
CERTALERT

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TO: AIRPORT CERTIFICATION PROGRAM INSPECTORS

TOPIC: Effects Of Type II Deicing Fluid On Runway Friction

The FAA's Technical Center in conjunction with the Port Authority of New York and New Jersey conducted tests to determine the effects of Type II aircraft deicing fluids on runway friction. The tests were conducted this past July and August at La Guardia and John F. Kennedy International Airports on grooved asphaltic pavement. Since the tests were conducted in the summer no attempt was made to simulate ice or snow on the pavement surface. (See future test programs.) Two specially instrumented B-727's and two Saab friction devices were used to measure the runway friction.

The purpose of this effort was to test the premise that Type II deicing fluid deposited on a runway poses a hazard to aircraft landing on the runway. At the present time it is unknown to what extent Type II actually falls off a departing aircraft and what portion of it is deposited on the runway. (See future test programs.)

Three types of pavement surfaces were used in the tests: surface with light rubber contamination, surface with medium rubber contamination, and surface with smooth microtexture. Except as noted, each surface was tested dry, wet, and with pure Type II deicing fluid. The Type II was also tested in combination with the following contaminants: Water, UCAR runway anti-icing fluid, Potassium Acetate, and Sand. The surface with the smooth microtexture was not tested under dry conditions or with Potassium Acetate. After applying the preceding contaminants on each pavement surface, the friction was measured using the aircraft and Saab measuring devices.

Resulting of the Test Program:

The following is a summary of the most significant test results as reported by the Technical Center:

1. The aircraft braking performance on Type II was very similar to the braking performance on a wet runway for all three types of surface tested.

2. The aircraft braking performance on Type II was similar to the braking performance on UCAR for all three types of surfaces tested. It was also similar to the braking performance on Potassium Acetate, although the latter was not tested on the smooth micotexture surface.
3. Type II deicing fluid does not react the same way as other fluids and causes the Saab friction measuring equipment to show consistently greater friction degradations than the aircraft measured under the same pavement surface conditions.
4. Use of UCAR and Potassium Acetate on top of Type II fluid to increase friction had little effect. Sand placed on top of Type II fluid produced a slight improvement in friction.
5. Friction performance improved after the rubber was removed, but not as dramatically as expected. This was probably because the rubber removal technique was not entirely successful in removing all the rubber from the surface.

Future Test Programs

In November, the FAA Technical Center plans to conduct tests involving aircraft emergency stops. These tests will be conducted on grooved asphalt pavements with medium rubber deposits. Specific test conditions will include water, Type I over Water, Type II over water, and sand over Type II and water.

The FAA Technical Center also plans to conduct tests this winter on snow and/or ice-covered runway pavement surfaces to determine the effect of Type II deicing fluids on aircraft operating under these conditions.

United Airlines plans to conduct tests at Chicago on various types of aircraft to establish information on how Type II fluids shear from aircraft, how much falls on the runway and where, and what the condition of the material is when it lands on the runway and its effect thereon.