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

GB 29743.1-2022

Replacing GB 29743-2013

Motor vehicle coolant - Part 1: Fuel vehicle engine coolant

机动车冷却液 第1部分：燃油汽车发动机冷却液

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part

1. Rules for the Structure and Drafting of Standardizing Documents. This Document is Part 1 of GB 29743 Motor Vehicle Coolant. The GB 29743 has published the following parts.

1. Fuel Vehicle Engine Coolant. This Document replaced GB 29743-2013 Motor Vehicle Engine Coolant. Compared with GB 29743-2013, this Document made the major technical changes as follows besides the structural adjustments and editorial modifications.

a) Change the scope of application (see Clause 1 of this Edition; Clause 1 of the 2013 Edition);

b) Change the term and definition of "engine coolant" (see

3.1 of this Edition;

3.1 of the 2013 Edition);

c) Delete the terms and definitions of "ethylene glycol type motor vehicle engine coolant" and "propylene glycol type motor vehicle engine coolant" (see

3.5 of the 2013 Edition);

d) Delete two models -15 and -20 (see Clause 4 of the 2013 Edition);

e) Add the classification code and model of 1,3-propanediol light-duty coolant (see Table 1 of this Edition);

- f) Add the classification code and model of 1,3-propanediol heavy-duty coolant (see Table 2 of this Edition);
- g) Change the classification codes and models of other types of coolants (see Table 1, Table 2 of this Edition; Table 1 of the 2013 Edition);
- h) Change the physical and chemical index requirements for "ash content" and "chlorine content" of ethylene glycol-based coolants; add the physical and chemical index requirements for "sulfate content"; and delete the physical and chemical index requirements for "other glycol content" (see Table 4 of this Edition; Table 4 of the 2013 Edition);

1 Scope

Part 1 of China's mandatory standard for motor vehicle coolant, covering the coolant of internal combustion engines - the antifreeze in every car, truck and bus on the road. It specifies the product classification, the technical requirements, the test methods, the inspection rules, and the marking, packaging, transport and storage of engine coolant for fuel vehicles. The document exists because a coolant has to do three incompatible things in a system made of several different metals. It must not freeze, which sets the freezing point and therefore the glycol content. It must not boil, which sets the boiling point and the reserve above it. And it must not corrode the aluminium head, the cast iron block, the copper and brass of the radiator, the solder and the steel of the pump - all of them in the same loop, in contact with each other, at temperature, for years. Most of the standard is about that third requirement: the corrosion tests on each metal, the behaviour of the inhibitor package over time and at temperature, the pH and the reserve alkalinity that keeps the coolant from turning acid as it degrades, the ash content, the foaming, and the compatibility with the elastomers of the hoses and seals. To those are added the physical properties - the density, the water content, the effect on the pump - and the requirement that the product be dyed, since the colour is how a mechanic tells one coolant from another and the standard treats it as part of the specification rather than as marketing. The classification is by the type of coolant and by the freezing point at which it is supplied. Issued on 29 December 2022 and in force since 1 July 2023, it replaces GB 29743-2013.

This Document specifies the product classification, technical requirements, test methods, inspection rules, and marking, packaging, transportation and storage of fuel vehicle engine coolants. This Document applies to the coolant for light-duty engines and heavy-duty engines of fuel vehicles.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest

version (including all the amendments) is applicable to this Document.

GB/T 711 Hot-Rolled Quality Carbon Structural Steel Plates, Sheets and Wide Strips

GB/T 1173 Casting aluminum alloys

GB/T 3673 Phthalocyanine green G

GB/T 5231 Designation and chemical composition of wrought copper and copper alloys

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 8926 Standard test method for insoluble in used lubricating oils

GB/T 9439 Grey iron castings JT/T 1230 Standard test method for determination of inorganic anions in motor vehicle engine coolant - Ion chromatography JT/T 1304 Technical specification of aluminum centrifugal pumps for cavitation corrosion characteristics test with engine coolants NB/SH/T 0164 Petroleum and related products packaging, storage, transportation and acceptance of delivery rules NB/SH/T 0828 Standard Test Method for Determination of Silicon and Other Elements in Engine Coolant by Inductively Coupled Plasma-atomic Emission Spectroscopy SH/T 0065 Preparation of the engine coolant or rust test samples and aqueous samples SH/T 0066 Standard test method for foaming tendencies of engine coolants in glassware SH/T 0067 Determination method for ash content in engine coolant and antirust agent SH/T 0068 Standard test method for density or relative density of coolant concentrates and engine coolants by the hydrometer SH/T 0069 Determination method for PH value of engine anti-freezing agent, antirust agent and coolant liquid SH/T 0084 Standard test method for effect of cooling system chemical solutions on organic finishes for automotive vehicles SH/T 0085 Determination Method of Corrosion Test for Engine Coolants (Glassware Method)

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Engine coolant The functional liquid that is compounded with antifreeze, corrosion inhibitor and other raw materials. It is used in the engine cooling system and has the functions of cooling, anti-corrosion, anti-freezing and anti-scaling, etc. NOTE. The engine coolant taken directly from the original product packaging is usually called the stock solution, which can be either the engine coolant concentrate or the engine coolant predilute.

3.2 Light-duty engine An engine that operates for a long time at a condition of lower than the rated (net) power.

3.3 Heavy-duty engine An engine that operates for a long time at a condition of rated (net) power. NOTE. Most heavy-duty engines adopt wet cylinder liner design.

3.4 Engine coolant concentrate The engine coolant, of which the water content is not more than 5%, is used for the engine cooling system after dilution.

3.5 Engine coolant predilute The engine coolant, with a specific freezing point, is directly used in the engine cooling system.

4 Product Classification

4.1 Classification by the engine load of the light-duty coolant shall comply with the provisions in Table 1.

4.2 Classification by main raw materials Coolant is divided into four categories according to the main raw materials.

4.3 Classification by moisture content Coolant is divided into coolant concentrate and coolant predilute according to the moisture content.

5 Technical Requirements and Test Methods

5.1 General requirements and test methods The general requirements and test methods for the coolant shall comply with the provisions in Table 3.

5.2 Physical and chemical performance requirements and test methods

5.2.1 The physical and chemical performance requirements and test methods of ethylene glycol type coolants shall comply with the provisions in Table 4.

5.2.2 The physical and chemical performance requirements and test methods of 1,2-propanediol type coolant shall comply with the provisions in Table 5.

5.3 Performance requirements and test methods The performance requirements and test methods of the coolant shall comply with the provisions in Table 8.

5.4 Special requirements and test methods for heavy-duty coolant In addition to meeting the requirements of 5.1~5.3, heavy-duty engine coolant shall also meet one of the following requirements.

6 inspection Rules

6.1 Classification of inspection

6.1.1 Inspection is divided into type inspection and exit-factory inspection.

6.1.2 Type inspection shall be carried out under the following circumstances.

6.1.3 Exit-factory inspection is divided into exit-factory batch inspection and exit-factory periodic inspection. When there is no change in the main raw materials and additives, at least two exit-factory periodic inspections shall be carried out every year.