



AEROSPACE INFORMATION REPORT

AIR5704™

REV. A

Issued 2007-07
Reaffirmed 2016-06
Stabilized 2023-11

Superseding AIR5704

Field Viscosity Test for Thickened Aircraft Anti-Icing Fluids

RATIONALE

This document resides in the G-12 Fluids group, but has no document sponsor and is unlikely to technically change in the foreseeable future. The recommendation to stabilize the document has been made in consultation with the Fluid group voting members and will be confirmed by ballot.

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FOREWORD

Aircraft operators rely on the use of AMS 1428 anti-icing fluids during winter operations to provide a limited period of protection against frozen or freezing precipitation while the aircraft is on the ground. Methods of protection of aircraft surfaces with anti-icing fluids are described in ARP4737. The protection time can be estimated using fluid specific holdover time guidelines that are published by the FAA and Transport Canada. Holdover time values for thickened anti-icing fluids are derived from endurance time testing standard procedures described in ARP5485.

The viscosity values of the fluids listed with the holdover guidelines are those for the fluid samples provided by the fluid manufacturers for endurance time testing. For the holdover time guidelines to be valid, the viscosity of the fluid on the wing shall not be lower than that listed with the holdover tables. The fluid user should periodically ensure that the viscosity value of a fluid sample taken from the wing is not lower than that listed. The viscosity should ideally be measured by the method recommended by the manufacturer and which is described with the holdover time guidelines or the method described in AIR9968 which can be correlated to the fluid manufacturer viscosity method. However, both of these methods require the use of a Brookfield rotational viscometer and precise temperature control equipment, both of which are not suited for field use. The method described in this AIR5704 is better suited for use in the field as it requires less sophisticated equipment.

This AIR5704 is meant as a screening field test to verify that the anti-icing fluid will have a sufficient low shear viscosity which relates to the minimum acceptance for holdover performance.

1. SCOPE

1.1 Purpose

This SAE Aerospace Information Report (AIR) provides a description of a screening method for use in the field for verifying an AMS 1428 anti-icing fluid is above its minimum low shear viscosity as published with holdover time guidelines. The test will determine if the fluid is (a) satisfactory, (b) unsatisfactory, or (c) borderline needing more advanced viscometry testing. Other field tests may be required to determine if an anti-icing fluid is useable, such as refractive index, appearance or other tests as may be recommended by the fluid manufacturer.