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

GB 13895-2018

Replacing GB 13895-1992

Heavy duty gear oils for automobile (GL-5)

重负荷车辆齿轮油(GL-5)

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Foreword

Chapter 4 and Chapter 5 in this Standard are mandatory provisions; the remaining is recommended provisions. This Standard is drafted in accordance with stipulations in GB/T 1.1-2009. This Standard serves as a replacement of GB 13895-1992 Heavy Duty Gear Oil for Automobile. In comparison with GB 13895-1992, there are several main technical changes, which are listed in Appendix A. This Standard was proposed by and shall be under the jurisdiction of National Energy Administration. The drafting organizations of this Standard. SINOPEC Lubricant Company, PetroChina Company Limited Lubricant Branch, SINOPEC Research Institute of Petroleum Processing, China National Heavy Duty Truck Group Co., Ltd., China First Automobile Works Group, Lanzhou BROIL Petroleum Additive Co., Ltd. The main drafters of this Standard. Du Xueling, Zhouyi, Mi Liping, Xu Shuyan, Shiqian, Wang Qingguo, Wang Shuaibiao, Huang Yunqi, Yanghe, Zhao Mingqiang, Tao Chunsheng, Ji Changchang. The release of previous versions of the standard replaced by this Standard is as follows:

---GB 13895-1992. Heavy Duty Gear Oils for Automobile (GL-5)

1 Scope

GB 13895 is the product standard for GL-5 heavy duty automotive gear oil, the extreme-pressure lubricant used in hypoid final drives and heavily loaded axles. It sets the product varieties and their designation by viscosity grade, the requirements and the test methods that go with each property, the inspection rules and the provisions for marking, packaging, transport and storage. It is the specification a blender must meet to sell GL-5 oil in China and the one a vehicle maker cites in a service schedule. Being a GB without the /T suffix, compliance is mandatory. Issued on 13 July 2018, in force since 1 February 2019, replacing GB 13895-1992. This page is published from the official record of the standard

held by the Chinese standards administration: the identification, the dates, the classification and the edition it replaces are taken from there. The clause text, the tables and the numeric limits are not reproduced on this page - they are in the document itself, which is delivered in full in English translation.

This Standard specifies the requirements, test methods, inspection rules, mark, packaging, transportation and storage of heavy duty gear oils for automobile (GL-5). Such gear oils are modulated by adding various additives to the base oil of refined mineral oil, synthetic oil, or the mixture of refined mineral oil and synthetic oil. This Standard is applicable to heavy duty gear oils for automobile (GL-5). This product is mainly applicable to automobile drive axle, especially hyperbolic gear that is adopted under the working condition of high-speed impact load, high-speed low torque and low- speed high torque.

2 Normative References

The following documents are indispensable to the application of this Standard. In terms of references with a specified date, only versions with a specified date are applicable to this Standard. The latest version (including all the modifications) of references without a specified date is also applicable to this Standard.

GB/T 260 Petroleum Products - Determination of Water

GB/T 265 Petroleum Products - Determination of Kinematic Viscosity and Calculation of Dynamic Viscosity

GB/T 511 Petroleum Products and Additives - Determination of Mechanical Impurities - Gravimetric Method

GB/T 1995 Petroleum Products - Calculation of Viscosity Index

GB/T 2433 Determination of Sulfated Ash from Additives and Lubrication Oil with Additives

GB/T 2541 Petroleum Products - Computation Table for Viscosity Indices

GB/T 3535 Petroleum Products - Determination of Pour Point

GB/T 3536 Petroleum Products - Determination of Flash and Fire Points; Cleveland Open Cup Method

GB/T 4756 Petroleum Liquids - Manual Sampling

GB/T 5096 Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
Lubricating Oil SH/T 0296 Determination Method for Phosphorus Content of Additive and Lubrication Oil Containing Additive (Colorimetric method)
SH/T 0303 Determination Method for Sulphur Content in Additive (Coulometric method)
SH/T 0519 Performance Evaluation Method for Anti-abrasion of Automotive Gear Oil (L-42 method)
SH/T 0520 Evaluation Method of Thermal and Oxidative Stability for Gear Oil SH/T 0755

Standard Test Method for Evaluation of the Thermal and Oxidative Stability of Lubricating Oil Used for Manual Transmissions and Final Drive Axles (L-60-1 method)

3 Product Variety and Designation

3.1 Product Variety In accordance with GB/T 17477, products that belong to this Standard can be divided into 10 grades of viscosity. 75W-90, 80W-90, 80W-110, 80W-140, 85W-90, 85W-110, 85W-140, 90, 110 and 140.

3.2 Product Designation The designation of heavy duty gear oils for automobile (GL-5) shall be. viscosity grade, variety code, standard number of heavy duty gear oils for automobile. For instance. 80W-90 GL-5 heavy duty gear oils for automobile GB 13895

4 Requirements and Test Methods

Please refer to the technical requirements and test methods of heavy duty gear oils for automobile (GL-5) in Table 1.

5.1 Inspection Classification and Items

5.1.1 Exit-factory inspection Exit-factory inspection includes batch inspection and exit-factory cycle inspection.

Appendix A

(Informative) Main Technical Changes between This Standard and GB 13895-1992 Please see Table A.1 for the main technical changes between this Standard and GB 13895-1992.

Table 1 -- Main Technical Changes between This Standard and GB 13895-1992 Item GB 13895-1992 This Standard Scope Products that belong to this standard are applicable to automobile gears that are adopted under the working condition of high-speed impact load, high-speed low torque and low-speed high torque, especially hypoid gear drive axle for buses and other types of automobiles; manual transmission. Products that belong to this standard are mainly applicable to automobile drive axle, especially hyperboloid gear that is adopted under the working condition of high-speed impact load, high-speed low torque and low-speed high torque. Multi-grade Oil Connection Symbol Multi-grade oil connection symbol is "/" Multi-grade oil connection symbol is modified into "-", for example, "80W/90" is modified into "80W-90" Viscosity Grade 6 viscosity grades are set. 75W, 80W/90, 85W/90, 85W/140, 90 and 140 10 viscosity grades are set. 75W-90, 80W-90, 80W-110, 80W-140, 85W-90, 85W-110, 85W-140, 90, 110 and 140 (5 viscosity grades are added. 75W-90, 80W-110, 80W-140, 85W-110 and 110; viscosity grade 75W is deleted) Kinematic Viscosity (100 °C) 75W ($\geq$

4.1 mm²/s) 80W/90, 85W/90 and 90 (

24.0 mm²/s); 85W/140 and 140 (

41.0 mm²/s) 75W-90, 80W-90, 85W-90 and 90 (

18.5 mm²/s); 80W-110, 85W-110 and 110 (

24.0 mm²/s); 80W-140, 85W-140 and 140 (

32.5 mm²/s) Viscosity Index 90 and 140. ≥ 75 ; 75W, 80W/90, 85W/90 and 85W/140.

report; Test method. GB/T 2541 90, 110 and 140. ≥ 90 ; 75W-90, 80W-90, 85W-90,

80W-110, 85W-110, 80W-140 and 85W/140. report; Test method GB/T 1995 is added KRL

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