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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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GB 1787-2018

Replacing GB 1787-2008

Aviation piston engine fuels

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Foreword

Clauses 4 and 5 of this Standard are compulsory; the others are voluntary.

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

This Standard replaces GB 1787-2008, *Aviation piston engine fuels*. Compared with GB 1787-2008, the major changes of this Standard are as follows:

- it adds two designations, No. UL91 and No. 100LL, and all indexes (see Table 1);
- for determination of lead content, it adds test method and reference ASTM D5059, *Standard test methods for lead in gasoline by X-ray spectroscopy* and list it as arbitration method (see Table 1);
- it adds test method for colour and reference ASTM D2392, *Standard test method for color of dyed aviation gasolines*, and requirements for dyestuff and quantity added (see Table 1);
- for determination of density, it adds test method and reference SH/T 0604, *Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method*, and lists it as arbitration method (see Table 1);
- for determination of sulfur content, it adds test method and reference NB/SH/T 0842, *Standard test method for sulfur in gasoline and diesel fuel by monochromatic wavelength dispersive X-ray fluorescence spectrometry*, and changes arbitration method from GB/T 380, *Determination of sulfur content in petroleum products (lamp method)*, into SH/T 0689, *Standard test method for determination of total sulfur in light hydrocarbons motor fuels and oils by ultraviolet fluorescence* (see Table 1);
- it cancels iodine value and existent gum items;
- it only has requirements for numbers 75 and 95 in respect of acidity and aromatic hydrocarbon indexes.

This Standard was proposed by and shall be under the jurisdiction of the National Energy Administration.

The drafting organizations of this Standard: Sinopec Research Institute of Petroleum Processing, CNPC Lanzhou Petrochemical Branch, Sinopec Beijing Yanshan Branch.

The main drafters of this Standard: Gong Dongmei, Tao Zhiping, Zhang Cuijun, Ling Liexiang, Cheng Ye, Liu Hua.

The previous editions of the standard replaced by this Standard are as follows:

Aviation piston engine fuels

Warning – This standard may involve certain hazards in the process of production, transportation, loading, use, etc. of the products covered by it, if appropriate protective measures are not taken, but it does not purport to address all of the safety concerns, if any. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This Standard specifies the classification and designation, requirements and test methods, inspection rules, marking, packaging, transportation and storage and safety of aviation piston engine fuels, which are produced using the materials and processes approved through the national evaluation procedure and adding appropriate additives.

This Standard applies to aviation piston engine fuels.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition dated applies to this document. For undated references, the latest edition of the referenced documents (including all amendments) applies to this document.

GB 190, *Labels for Packages of dangerous goods*

GB/T 258, *Standard test method for determination of acidity of light petroleum products*

GB/T 259, *Petroleum products – Determination of water-soluble acids and alkalis*

GB/T 260, *Test method for water in petroleum products – Distillation method*

GB/T 380, *Determination of sulfur content in petroleum products (lamp method)*

GB/T 384, *Determination of calorific value of petroleum products*

GB/T 503, *Determination of the gasoline octane number – Test method for motor octane number*

SH/T 0506, *Determination of knock characteristics of aviation gasolines (pressurization method)*

SH/T 0585, *Determination method for oxidation stability of aviation fuel (potential residue method)*

SH/T 0604, *Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method*

SH/T 0689, *Standard test method for determination of total sulfur in light hydrocarbons motor fuels and oils by ultraviolet fluorescence*

SH/T 0770, *Standard test method for freezing point of aviation fuels (automatic phase transition method)*

SH/T 0794, *Standard test method for vapor pressure of petroleum products (mini method)*

NB/SH/T 0842, *Standard test method for sulfur in gasoline and diesel fuel by monochromatic wavelength dispersive X-ray fluorescence spectrometry*

ASTM D2392, *Standard test method for color of dyed aviation gasolines*

ASTM D3338, *Standard test method for estimation of net heat of combustion of aviation fuels*

ASTM D5059, *Standard test methods for lead in gasoline by X-ray spectroscopy*

3 Classification and designation

3.1 Classification

Aviation piston engine fuels includes 5 designations according to motor octane numbers, including numbers 75, UL91, 95, 100 and 100LL, with “UL” representing unleaded and “LL” representing low lead.

3.2 Designation

Aviation piston engine fuels complying with the technical requirements of Table 1 of this Standard shall be designated as “No. 75 aviation piston engine fuel”, “No. UL91 unleaded aviation piston engine fuel”, “No. 95 aviation piston engine fuel”, “No. 100 aviation piston engine fuel” or “No. 100LL low lead aviation piston engine fuel”.

The inspection of this product is exit-factory inspection. The items of exit-factory inspection include all inspection items specified in the technical requirements of Clause 4 (all the items in Table 1).

5.2 Batch

On the condition that the materials and processes remain unchanged, each tank of the product produced is a batch.

5.3 Sampling

Carry out sampling as specified in GB/T 4756. Take 4 L of oil sample for each batch of no. 75 and 91 for inspection and 1 L as reserved sample; take 10 L of oil sample for each batch of no. 95, 100 and 100LL for inspection and 2 L as reserved sample.

5.4 Criteria

The product can be delivered only when all exit-factory inspection results pass.

5.5 Re-inspection rules

If there is any item in the exit-factory inspection fails to meet the requirements of Table 1, then take a double amount of sample to carry out re-inspection as specified in GB/T 4756. If there still one items in the re-inspection results failing to meet the requirements of Table 1, then the batch of product is rejected.

6 Marking, packaging, transportation and storage

According to GB 30000.7-2013, aviation piston engine fuels are flammable. Therefore, their marking, packaging, transportation and storage and delivery acceptance shall be as specified in SH 0164, GB 13690 and GB 190.

7 Safety

According to GB 30000.7-2013, aviation piston engine fuels are flammable. For their hazard statements and precautionary statements see Annex D to GB 30000.7-2013.

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