International Standard 1675

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Plastics — Liquid resins — Determination of density by the pyknometer method

Plastiques — Résines liquides — Détermination de la masse volumique par la méthode du pycnomètre

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

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Plastics — Liquid resins — Determination of density by the pyknometer method

1 Scope and field of application

This International Standard specifies a method for the determination of the density of liquid resins using a pyknometer.

2 Definition

density; mass density : Mass divided by volume. (Definition taken from ISO 31/3.)

It may be expressed in grams per millilitre (g/ml).*

3 Principle

Determination of the mass at 23 °C of resin contained in a pyknometer of known volume.

NOTE — This method is easily applicable to low and medium viscosity resins. Difficulties in the procedure exist for high viscosity resins.

4 Apparatus

4.1 Pyknometer, consisting of a precision graduated flask. The height of the neck above the graduation mark shall not exceed 50 mm.

The graduated volume of the pyknometer at 23 ± 0,1 °C, measured by weighing the mass of distilled water contained in the pyknometer at this temperature, shall be known to within 1 part in 10 000 (see note to clause 6).

The pyknometers normally used have the characteristics given in the following table.

Volume of flask, V	Internal diameter of neck, d
ml	mm
100 ± 0,1	13 ± 1
50 ± 0,05	11 ± 1

* 1 g/ml = 1 000 kg/m^3

4.2 Funnel, whose stem, the internal diameter of which shall be as large as possible, penetrates into the pyknometer exactly down to the level of the graduation mark.

4.3 Balance, accurate to 0,2 mg.

4.4 Water-bath, capable of being maintained at 23 ± 0,1 °C.

4.5 Fine filter paper.

4.6 Transparent conical flask, with wide neck (for example Erlenmeyer), stoppered, of capacity 200 to 600 ml.

5 Procedure

5.1 Preparation of resin

Place at least 150 g of resin in the conical flask (4.6) and inspect the contents of the flask for bubbles. If any bubbles are observed, allow the stoppered flask to stand long enough for all the bubbles to dissipate before or while bringing the flask and its contents to 23 ± 0,1 °C by immersion in the water bath (4.4).

NOTE — To accelerate the release of bubbles, especially any adjacent to the walls of the flask, disturb or detach them using a fine wire inserted through the neck of the flask.

5.2 Measurement of density

Weigh the empty pyknometer (4.1) to the nearest 0,2 mg.

Place the pyknometer in the water-bath (4.4) and fill the pyknometer with resin using the funnel (4.2).

The following points require close attention :

a) bubbles shall not be present in the resin in the pyknometer; if bubbles form, wait for them to disappear, if necessary rubbing the walls of the pyknometer with a fine metal wire, or, better still, empty the pyknometer, clean it and refill;