

# INTERNATIONAL STANDARD

**ISO**  
**8130-2**

First edition  
1992-12-01

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## **Coating powders —**

### **Part 2:**

Determination of density by gas comparison  
pycnometer (referee method)

*Poudres pour revêtement —*

*Partie 2: Détermination de la masse volumique à l'aide d'un pycnomètre  
à gaz (méthode de référence)*



Reference number  
ISO 8130-2:1992(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8130-2 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Sub-Committee SC 9, *General test methods for paints and varnishes*.

ISO 8130 consists of the following parts, under the general title *Coating powders*:

- *Part 1: Determination of particle size distribution by sieving*
- *Part 2: Determination of density by gas comparison pycnometer (referee method)*
- *Part 3: Determination of density by liquid displacement pycnometer*
- *Part 4: Calculation of lower explosion limit*
- *Part 5: Determination of flow properties of a powder/air mixture*
- *Part 6: Determination of gel time of thermosetting coating powders at a given temperature*
- *Part 7: Determination of loss of mass on stoving*
- *Part 8: Assessment of the storage stability of thermosetting powders*

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International Organization for Standardization  
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

— Part 9: Sampling

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## Coating powders —

### Part 2:

### Determination of density by gas comparison pyknometer (referee method)

#### 1 Scope

This part of ISO 8130 specifies a method for the determination of the density of coating powders using a gas comparison pyknometer. It can be used for all types of coating powder, is simple to carry out but requires more expensive instrumentation than is often used for density determinations.

The density of coating powders can also be determined using the liquid displacement pyknometer method described in ISO 8130-3. The apparatus is relatively inexpensive, but the liquid displacement pyknometer method is liable to give erroneous results, particularly if the powder swells in contact with the displacement liquid used or the displacement liquid does not totally displace the air between the powder particles. The liquid displacement method is much slower in execution, less accurate and is only to be used if it can be shown that the same results will be obtained as for the gas comparison pyknometer method.

#### 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 8130. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8130 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 842:1984, *Raw materials for paints and varnishes — Sampling*.

#### 3 Principle

The volume of a weighed test portion is determined by measuring the volume of gas displaced within a receptacle when the test portion is introduced. This is achieved by equalizing the pressure difference which arises due to the displacement of the gas. The density is then calculated from the mass and the volume of the test portion.

#### 4 Material

**4.1 Air** or, if desired, **helium**, commercial grade, in a steel cylinder.

Other gases may be used provided that the product under test is not affected and this deviation from the method is noted in the test report.

#### 5 Apparatus

**5.1 Gas comparison pyknometer**, for the manual or automatic determination of the density, complying with the requirements given below.

The essential design of a typical gas comparison pyknometer using air as the medium is outlined in figure 1. It consists of two cylinders (A and B) with pistons of exactly equal dimensions. The cylinders are connected by a valve and a pressure difference meter. The test portion, contained in a 50 ml beaker, is placed in cylinder B. Both pistons are moved by an equal amount which results in a pressure difference between cylinders A and B. The measuring piston in cylinder B is then moved again to re-