

JIS

JAPANESE INDUSTRIAL STANDARD

Deicing and defrosting fluids for automobiles

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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Deicing and defrosting fluids for automobiles

K 2397-1991

1. Scope

This Japanese Industrial Standard specifies the spray-type deicing and defrosting fluids (hereafter referred to as the "deicing and defrosting fluids") to be used for deicing and defrosting window glasses, key holes or others of automobiles. Provided that the liquid used together with window washing fluid should be excluded.

Remarks: The applicable standards of this Standard are attached in Attached Table 1.

2. Quality

The quality of deicing and defrosting fluid shall conform to the requirements shown in Table 1 when being tested in accordance with the description in 6.

Table 1. Quality

Items			Quality
Temperature rise by dissolution heat °C			5.0 min.
pH			6.0 to 11.0
Corrosiveness to metals (50±2 °C) (48 h)	Change of mass mg/cm ²	Aluminum	± 0.30
		Brass	± 0.15
		Zinc die cast	± 1.00
	Appearance of a test piece after testing		There should be no observable corrosion except the contacting place of the test piece and spacer. Provided that color changing is permissible.
Influence to rubber (50±2 °C) (48 h)	Change of mass %	Natural rubber	± 4.0
		Chloroprene rubber	± 3.0
	Change of hardness IRHD or Hs	Natural rubber	± 4
		Chloroprene rubber	± 3
	Appearance of a test piece after testing		There should be no stickiness of surface, scale off of carbon black, or cracking.
Influence to coated film (50±2 °C) (6 h)	Scratch by pencil	Coated plate by baked acrylic resin enamel (metallic color)	HB or more
		Coated plate by amino alkyd resin enamel (solid color)	HB or more
		Coated plate by amino alkyd resin enamel (solid color)	HB or more
	Appearance of a coated surface after testing		Coated film shall have no blister, and the sedimentation of pigments contained in the deicing and defrosting fluid shall be negligible.
Influence to plastics (50±2 °C) (48 h)	Change of mass mg/cm ²	Polyethylene resin	± 2.0
		ABS resin	± 5.0
		Polypropylene resin	± 2.0
	Appearance of a test piece after testing		There should be no cracking on surface or serious deformation.

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3. General matters

The general matters commonly applicable to tests shall comply with JIS K 0050.

4. Standard condition of testing site

The standard condition of testing site shall be a room temperature (5 to 35°C) and ordinary humidity (45 to 85 %) that is specified in JIS K 8703.

5. Sampling

Sampling shall be as follows.

5.1 Number of samples The product manufactured under the same condition and regarded as the same quality makes one lot, and the number of containers given in Table 2 shall be picked up at random in accordance with the whole number in the lot. In the case of more than 1000 containers in a lot, Table 2 shall be applied to its fraction.

Table 2. Sampled number of containers

Number of containers in lot	Number of samples (piece)
1 to 10	1
11 to 50	2
51 to 100	3
101 to 500	5
501 to 1000	10

5.2 Preparation of sample The sample containers picked up at 5.1 shall be treated as follows according to shape of product.

5.2.1 Apparatuses and tools Apparatuses and tools shall be as follows.

- (1) **Degassing apparatus for dissolved gas** Degassing apparatus for dissolved gas shall be constructed with using the following tools as shown in Fig. 1.
 - (a) **Heater** Thermostatic water bath or mantle heater with a variable resistor capable of keeping the temperature at 50°C.
 - (b) **Stirrer or magnetic stirrer** On the market.
 - (c) **Condenser** Coiled condenser specified in JIS R 3503 (whole length 380 mm).
 - (d) **Flask** 1 / Erlenmeyer flask with a commonly ground opening specified in JIS R 3503.

- (e) Thermometer Thermometer numbered 42 specified in JIS B 7410 or the equivalents.
- (2) Beaker 1 / beaker specified in JIS R 3503.
- (3) Wide-mouthed bottle with stopper or polyethylene bottle 1 / capacity one on the market.

5.2.2 Operation Operations shall be as follows.

(1) In case of aerosol product

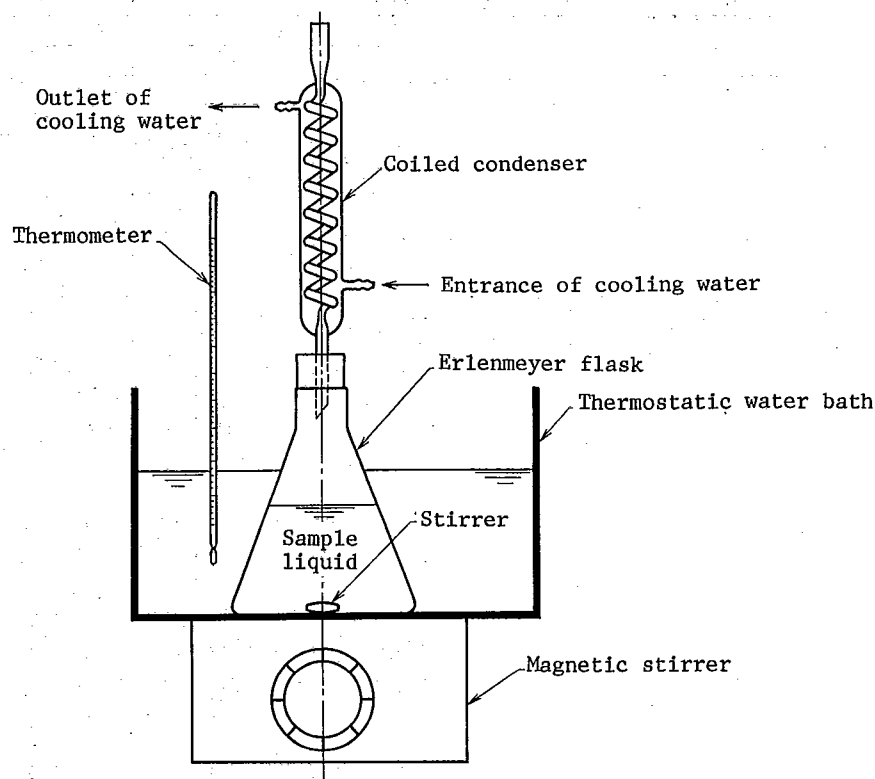
- (a) Place the sample taken according to 5.1 into a beaker after making an opening in each container ⁽¹⁾, mix them sufficiently, pour its 500 ml into a flask, and construct it as shown in Fig. 1.
- (b) While keeping the liquid put in the flask at about 50°C agitate it for 30 min, and remove dissolved gas ⁽²⁾ ⁽³⁾ ⁽⁴⁾.
- (c) Cool the liquid kept in the flask to room temperature to make it the sample for testing, and reserve it at cool and dark place after being put in a wide-mouthed bottle with stopper or polyethylene bottle.

Notes ⁽¹⁾ When making an opening in aerosol bottles, preferably open it after being cooled.

The opening may have the size enough to let the liquid flow out.

- ⁽²⁾ The amount of gas dissolved in deicing and defrosting fluid varies according to the packed gas contained in aerosol product, but in case of such as carbon dioxide, liquefied petroleum gas, or dimethyl ether, or of mixing of them, the procedure at (1) can be omitted.
- ⁽³⁾ When removing the dissolved gas during keeping it at about 50°C, take into consideration the loss of solvent in the sample, therefore weigh the mass of the sample before and after keeping at 50°C.
- ⁽⁴⁾ In case of employing low-boiling point solvent of such as on-market product, some product may be unsuitable for heating about 50°C, so that it should be carefully heated.

Fig. 1. Example of degassing apparatus for dissolved gas



- (2) In case of product other than aerosol one Transfer respectively the sample taken by 5.1 into a beaker and make them testing sample after sufficient mixing. Reserve this sample in dark and cool place after keeping in a wide-mouthed bottle with stopper or polyethylene bottle. When bubbles or gas bubbles are found, carry out the same operations as shown in (1) (b) to (c) using the apparatus shown in Fig. 1.

6. Testing method

6.1 Temperature rise by dissolution heat

6.1.1 Apparatuses and tools Apparatuses and tools shall be as follows.

- (1) Measuring apparatus for temperature rise The measuring apparatus for temperature rise shall be constructed as shown in Fig. 2 with using the following tools.
- (a) Thermostat Capable of keeping at $20 \pm 1^\circ\text{C}$.
 - (b) Dewar vessel 1 / capacity one on the market.
 - (c) Stirring rod Shall be coil type (Number of coils is 5) made of 1.6 mm diameter steel wire specified in JIS G 4314, and move up and down by manual or a motor drive.