

# Aerospace — Aircraft de-icing/anti-icing methods with fluids

UDC 629.7.067.5-032.24

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# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Aerospace Standards Policy Committee (ACE/-) to Technical Committee ACE/57, upon which the following bodies were represented:

- Association of Webbing Load Restraint Equipment Manufacturers
- British Airways
- British Narrow Fabrics Association
- Civil Aviation Authority (Airworthiness Division)
- Health and Safety Executive
- Ministry of Defence
- Society of British Aerospace Companies Ltd.
- Society of Motor Manufacturers and Traders Ltd.

This British Standard, having been prepared under the direction of the Aerospace Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 March 1994

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The following BSI references relate to the work on this standard:  
Committee reference ACE/57  
Draft for comment 90/81410 DC

ISBN 0 580 22968 8

## Amendments issued since publication

| Amd. No. | Date | Comments |
|----------|------|----------|
|          |      |          |
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# National foreword

This British Standard has been prepared under the direction of the Aerospace Standards Policy Committee. It is identical with ISO 11076:1993 *Aerospace — Aircraft de-icing/anti-icing methods with fluids*, published by the International Organization for Standardization (ISO).

**Cross-references**

| International Standard | Corresponding British Standard                                                                                       |
|------------------------|----------------------------------------------------------------------------------------------------------------------|
| ISO/11075:1993         | BS M 75:1994 <i>Aerospace — Aircraft de-icing/anti-icing Newtonian fluids, ISO type I</i><br>(Identical)             |
| ISO 11077:1993         | BS M 77:1994 <i>Aerospace — Self-propelled de-icing/anti-icing vehicles — Functional requirements</i><br>(Identical) |
| ISO 11078:1993         | BS M 78:1994 <i>Aerospace — Aircraft de-icing/anti-icing non-Newtonian fluids, ISO type II</i><br>(Identical)        |

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**Summary of pages**

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

## 1 Scope

This International Standard establishes the minimum requirements for ground-based aircraft de-icing/anti-icing with fluids to ensure the safe operation of transport aircraft during icing conditions (see also 8.3.2). All requirements specified herein are applicable only in conjunction with the referenced International Standards. This International Standard does not specify requirements for particular aeroplane model types.

NOTE 1 Particular airline or aircraft manufacturers' published manuals, procedures or methods supplement the information contained in this International Standard.

Frost, ice or snow deposits, which can seriously affect the aerodynamic performance and/or controllability of an aircraft, are effectively removed by the application of the procedures specified in this International Standard.

De-icing/anti-icing by mechanical means is not covered by this International Standard.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 11075:1993, *Aerospace — Aircraft de-icing/anti-icing Newtonian fluids, ISO type I*.

ISO 11077:1993, *Aerospace — Self-propelled de-icing/anti-icing vehicles — Functional requirements*.

ISO 11078:1993, *Aerospace — Aircraft de-icing/anti-icing non-Newtonian fluids, ISO type II<sup>1)</sup>*.

## 3 Definitions

For the purposes of this International Standard, the following definitions apply.

### 3.1

#### de-icing

procedure by which frost, ice or snow is removed from an aircraft in order to provide clean surfaces

### 3.2

#### de-icing fluid

- a) heated water;
- b) ISO type I fluid in accordance with ISO 11075;
- c) mixture of water and ISO type I fluid;

d) ISO type II fluid in accordance with ISO 11078;

e) mixture of water and ISO type II fluid.

NOTE 2 De-icing fluid is normally applied heated in order to assure maximum efficiency.

### 3.3

#### anti-icing

precautionary procedure which provides protection against the formation of frost or ice and accumulation of snow on treated surfaces of the aircraft for a limited period of time (holdover time)

### 3.4

#### anti-icing fluid

- a) ISO type I fluid in accordance with ISO 11075;
- b) mixture of water and ISO type I fluid;
- c) ISO type II fluid in accordance with ISO 11078;
- d) mixture of water and ISO type II fluid.

NOTE 3 Anti-icing fluid is normally applied cold on clean aircraft surfaces.

### 3.5

#### de-icing/anti-icing

combination of the procedures described in 3.1 and 3.3. It may be performed in one or two steps

### 3.6

#### holdover time

estimated time for which an anti-icing fluid will prevent the formation of frost or ice and the accumulation of snow on the protected surfaces of an aircraft, under weather conditions as specified in clause 13

### 3.7

#### freezing conditions

conditions in which the outside air temperature is below  $-3^{\circ}\text{C}$  ( $26,6^{\circ}\text{F}$ ) and visible moisture in any form (such as fog with visibility below 1,5 km, rain, snow, sleet or ice crystals) or standing water, slush, ice or snow is present on the runway

### 3.8

#### frost

crystallized deposit formed from water vapour on surfaces which are at or below  $0^{\circ}\text{C}$  ( $32^{\circ}\text{F}$ )

NOTE 4 This definition includes hoar-frost.

### 3.9

#### freezing fog

cloud of supercooled water droplets at freezing point that form a deposit of ice on objects in cold weather conditions

### 3.10

#### snow

precipitation in the form of small ice crystals or flakes

<sup>1)</sup> To be published.