

INTERNATIONAL STANDARD

ISO
8130-5

First edition
1992-12-15

Coating powders —

Part 5:

Determination of flow properties of a powder/air
mixture

Poudres pour revêtement —

*Partie 5: Détermination de l'aptitude à la fluidisation d'un mélange
poudre/air*



Reference number
ISO 8130-5:1992(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 8130-5 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 pyknometer (referee method)*
- *Part 3: Determination of density by liquid displacement pyknometer*
- *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*

Annexes A and B of this part of ISO 8130 are for information only.

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Coating powders —

Part 5:

Determination of flow properties of a powder/air mixture

1 Scope

This part of ISO 8130 specifies a method for determining the flow properties of a mixture of coating powder and air. The method reflects commercial practice in powder spraying (see "Bibliography" annex B).

The results obtained are influenced by the composition of the coating powder, its density, particle size distribution and particle shape, together with the tendency of the particles to agglomerate and to accept a triboelectric charge.

NOTE 1 It is well known that the transport and spraying characteristics of powders are highly dependent on their flow properties in bulk and in air. The procedure described in this method is considered to be more meaningful than the "flow angle" approach sometimes used to evaluate bulk flow properties. In the latter, the angle of the cone formed when a powder is allowed to flow through a vertical funnel on to a horizontal surface is measured. A given mass of powder with good flow properties forms a shallower cone than an equal mass of a powder with poorer flow. The objections to the flow angle method are that it is difficult to obtain a precise measurement and that the powder is used alone, whereas during application it is mixed with air.

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 edi-

tion of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8130-9:1992, *Coating powders — Part 9: Sampling*.

3 Principle

Under draught-free conditions, a specified quantity of coating powder is placed in a vessel and is fluidized with clean dry air under standard conditions of atmospheric temperature and pressure. The height of the powder during and after fluidization is measured and the rate at which the fluidized powder flows through a specified orifice is then determined.

The measurements are used to calculate the fluidization factor ϕ and the powder flow rate (flow factor) R which together define the transport and spraying characteristics of the powder.

4 Apparatus

4.1 Apparatus for the determination of flow properties, consisting of a fluidization vessel with a circular opening in the wall and a device for measuring the height of powder in the vessel. A means for weighing the amount of powder that flows through the opening is also included.

NOTE 2 A suitable apparatus is shown in figure 1 and described below. Other apparatus may be used if it gives comparable results.

A typical apparatus consists of the elements described in 4.1.1 to 4.1.3.