel strength

The static liquid column pressure loss of cement slurry results in the static gel strength of cement slurry when the annulus static liquid column pressure and the formation pore pressure reach equilibrium.

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See Appendix A.

Note. The unit of critical static gel strength is Pa (Pa) or cattle per square meter (N/m2).

4.1 General

The cement slurry test in this standard requires cement or cement mixture, solid and liquid additives, and mixing water. The best available sampling should be used

Technology to ensure that laboratory test conditions and materials are as close as possible to the site.

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