Hydramotion
innovators in fluid measurement

Quick de-icer viscosity

COMMERCIAL airlines have long used de-icing and anti-icing fluids to prepare aircraft for safe takeoff and flight in wintry conditions. Viscosity is a key parameter when selecting the right type of fluid to use.

The US Society of Automotive Engineers (SAE) recognises four types of de-icing/anti-icing fluid. Type I is low viscosity, usually diluted with water and applied hot (60 – 80 °C). Types II and IV are higher viscosity and generally used undiluted and unheated. Type III fluids (sometimes called 1½), intermediate between Types I and II, are as yet little used.

Meeting the standard

Viscosity checks are an important part of fluid quality control. Safety standards stipulate that fluid must be in an "ex-manufacturers" condition and at the correct concentration when it is used. Lab and field tests of pH, refractive index and viscosity are frequently necessary.

Samples are taken from delivery tankers, the spraying vehicle and directly from the gun or nozzle. In the lab, a rotational viscometer is commonly used. In the field, however, de-icer viscosity is traditionally measured by the falling ball method. The operator notes the time for a steel or glass ball to fall a specified distance through the fluid contained in a sample tube.

Both these methods can be time-consuming. The falling-ball procedure may also be unreliable, particularly at low viscosities, as the results depend on the acuity of the operator.

An easy-to-use alternative

A Hydramotion **Viscolite** offers an easy-to-use, quick alternative to the conventional methods. Fluid viscosity can be read off as soon as the probe is dipped into the sample.

With the optional integrated thermometer, temperature-corrected readings can be obtained on the spot — an important consideration when the fluid temperature may range from –10 to +80 °C.

The viscometer has very high accuracy and repeatability and excellent sensitivity, even at low viscosity.

Field tests have shown excellent correlation between the results from the Viscolite and those from conventional methods, with the Viscolite showing much better repeatability regardless of fluid type or dilution.

SAE / ISO types of de-icing/anti-icing fluid

	Type I	*Types II and IV*
Minimum glycol content	80%	50%
Thickeners	no	yes
Fluid type	Newtonian	Pseudoplastic
Holdover time*	5 - 15 min	up to 80 min

**I.e.* the time from when anti-icing/de-icing fluid is applied to when ice or snow begins to accumulate or readhere.

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