GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 75.160.20
E 31

GB 6537-2018

Replacing GB 6537-2006

No.3 jet fuel

3 号喷气燃料

Issued on: July 13, 2018 **Implemented on: February 01, 2019**

Issued by: State Market Regulatory Administration;
Standardization Administration of PRC.

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No.3 jet fuel

Caution - If the appropriate precautions are not observed, the products covered by this standard may be dangerous during production, storage, and use. This standard is not intended to advise on all safety issues related to this product. It is the responsibility of the user to take appropriate safety and health measures and to ensure compliance with the conditions set by the relevant national regulations.

1 Scope

This standard specifies the requirements and test methods, inspection rules, marking, packaging, transportation, storage, safety for the No.3 jet fuel which is produced by processing natural crude oil or its distillate oil as well as the No.3 jet fuel which is formed by blending it with synthetic hydrocarbon kerosene fraction.

This standard applies to No.3 jet fuel which is used for aviation turbine engines.

2 Normative references

The following documents are essential to the application of 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) are applicable to this standard.

GB 190 Packing symbol of dangerous goods

GB/T 261 Determination of flash point - Pensky-Martens closed cup method

GB/T 265 Petroleum products - Determination of kinematic viscosity and calculation of dynamic viscosity

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

GB/T 382 Test method for smoke point of kerosene and aviation turbine fuel

GB/T 384 Determination of calorific value of petroleum products

GB/T 509 Engine fuels - Determination of existent gum

GB/T 1792 Determination of mercaptan sulfur in gasoline, kerosene, jet, and

distillate fuels - Potentiometric method

GB/T 1793 Standard test method for water reaction of aviation fuels

GB/T 1884 Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method

GB/T 1885 Petroleum measurement tables

GB/T 2429 Aviation fuels - Calculation of net heat of combustion

GB/T 2430 Standard test method for freezing point of aviation fuels

GB/T 3555 Petroleum products - Determination of Saybolt color - Saybolt chromometer method

GB/T 4756 Method for manual sampling of petroleum liquids

GB/T 5096 Test method for corrosiveness to copper from petroleum products by copper strip test

GB/T 5208 Determination of flash point - Rapid equilibrium closed cup method

GB/T 6536 Standard test method for distillation of petroleum products at atmospheric pressure

GB/T 6539 Standard test methods for electrical conductivity of aviation and distillate fuels

GB/T 8019 Standard test method for gum content in fuels - By jet evaporation

GB/T 9169 Standard test method for thermal oxidation stability of aviation turbine fuels - JFTOT procedure

GB/T 11132 Standard test method for hydrocarbon types in liquid petroleum products by fluorescent indicator adsorption

GB/T 11133 Standard test method for determination of water in petroleum products, lubricating oils, and additives - Coulometric Karl Fischer titration method

GB/T 11140 Standard test method for sulfur in petroleum products by wavelength dispersive X-ray fluorescence spectrometry

GB/T 12574 Jet fuels - Determination of total acid number

GB 13690 General rule for classification and hazard communication of chemicals

hydrocarbons by syringe/inlet oxidative combustion and chemiluminescence detection

SH/T 0687 Standard test method for measurement of lubricity of aviation turbine fuels by the ball-on-cylinder lubricity evaluator (BOCLE)

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)

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

NB/SH/T 0892 Standard test method for trace elements in middle distillate fuels by inductively coupled plasma atomic emission spectrometry

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

ASTM D7359 Standard test method for total fluorine, chlorine and sulfur in aromatic hydrocarbons and their mixtures by oxidative pyrohydrolytic combustion followed by ion chromatography detection (combustion ion chromatography-CIC)]

IP 585 Determination of fatty acid methyl esters (FAME), derived from biodiesel fuel, in aviation turbine fuel - GC-MS with selective ion monitoring/scan detection method

IP 590 Determination of fatty acid methyl esters (FAME), derived from biodiesel fuel, in aviation turbine fuel -HPLC evaporative light scattering detector method

3 Abbreviations

The following abbreviations apply to this document.

FT-SPK: Fischer Tropsch - Synthesized paraffinic kerosene

HEFA-SPK: Hydroprocessed esters and fatty acid - Synthesized paraffinic kerosene

4 Requirements and test methods

4.1 The raw materials, production processes and additives which are used in

[f] The flash point can also be determined in accordance with GB/T 21929 and GB/T 261. If there is any dispute, GB/T 21789 shall prevail.

[g] The density can also be determined in accordance with the method of SH/T 0604. If there is any dispute, GB/T 1884 and GB/T 1885 shall prevail.

[h] The freezing point can also be determined in accordance with the method of SH/T 0770. If there is any dispute, GB/T 2430 shall prevail.

[i] The viscosity can also be determined in accordance with the method of GB/T 30515. If there is any dispute, GB/T 265 shall prevail.

[j] For civil aviation fuels, there is no requirement for the viscosity index at 20 °C.

[k] The net calorific value can also be determined in accordance with the methods of GB/T 2429 and ASTM D3338. If there is any dispute, GB/T 384 shall prevail.

[l] For civil aviation fuel, this indicator may not be required.

[m] The gum can also be determined in accordance with the method of GB/T 509. If there is any dispute, GB/T 8019 shall prevail.

[n] For civil aviation fuels, this indicator may not be required.

[o] Fuel is required to be greater than 150 pS/m (20 °C) when exit-factory. If it is not required to add the antistatic agents to the fuel, this indicator is not required.

[p] For the civil aviation fuel, it requires that WSD is not more than 0.85 mm.

4.3 Technical requirements for the No.3 jet fuel which contains FT-SPK or HEFA-SPK synthetic hydrocarbon components shall comply with the following requirements in addition to the requirements of Table 1:

The synthetic hydrocarbon components of FT-SPK and HEFA-SPK are as shown in Appendix B and Appendix C, respectively. In the No.3 jet fuel which contains synthetic hydrocarbon components, the volume fraction of FT-SPK or HEFA-SPK components shall not be higher than 50%; the volume fraction of aromatic hydrocarbon shall be not less than 8.0%; the difference of recovery temperature at the boiling range 50% and 10% is not less than 15 °C; the difference of recovery temperature at the boiling range 90% and 10% is not less than 40 °C

5 Inspection rules

5.1 Inspection classification and inspection items

This product inspection is exit-factory inspection. The exit-factory inspection items are all inspection items as specified in the technical requirements of clause 4.

5.2 Group-batch

Under the conditions of no change of raw materials and processes, the products manufactured per tank or kettle form one batch.

5.3 Sampling

Appendix A

(Normative)

Additive's name and amount added

A.1 Name and amount of antistatic agent

T1502 or Stadis 450. The initial amount of addition is not more than 3.0 mg/L, the cumulative amount of addition is not more than 5.0 mg/L.

A.2 Name and amount of antioxidant

2,6-di-tert-butyl-p-methylphenol. When using the hydrogenation process to produce jet fuel, it shall add the antioxidant of 17.0 mg/L ~ 24.0 mg/L.

A.3 Name and amount of anti-wear agent

Naphthenic acid type (T1602), the amount of addition is not more than 20.0 mg/L.

A.4 Name and amount of anti-freezing agent

As allowed by the user, it may add the ethylene glycol methyl ether or diethylene glycol methyl ether, the volume fraction of the added amount is 0.10% ~ 0.15%.

A.5 Name and amount of metal passivating agent

As allowed by the user, it may add N, N'-disaliline-1,2-propanediamine. The amount of the first addition shall not exceed 2.0 mg/L, the cumulative amount of addition shall not exceed 5.7 mg/L.

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