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**NATIONAL STANDARD OF THE  
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**Petroleum and natural gas industries -- Drilling fluids --  
Laboratory testing**

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**(English Translation)**

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## Foreword

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

This standard uses redrafted Law Amendment uses ISO 10416:2008 "oil and gas industry drilling laboratory tests" (English Version).

This standard and ISO 10416:2008 technical differences exist compared to the terms of these differences involved have been incorporated into the body and through the outer Vertical singlet side margin position (I) have been marked, the list given in Appendix A corresponding technical differences and their causes.

This standard also made the following editorial changes.

- a) use the "standard" instead of "this International Standard";
- '.' B) with a decimal point instead of a comma as the decimal point, ";
- c) the text of the original text has been corrected the wrong place.
  - 1) Original Table 2, 3.31 and 3.20 to be exchanged;
  - 2) Original 8.2.16 in 8mm (3/16in) should be changed to 8mm (5/16in);
  - 3) should be replaced by the original 9.5.5 228.8nm 283.3nm;
  - 5) Original 14.2.7 and 26.2.6 in 10000r/min  $\pm$  100r/min should be changed to 1000r/min  $\pm$  100r/min;

- 6) should be replaced in its original 14.5.1 in 350g 360g;
- 7) Original 14.7.1 in 750r/min  $\pm$  50r/min should be changed to 7500r/min  $\pm$  500r/min;
- 8) should be replaced by the original 16.2.3 in 5mol 5mol/L;
- 9) the original formula (26) should be replaced in md m0;
- 10) Original 24 23.1.1 to 24.1.1;
- 11) Original 24.3.1.10 and 25.3.1.10 should be replaced in the 150 °F 140 °F;
- 12) Original 25.2.1.1 in 25 °C  $\pm$  1 °C (77 °F  $\pm$  3 °F) should be changed to 105 °C  $\pm$  3 °C (220 °F  $\pm$  5 °F);
- 13) Original 26.4.1 in 50 °C (300 °F) should be changed to 50 °C (120 °F);
- 14) Original 27.4.1.3 and 28.4.1.3 in 6 °C (10 °F) should be changed to 6 °C (43 °F);
- 15) The original 28.2.6.1 6200kPa (460psi) should be changed to 6200kPa (900psi);
- 16) The original 28.3.1.4  $9.87 \times 10^{-16} \text{m}^2 \sim 9.87 \times 10^{-11} \text{m}^2$  (100 mD  $\sim$  100D) should be replaced  $1.02 \times 10^{-13} \text{m}^2 \sim 1.02 \times 10^{-10} \text{m}^2$  (100mD  $\sim$  100D).

This standard by the National Standardization Technical Committee of Oil and Gas (SAC/TC355) and focal points.

This standard was drafted. China Research Institute of Petroleum and Chemical Corporation Zhongyuan Petroleum Exploration Bureau drilling engineering technology.

## Introduction

Determination of drilling fluid materials used in this standard is referenced from API RP13I seventh edition/ISO 10416:2002 [2]. This standard provides More and more rigorous testing methods to ensure the reproducibility and accuracy of test results. This standard applies to laboratory tests, if the site has More sophisticated equipment, through strict control of experimental conditions, can also be used for on-site drilling tests.

This standard is used to test drilling site maintenance unconventional performance, and field testing standards GB/T 16783.1 and GB/T 16783.2 compared to test results or more accurately, or to provide on-site testing standard does not mention the performance test method.

Users of this standard process can be made more or different requirements according to the special requirements of this standard is not intended to prevent vendors push or a user acceptance test in favor of improvements in technology and innovative alternative products or engineering technology programs. When there are alternative products or technologies introduced , The supplier shall submit their differences with the technical specifications of this standard.

If the test requires the use of hazardous chemicals, the user of this standard should have the appropriate knowledge and acceptance of the use and handling of these chemicals Training. Users should comply with local, regional and national labor laws and the HSE regulations.

The standard example of a footnote apparatus, reagents and materials are examples of suitable commercially available products. This information is given for the convenience of the standard the user does not imply an endorsement of these products, if other equivalent product has the same effect, you can use these equivalent products.

Oil drilling and natural gas industries laboratory tests

## 1 Scope

This standard specifies the method for laboratory testing of materials and drilling mud physical, chemical, rheological properties.

This standard applies to water-based drilling fluids, oil-based drilling fluids and other fluid-based solutions or man made.

This standard does not apply to control drilling fluid properties detailed manual. Since the test temperature and stirring conditions on drilling performance significantly the present standard gives the recommended test temperature and stirring conditions.

## 2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 261 Flash Point by Pensky - Martens closed cup method (GB/T 261-2008, ISO 2719:2002, MOD) GB/T 262 Petroleum products and hydrocarbon solvents aniline point and mixed aniline point measurement method (GB/T 262-2010, ISO 2977:1997, MOD) GB/T 1884 crude oil and liquid petroleum products - Laboratory determination of density (density meter method) (GB/T 1884-2000, eqv ISO 3675:1998) GB/T 3535 Petroleum products - Determination of pour point (GB/T 3535-2006, ISO 3016:1994, MOD) GB/T 5005-2010 drilling material specification (ISO 13500:2008, MOD) GB/T 6682-2008 analytical laboratory use specifications and test methods (ISO 3696. 1987, MOD) GB/T 16783.1 Petroleum and natural gas industries - Field testing of drilling fluids - Part 1. Water-based drilling fluids GB/T 16783.2 Petroleum and natural gas industries - Field testing of drilling fluids - Part 2. Oil-based drilling fluids (GB/T 16783.2-2012, ISO 10414-2:2002, MOD) ISO 91-1:1992 Petroleum Measurement Tables - Part 1. 60 °F to 15 °C and the temperature of the standard table (Petroleum measurementtables-Part 1. Tablesbasedonreferencetemperaturesof15 °C and60 °F) ISO 3007 Petroleum products and crude oil measurement Reid vapor pressure (Reid) Act

(Petroleum products and crude petroleum - Determination of vapour pressure - Reid method)  
Determination and calculation of dynamic viscosity ISO 3104 Petroleum products -  
Transparent and opaque liquids kinematic viscosity (Petroleum  
products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of  
dynamic viscosity) Determination (Petroleum products - Determination of dis-  
tillation characteristics of petroleum products under pressure 2011. ISO 3405  
Distillation characteristics at atmospheric pressure) ISO 3839 Petroleum products distillates and  
aliphatic olefins - Determination of bromine number potentiometric titration  
(Petroleum products - Determination of bromine number of distillates and aliphatic olefins - Electro-  
metric method) ASTM D1141 seawater substitutes  
(Standard practice for preparation of substitute ocean water) ASTM D4052 digital density meter  
test method for determining the density and relative density of the liquid  
(Standard test method for density and relative density of liquids by digital density meter)  
ASTM D5186 measured diesel and aviation turbine fuel aromatic content and polynuclear  
aromatics content by supercritical fluid chromatography Standard Test Method  
(Standard test method for determination of aromatic content and polynuclear aromatic