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

GB/T 19139-2012

Replacing GB/T 19139-2003

Testing of well cements

油井水泥试验方法

(English Translation)

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Foreword

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

This standard replaces GB /"oil well cement test methods", compared with the GB/T 19139-2003, T 19139-2003 main changes are as follows.

--- Delete the words "This standard is one of cement and admixture standard wells, in addition to this standard, the standard also includes the series.

a) GB 10238 Oil well cement, b) SY/T 5374 oil and gas well cementing pad fluid use, c) SY/T 5406 water wells Mud DRA evaluation methods, d) SY/T 5504 oil well cement retarder evaluation methods, e) SY/T 5960 oil well cement fluid loss Agent evaluation methods, f)

SY/T 6466 high-temperature oil well cement performance evaluation method "(see preface to the 2003 edition);

--- Modify the normative references blurb file, the file is not referenced with the year number (see Chapter 2, Section 2 of the 2003 edition);

--- Remove the magnitude of the relevant parameters in English units, all units use the national legal metrology;

--- Added the following 38 terms. absolute volume (see 3.1.1), additives (see 3.1.2), the annulus (see 3.1.3), a bulk density (See 3.1.8), cementing the casing (see 3.1.9), cement (Portland cement) (see 3.1.10), cement level (see 3.1.11), water Mud type (see 3.1.12), clinker (see 3.1.15), compressive strength (see 3.1.17), thickening device (see 3.1.18), continuously pumped squeeze Cement job (see 3.1.19), equivalent bags (see 3.1.20), the filtrate (see 3.1.21), freeze - thaw cycles (see 3.1.24), intermittent pump Get cementing operations (see 3.1.25), the heating rate Rh (see 3.1.26), the tail pipe cementing (see 3.1.27), the drilling fluid (mud) (See 3.1.28), drilling fluid density meter (see 3.1.29), blood pressure rate Rpd (see 3.1.31), permeability (see 3.1.32), water Mud plug (see 3.1.33), the autoclave (see 3.1.36), pressurized curing autoclave (see 3.1.37), the boost rate RPU (see 3.1.38), phase Density (see 3.1.39), settlement (see 3.1.40), pulp cup (see 3.1.41), acoustic intensity (see 3.1.42), the initial pressure pS (See 3.1.43), the isolation solution (see 3.1.44), squeeze cementing (see 3.1.45), the static fluid loss test (see 3.1.46), the static stability Test (see 3.1.47), stirring type filtration device (see 3.1.48), thickening time (see 3.1.50), wettability with water (see 3.1.53);

--- Removed the following four terms. grout surface temperature (SST) (see 2003 edition 3.9), to be a temperature gradient (PSTG) (see 2003 version 3.11), is expected to bottom hole circulating temperature (PBHCT) (see the 2003 version 3.12), is expected to squeeze cement temperature (PSqT) (see 2003 edition 3.13);

--- Modified the following 12 terms. Suppose surface temperature TAS (see 314, 2003 version 3.10.), Borden Bc (see 3.1.6, 2003 version 3.7), air-through (see 3.1 7. 2003 version 3.14), cement mixer (see 3.1 13. 2003 edition 3.1), the compatibility (see 3.1 16. 2003 version 3.16), fly ash (see 3.1 22. A 2003 version 3.20), free fluid (See 3.1 23. 2003 version 3.15), pozzolan (see 3.1 34. A 2003 version 3.19), ahead fluid (see 3.1 35. The 2003 version 3.17 and 3.18), the intensity attenuation (see 3. 1. 49 2003 version 3.5), weighed mixer, namely, Volume tank (.. See 3151, 2003 version 3.2), an oil simulation test (see 3152, 2003 version 3.6.);

--- Adds symbols and meanings and is expected to squeeze cement temperature terminology and symbols into meaning (see 3.2);

--- Remove the 1 common shunt sampler top view (see the 2003 edition of the FIG. 1);

--- The slurry density of 0.05g/mL deviation modify slurry density deviates from 0.00g/cm³ ~

0.04g/cm³ of (See 5311, 2003, version 5.3.1...);

--- The "cement additives and solid density can be used GB/T Lee (LeChatelier) 208-1994 The bottle was measured set. In addition, the density of these materials can be measured using a density bottle. "To" cement density according to GB/T 208 said the method of determination, solid additives (admixtures) density of 4472 according to the method described in GB measured. "(See 5.3.1.2, 2003 version 5.3.1.1);

--- The "mixing water and the density of the liquid admixture should be used SY/T 6395-1999 the liquid density was measured. Another Outside, but also to determine the density of these materials using density bottles. "To" mixing water and the density of the liquid additive according to GB 4472 the densitometer measurement method "(see 5313, 2003, edition of 5.3.1.2...);

--- Added Figure 4 densitometer (see 5.3.1.3);

--- Increase the formula (4), (5), (6) (see Standard Operations 5.3.1.4);

--- The mixing water and cement temperature should be 22.8 °C ± 1.1 °C (73 °F ± 2 °F) is amended as mixing water and cement temperature should be 23 °C ± 1 °C (see 532, 2003 version 5.3.3.);

--- Increasing the sampling (see 7.2);

--- Remove the slurry was stirred (optional) (see 2003 edition 7.4);

--- The "test the temperature can be maintained at a temperature of ± 1.7 °C (± 3 °F) within the scope of" the temperature can be maintained at the test temperature was changed to " Within ± 2 °C "(see 743, 2003 edition of 7.2.3.);

--- The "atmospheric water bath can be used at 65.6 °C (150 °F) or lower temperature curing compressive strength of samples" to "atmospheric conservation can be used in a water bath temperature of 66 °C or lower samples conservation "(see 7431, 2003, edition of 7.2.3.1...);

--- The "shall be calibrated to the accuracy of ± 2 °C" "thermocouple calibration accuracy to ± 1.7 °C (± 3 °F)" modify (see 7.4.5, 2003 edition of 7.2.5.1, 7.2.5.3);

--- The release agent may become an option (see 748, 2003 version 7.2.8.);

--- The accuracy of the "temperature measuring system shall be calibrated to ± 1.7 °C (± 3 °F), not less than once monthly calibrations, calibration GB 10238-1998 according to the method described in Appendix E of conduct "to" accuracy temperature measurement system shall be calibrated to ± 2 °C. Calibration frequency should be at least once a month, according to the calibration method GB 10238 a "(see 8.2a), 9.3.3, 2003 edition of 8.2.1, 9.3.2);

--- The "heating system requirements in order to be able to at least 2.8 °C/min (5 °F/min) at

a rate of temperature rise of the oil bath" to "with minimal Heating rate 3 °C/min heating oil bath "(see 923, 2003 version 9.2.);

--- Remove the calibration potentiometer calibration method is to use an oil supplement (see 2003 edition of 9.3.1.2);

--- Increased "top thermocouple should be in a vertical position, inserted into the slurry cup agitator shaft from the slurry cup base 4.45cm ~ 8.89cm between. Since the thickening caused by different instrument models of different sizes, the thermocouple should be used with caution to ensure that the use of thermocouples Match thickening instrument, thermocouple tip in the correct position as described above, "the description (see 9.4.4);

--- Increased determination casing cementing program thickening time method [see 9.5.2a) ~ g)];

--- Increased determination tail pipe cementing thickening time program approach [see 9.5.3a) ~ g)];

--- Modify the formula (19), the "Q30 = 2Qt5.477 "To" fluid loss calculation = 2Vt 30t "[See equation (19), 2003 edition Formula (16)];

--- The pressure viscometer maximum test temperature 87 °C (189 °F) modified to 90 °C (see 124, 2003 edition 12.4.);

--- The "To improve the reliability of the measurement results, the entire test procedure can be repeated several times, each repetition using freshly prepared sample grout Goods. "Was changed to" in order to improve the reliability of the measurement results can be repeated two or three times a test step, each repetition using freshly prepared Grout. "(See 12.4i), 12.5f), 2003 edition of 12.4.9,12.5.6);

--- For Chapter 13 made editorial changes, including formulas and examples (see 13);

--- Deleted Table 6 "constant K" Table 7 "Symbol explanation" (see 2003 edition of 13.4.4);

--- Modify the "typical settling tube" (see Figure 19, 2003 edition of the FIG. 16);

--- Increased water wetting test (see 16.8);

--- Increased loose bulk density calculation formula (105), a compacted bulk density of formula (106) (see 17.2.2e));

--- Deleted "and corresponds to the present standard formula for using imperial units of formula" (see 2003 edition of Appendix D);

--- The "slurry thickening time testing program" was changed to an information appendix to this standard as Appendix D, delete the corresponding Imperial units value (see Appendix D, 2003 edition of Appendix E);

--- Deleted the "standard clauses coding and API RP10B-1997 reg coding control" (see