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

GB 11145-1989

Replacing GB/T 11145-1989

**Standard test method for measurement of low-temperature
viscosity of lubricants -- Brookfield viscometer method
(English Translation)**

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Foreword

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

This standard replaces GB/T 11145-1989 "Vehicles low viscosity lubricant fluid assay (Brookfield viscometer method)", and GB/T 11145-1989 main technical changes compared as follows.

- The standard name from "vehicle cryogenic fluid lubricant viscosity assay (Brookfield viscometer method)" to "low lubricant Brookfield viscosity measured temperature viscometer Law";
- Test Method A suitable viscosity range from the " $1000\text{mPa} \cdot \text{s} \sim 1000000\text{mPa} \cdot \text{s}$ " changed to " $500\text{mPa} \cdot \text{s} \sim 900000\text{mPa} \cdot \text{s}$ (see Chapter 1 and Chapter 1 of the 1989 edition)";
- Method A useful temperature range from the " $-5\text{ }^{\circ}\text{C} \sim -40\text{ }^{\circ}\text{C}$ " changed to "in the viscometer allows low-temperature range (see Chapter 1 and Chapter 11 989 edition);
- A method of increasing the number of adiabatic 4B2 spindle number Tannas4 glass composite mandrel and carbonaceous composite mandrel three kinds of spindle (see 5.2.2);
- A method of increasing the use of air cooling bath - heated liquid bath cooling liquid bath and procedural steps [see 5.2.8,5.4.3b) and 5.4.3c)];
- A test tube method used by the "inner diameter of $22\text{mm} \sim 23\text{mm}$, total length of $128\text{mm} \sim 130\text{mm}$, 70mm at the bottom from there Lasso line "to" glass tube, an inner diameter of $22.0\text{mm} \sim 22.5\text{mm}$, total length of $115\text{mm} \pm 5\text{mm}$, annular engraved Line "(see 5.2.3 and 4.1.4 1989 edition);
- A method of specimen preparation requirements by the " $50\text{ }^{\circ}\text{C}$ water bath placed 0.5h" was changed to "test tube small viscosity liquid sample preheating to $50\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$, constant temperature $30\text{min} \pm 5\text{min}$. For large tube viscosity of the liquid sample is

preheated to $90\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$, constant Wen $30\text{min} \pm 5\text{min}$ "[see 5.4.2c) and 1989 version 7.3];

--- A unified method of testing time limit "after the viscometer spindle starts to rotate, the test should be completed in the 60s (more than Sample $150000\text{mPa} \cdot \text{s}$ no more than 90s) "[see 5.4.5g) 3)].

This standard uses redrafted Law Revision using American Society for Testing Materials Standards ASTM D2983-09 "low viscosity lubricants Determination France (Brookfield viscometer law). " this standard ASTM D2983-09 compared to the structure have more adjustment, listed in Appendix A of this standard and ASTM D2983-09 the reg number table.

Differences and Reasons of the technical standards and ASTM D2983-09 follows.

--- Taking into account the actual situation, increase the content of this standard Chapter 6 Method B --- semiconductor cold bath Determination of viscosity and Appendix H "semiconductor technology cold bath conditions and instructions for use."

--- Due to our current unused SimAir laboratory test tube, so there is no use in SimAir tube phase ASTM D2983-09 Relevant content.

The standard proposed by China Petroleum and Chemical Corporation.

The standard by the China Petroleum Products and Lubricants Standardization Technical Committee of petroleum fuels and lubricants Technical Committee (SAC/TC280/SC1) centralized.

This standard was drafted. China Petroleum & Chemical Corporation lubricants R & D (Beijing) Center.

1 Scope

This standard specifies the appropriate torque conditions, try using Brookfield viscometer lubricant dynamic viscosity of low shear rate Test methods.

This standard applies to viscosity in the range of $500\text{mPa} \cdot \text{s} \sim 900000\text{mPa} \cdot \text{s}$, temperature range Brookfield viscometer allows Temperature range.

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 514-2005 petroleum products Glass liquid thermometer technical conditions GB/T 6683 Petroleum products - Determination of precision data test method SH/T relationship between viscosity and temperature of the lubricating oil at a low temperature cut 0732 assay (temperature scanning)

3 Terms and Definitions

The following terms and definitions apply to this document.

Apparent viscosity According to the standard measurement of dynamic viscosity.

Note: For non-Newtonian fluid lubricant, which will be apparent viscosity with Brookfield viscometer spindle speed (shear rate) change. See a brief description attached Record B.

Reference viscosity Reference viscosity of the oil.

Note: The reference oil is a Newtonian fluid having a specific viscosity at several temperature points required by the user. Reference oil viscosity typical reference in Appendix C.

4 Methods

4.1

automatic transmission fluid, gear oil, hydraulic transmission oil, hydraulic oil, industrial and automotive lubricants, the low temperature and low shear rate viscosity for normal Operation related equipment is very important. Many lubricant specifications and standards specify the use of this standard test viscosity and viscosity characteristics measured for determining Oil meets the requirements.

4.2

standard direct measurement of apparent viscosity, low temperature to avoid the error of estimating the value of the apparent viscosity of the resulting epitaxial method. With reference oil calibration