3-GP-955a
23 June 1961
CANCELLATION
September 1969

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

REFERENCE FLUID: SHEAR STABILITY

This specification is cancelled as of September 1969 because the material described is no longer specified.

CANADA

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

SPECIFICATION

FOR

REFERENCE FLUID, SHEAR STABILITY

3-GP-955a

23 JUNE 1961

SUPERSEDES 3 - GP - 955
14 MARCH 1958

ARCHIVES COPY

Withdrawn/Retirée

THIS SPECIFICATION APPLIES TO PETROLEUM OIL WITH APPROVED ADDITIVES FOR USE AS A REFERENCE STANDARD OF SHEAR STABILITY FOR HYDRAULIC OILS.

NATIONAL RESEARCH COUNCIL, OTTAWA, CANADA

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23 June 1961
Supersedes 3-GP-955
14 March 1958

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

REFERENCE FLUID, SHEAR STABILITY

Withdrawn/Retirée

1. DEFINITION

1.1 This specification applies to petroleum oil with approved additives for use as a reference standard of shear stability for hydraulic oils.

1.2 For more detailed information on uses, see 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.

2.1.3 U.S. Military Specification MIL-F-5504, Filters and Filter Elements, Fluid Pressure, Hydraulic Micronic Type.

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 finished fluid shall be clear, homogeneous, and free from undissolved additives, water, dirt and other visible impurities.

3.2 It shall contain no admixture of resins, rubber, soaps, gums, fatty oils, oxidized hydrocarbons, or any additives other than those specifically approved by the procuring agency.

3.3 At no time during the blending process or any subsequent operations shall the temperature of any of the components of the fluid, or the fluid itself, be permitted to rise above 300 °F.

3.4 Immediately before packing, the fluid shall be passed through a line-type filter conforming to U.S. Specification MIL-F-5504.

3.5 The color of the finished fluid shall not have been changed by the addition of any dye.

4. DETAIL REQUIREMENTS

NOTE: Requirement limits contained herein are not subject to correction for tolerance of test methods. If multiple determinations are made by the inspecting laboratory, average results will be used. For purposes of determining conformance with each requirement, an observed value or calculated value will be "rounded off" to the nearest unit in the last right-hand place of figures used in expressing the limiting value, in accordance with the "rounding-off" procedure given in ASTM E29, Recommended Practices for Designating Significant Places in Specified Limiting Values.

4.1 The finished fluid shall comply with the following detail requirements:

4.1.1 Corrosion and Resistance to Oxidation

4.1.1.1 Corrosion - The change in weight of steel, aluminum alloy, magnesium alloy and cadmium-plated steel, when subjected to the action of the fluid for 168 hours at 250 ± 0.2°F, shall be not greater than ± 0.2 mg per sq cm of surface. The change in weight of copper under the same conditions shall be not greater than ± 0.6 mg per sq cm of surface. There shall be no pitting, etching nor visible corrosion on the surface of any of the metals when viewed under magnification of 20 diameters. Slight discoloration of the surface of the copper and cadmium will be permitted.

4.1.1.2 Resistance to Oxidation - The fluid shall not have changed more than -5 or +20 per cent from the original viscosity in centistokes at 130°F after being subjected to the oxidation-corrosion test for 168 hours at 250 ± 2°F. The total acid number or strong base number of the oxidized oil shall be not more than 0.20 higher than the value obtained for the original fluid. There shall be no evidence of separation of insoluble materials nor gumming of the fluid.

3-GP-0 Method 38.4

4.2 Petroleum Base Stock - The petroleum base stock used in the compounding of the finished fluid before addition of any other ingredients shall comply with the following detail requirements:

		Min	Max	ASTM Test Method
4.2.1	Flash Point (C.O.C.), °F	200	-	D92
4.2.2	Pour Point, °F	-	-40	D97
4.2.3	Viscosity at 130°F, centistokes	3.6	3.8	D445
4.2.4	Color (ASTM)	-	2	D1500
4.2.5	Total Acid Number or Strong Base Number	-	0.2	D664
4.2.6	Precipitation Number	-	0.05	D91
4.2.7	Aniline Point, °F	165	-	D611

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4.3 Additive Materials

4.3.1 Acryloid HFS-1 (manufactured by the Rohm and Haas Co , Philadelphia 3, Pa. U.S.A.) or equal shall be used as the viscosity-temperature coefficient improver. This polymer shall be an oil-soluble polymerization product of one or more esters of methacrylic acid and monohydric alcohols. Its molecular weight shall be such that a solution composed of 30 per cent by weight of polymer and 70 per cent by weight of toluene shall have a viscosity between 59 and 64 centistokes at 37.8°C. A concentration of 7.0 ± 0.3 per cent by weight of Acryloid HFS-1 or equal, calculated as active ingredient, and an approved oxidation inhibitor (not exceeding 1 per cent by weight concentration) when blended with the petroleum base stock shall give a finished fluid having a viscosity between 12.5 and 15.5 centistokes at 37.8°C (100°F). Succeeding batches of the polymer shall be designated by name and batch number and shall be equivalent in shear stability characteristics to Acryloid HFS-1.

(Note: Equivalence in shear stability may be determined by comparative shear stability tests (3-GP-0 Method 39.9) on separate portions of petroleum base stock (meeting requirements 4.2.1 to 4.2.7 above) and approved oxidation inhibitor (not exceeding 1 per cent by weight concentration) blended (a) with 7.0 ± 0.3 per cent by weight (active ingredient) Acryloid HFS-1 and (b) with 7.0 ± 0.3 per cent by weight (active ingredient) of the viscosity-index improver to be tested.)

4.3.2 No other additive materials shall be permitted.

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 two Imperial quarts of the finished product, two Imperial quarts of the base stock and 100 millilitres of the Acryloid additive shall be provided for acceptance tests and shall be obtained in accordance with ASTM D270, Method 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 Uses - Shear stability reference fluid to this specification is intended for use as a standard reference fluid for comparative evaluation of hydraulic fluids with regard to shear stability. It is not implied that fluid to this specification is necessarily a satisfactory hydraulic fluid in other respects.

6.2 Related Specifications - At the time of publication, the undernoted document was a corresponding specification (but not necessarily equivalent):

6.2.1 U.S. Military Specification MIL-F-5602, Fluid; Reference, Shear Stability.

6.3 The publications referenced in par 2.1.1 and 2.1.3 are obtainable from the CGSB Secretary.

6.4 The publication referenced in par 2.1.2 is obtainable from the American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., U.S.A.

Correspondence regarding this specification should be addressed to the Secretary, Canadian Government Specifications Board, National Research Council, Ottawa 2, Canada.

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