3-GP-950a
30 March 1961
CANCELLATION
February 1971

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

FUEL: AVIATION, 100/130 REFEREE GRADE

This specification is cancelled because the material described is no longer specified.

3-GP-950a
30 March 1961
AMENDMENT NO. 1
12 November 1965

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

FUEL; AVIATION, 100/130 REFEREE GRADE

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4. DETAIL REQUIREMENTS

4.16.1 Oxidation Inhibitors - Add the following two inhibitors to the list:

(f) 72% minimum 2, 4-dimethyl 6-tertiary butylphenol
28% maximum monomethyl and dimethyl tertiary butylphenol

(g) N, N'-diisopropyl paraphenylenediamine

Withdrawn/Retirée

NADA

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

SPECIFICATION

FOR

FUEL; AVIATION, 100/130 REFEREE GRADE

3-GP-950a

30 MARCH 1961

SUPERSEDES 3 - GP - 950
3 MAY 1956

Withdrawn/Retirée

THIS SPECIFICATION APPLIES TO ONE GRADE OF AVIATION GASOLINE FOR USE WHEN AIRCRAFT ENGINE OILS ARE BEING EVALUATED FOR QUALIFICATION PURPOSES IN AN AIRCRAFT ENGINE OF THE SPARK IGNITION TYPE.

NATIONAL RESEARCH COUNCIL, OTTAWA, CANADA

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* Senior Consultant to the Division of Mechanical Engineering as of April 1957

Withdrawn/Retirée

3-GP-950a
30 March 1961
Supersedes 3-GP-950
3 May 1956

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

FUEL; AVIATION, 100/130 REFEREE GRADE

Withdrawn/Retirée

1. DEFINITION

1.1 This specification applies to one grade of aviation gasoline for use when aircraft engine oils are being evaluated for qualification purposes in an aircraft engine of the spark ignition type.

1.2 For more detailed information on uses, see Section 6.1.

2. APPLICABLE PUBLICATIONS

2.1 The following publications are applicable to this specification:

2.1.1 CGSB 3-GP-0, Methods of Testing Petroleum and Associated Products.

2.1.2 ASTM Standards on Petroleum Products and Lubricants.

2.2 Reference to the above publications is to the issues in effect on the date of invitation to tender, unless otherwise specified.

3. GENERAL REQUIREMENTS

3.1 The fuel shall consist entirely of hydrocarbon compounds except as otherwise specified herein. Benzol and other aromatic hydrocarbons may be added to the limits imposed by the detail requirements of this specification.

3.2 The fuel shall be clear and free from undissolved water, sediment and suspended matter.

3.3 The odor of the fuel shall not be nauseating or irritating.

3.4 No substance of known dangerous toxicity under usual conditions of handling and use shall be present (except as specified herein).

3.5 For identification purposes, the fuel shall be dyed as specified in par 4.15.

4. DETAIL REQUIREMENTS

NOTE: Requirements contained herein are absolute and not subject to corrections for tolerance of test methods. However, if multiple determinations are made, average results will be used.

The fuel shall comply with the following detail requirements:

		Min	Max	Test Method
4.1	Freezing Point, °F (°C)	-	-76(-60)	3-GP-0/32.1
4.2	Distillation			ASTM D86
4.2.1	Per cent evaporated at 167°F (75°C)	10	40	
4.2.2	Per cent evaporated at 221°F (105°C)	50	-	
4.2.3	Per cent evaporated at 275°F (135°C)	94	98	
4.2.4	Sum of 10 and 50 per cent evaporated temperatures, °F	307	-	
4.2.5	Final Boiling Point, °F (°C)	295(146)	338(170)	
4.2.6	Residue, per cent by volume	-	1.5	
4.2.7	Distillation Loss, per cent by volume	-	1.5	
4.3	Reid Vapor Pressure, psi	5.5	7.0	ASTM D323
4.4	Specific Gravity, 60/60°F	(To be reported but not limited)		ASTM D1298
4.5	Tetraethyl Lead, ml/Imp gallon (NOTE 1)	4.0	4.8	ASTM D526
4.6	Knock Rating (Lean Mixture) Octane Number	99.0 or 100.0	- -	ASTM D357 ASTM D614
4.7	Knock Rating (Rich Mixture) Performance Number	130.0	133.0	ASTM D909
4.8	Sulfur (Lamp), per cent by weight (NOTE 2)	-	0.05	ASTM D1266

NOTE 1: The tetraethyl lead shall be added in the form of antiknock mixture containing not less than 61 per cent by weight of tetraethyl lead and sufficient ethylene dibromide to provide two bromine atoms per atom of lead. The remainder shall contain no added ingredients other than kerosine, an approved inhibitor, and blue dye, as specified herein.

NOTE 2: Sulfur content shall be corrected for tetraethyl fluid when volumetric finish is used.

Withdrawn/Retired

		Min	Max	Test Method
4.9	Gum, Existent, mg/100 ml (NOTE 3)	-	3.0	ASTM D381
4.10	Total Potential Residue, 16 hours, mg/100 ml	-	6.0	ASTM D873
4.10.1	Gum Precipitate, 16 hours, mg/100 ml	-	2.0	ASTM D873
4.11	Corrosion (Copper Strip-Bomb), 2 hours at 212°F	-	No. 1	ASTM D130

NOTE 3: Gum - No allowance shall be made for top cylinder lubricant.

4.12 Water Reaction - The maximum acceptable interface rating as defined by 3-GP-0 Method 11.1 shall be No. 1 b. The fuel shall separate sharply from the water layer and there shall be no evidence of emulsion, precipitate or suspended matter within or upon either layer. Small air bubbles or water droplets that may be observed in the fuel layer when examined in a strong beam of transmitted light shall not be cause for rejection.

4.13 Calorific Value (lower heat value) - The lower or net heat of combustion shall be not less than 18,700 Btu per pound. The heat of combustion need not be determined, unless otherwise requested by the purchaser, providing the Aniline-Gravity Product (the product of the gravity of the fuel in °API (ASTM D287) and the aniline point in °F (ASTM D611)) is equal to or greater than 7,500.

3-GP-0 Method 23.1

4.14 Composition - The aromatics, olefins and saturates in the fuel shall be recorded but are not limited.

ASTM Method D1319

4.15 Color - The fuel shall be dyed green.

4.15.1 Dye Composition - No other dyes than the following shall be present in the finished fuel:

Blue: Essentially alkyl substituted amino-anthroquinone
Yellow: Essentially p-diethylaminoazobenzene

4.15.2 Dye Concentration - The concentration of the dyes used shall be within the following limits:

Dye	Dye Concentration			
	Minimum		Maximum	
	mg/liter	mg/Imp Gal	mg/liter	mg/Imp Gal
Blue	0.7133	3.24	1.234	5.65
Yellow	0.9025	4.10	1.562	7.09

Withdrawn/Retirée

4.16 Inhibitors - Only approved inhibitors shall be added.

4.16.1 Oxidation Inhibitors - The following active antioxidants may be added separately or in combination to the fuel, the total concentration not to exceed 1.25 pounds of inhibitor (not including weight of solvent) per 5000 Imperial gallons of fuel, in order to prevent the formation of gum and the precipitation of lead compounds:

(a) N,N' disecondary butyl paraphenylenediamine

(b) 2, 6-Ditertiary butyl 4-methyl phenol

(c) 2, 4-Dimethyl-6 tertiary-butylphenol

(d) 2, 6-Ditertiary-butylphenol

(e) Mixed tertiary butylphenol consisting of at least 75 per cent 2, 6-Ditertiary-butylphenol, 10 to 15 per cent 2, 4, 6-Tritertiary-butylphenol and 10 to 15 per cent Ortho-tertiary butylphenol.

4.16.2 When gum inhibitor is added to the fuel, the supplier shall state to the Inspecting Authority, on test certificates for material on import or manufacture, the amount and name of the gum inhibitor added to the fuel.

5. ACCEPTANCE TESTS, SAMPLING AND TEST METHODS

5.1 Acceptance Tests - Acceptance tests shall consist of tests for all requirements of this specification.

5.2 Acceptance Test Sample - A sample of not less than one Imperial gallon shall be provided for acceptance tests and shall be obtained in accordance with ASTM D270, Methods of Sampling Petroleum and Petroleum Products.

5.3 Testing - The methods of testing shall be those in CGSB 3-GP-0 or in ASTM Standards on Petroleum Products and Lubricants, using the procedure prescribed with each requirement.

6. NOTES

6.1 Intended Use - The fuel covered by this specification is intended for use in full-scale aircraft engine qualification tests of aircraft engine oils to CGSB Specifications 3-GP-60, 3-GP-80 and 3-GP-100.

6.2 Related Specifications - There are no other specifications covering a similar type of reference fuel.

6.3 The publications listed in Section 2 may be obtained as follows:

6.4.1 CGSB 3-GP-0 - Canadian Government Specifications Board, National Research Council, Ottawa 2, Canada.

6.4.2 ASTM Standards - American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., U.S.A.

Correspondence regarding this specification should be addressed to the Secretary, Canadian Government Specifications Board, National Research Council, Ottawa, Canada.

Withdrawn/Retirée