

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

## ISO RECOMMENDATION

### R 1068

PLASTICS

PVC RESINS

DETERMINATION OF THE COMPACTED APPARENT BULK DENSITY

1st EDITION

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## BRIEF HISTORY

The ISO Recommendation R 1068, *Plastics – PVC resins – Determination of the compacted apparent bulk density*, was drawn up by Technical Committee ISO/TC 61, *Plastics*, the Secretariat of which is held by the United States of America Standards Institute (USASI).

Work on this question led, in 1966, to the adoption of a Draft ISO Recommendation.

In May 1967, this Draft ISO Recommendation (No. 1266) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	India	South Africa, Rep. of
Austria	Iran	Spain
Belgium	Israel	Sweden
Bulgaria	Italy	Switzerland
Canada	Japan	Turkey
Czechoslovakia	Korea, Rep. of	U.A.R.
France	Netherlands	United Kingdom
Germany	New Zealand	U.S.A.
Greece	Poland	Yugoslavia
Hungary	Romania	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in April 1969, to accept it as an ISO RECOMMENDATION.

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## PLASTICS

## PVC RESINS

## DETERMINATION OF THE COMPACTED APPARENT BULK DENSITY

## 1. SCOPE

This ISO Recommendation describes a method for the determination of the compacted apparent bulk density of PVC resins.

NOTE. – The non-compacted apparent bulk density may be determined according to ISO Recommendation R 60, *Determination of apparent density of moulding material that can be poured from a specified funnel*.

## 2. PRINCIPLE

Placing a known quantity of PVC resin in a precision graduated cylinder and submitting to shaking under given conditions.

Calculation of the compacted apparent bulk density from the mass of the resin and its volume after compaction.

## 3. APPARATUS

- 3.1 *Shaking machine*, giving 100 to 250 falls per minute from a height of  $3 \pm 0.2$  mm, as in the Figure, page 7. The cylinder holder should have a mass of  $450 \pm 20$  g.
- 3.2 *Precision graduated glass measuring cylinder*, 250 ml capacity graduated in 2 ml and with a non-graduated portion of at least 50 ml volume. Its internal diameter should be about 38 mm and its mass  $220 \pm 40$  g. (See the Figure).
- 3.3 *Metallic piston*, of diameter slightly smaller than the internal diameter of the cylinder.
- 3.4 *Laboratory balance*, enabling the cylinder to be weighed to the nearest 0.1 g.

## 4. PROCEDURE

Wash and dry the cylinder and weigh it to the nearest 0.1 g. Introduce about 100 g of PVC resin, without shaking, and weigh the cylinder and resin to the nearest 0.1 g. Calculate by difference the mass  $m$  of PVC resin used.

Place the cylinder in the holder of the shaking machine and start the machine. After  $1250 \pm 50$  cycles stop the machine and, if necessary, level the free surface of the resin with a metal piston by turning it without compacting the powder. Read off the volume occupied by the powder to the nearest 1 ml.

Repeat the shaking for a further  $1250 \pm 50$  cycles and determine the new volume.

If the difference between the two readings is less than or equal to 2 ml, take the lower value,  $V$  ml, and stop the test.

If the difference is greater than 2 ml, continue shaking for further periods of  $1250 \pm 50$  cycles until the volumes measured after two successive shaking periods do not differ by more than 2 ml. Take the lower value,  $V$  ml, and stop the test.

### 5. EXPRESSION OF RESULTS

The compacted apparent bulk density, in grammes per millilitre, is calculated from the following formula :

$$\frac{m}{V}$$

where

- $m$  is the mass, in grammes, of the sample of PVC resin;  
 $V$  is the volume, in millilitres, of the compacted PVC resin.

### 6. TEST REPORT

The test report should include the following particulars :

- (a) the reference to this ISO Recommendation;
- (b) the density in grammes per millilitre;
- (c) the date of the test.

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