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INTERNATIONAL STANDARD 4324

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Surface active agents — Powders and granules — Measurement of the angle of repose

Agents de surface — Poudres et granulés — Mesurage de l'angle du talus d'éboulement

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

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.

International Standard ISO 4324 was developed by Technical Committee ISO/TC 91, *Surface active agents*, and was circulated to the member bodies in October 1975.

It has been approved by the member bodies of the following countries :

Australia	India	Portugal
Austria	Iran	Romania
Belgium	Italy	South Africa, Rep. of
Brazil	Japan	Spain
Canada	Korea, Rep. of	Switzerland
Egypt, Arab Rep. of	Mexico	Turkey
France	Netherlands	United Kingdom
Germany	New Zealand	U.S.A.
Hungary	Poland	U.S.S.R.

No member body expressed disapproval of the document.

Surface active agents – Powders and granules – Measurement of the angle of repose

0 INTRODUCTION

Determining the angle of repose of powders and granules may give information on the storage properties of the powder, especially in silos, etc.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a conventional method for the determination of the angle of repose of surface active agents in powder or granular form and of washing powders, free from agglomerates.

This method is also applicable to other powders and granules with comparable properties.

2 REFERENCES

ISO 554, *Standard atmospheres for conditioning and/or testing – Specifications.*

ISO 607, *Surface active agents – Detergents – Methods of sample division.*¹⁾

3 DEFINITION

For the purposes of this International Standard, the following definition applies :

angle of repose : The base angle of the cone obtained by flow under the specified conditions.

4 PRINCIPLE

Determination of the angle of repose of the cone obtained by passing a given volume of the product in the form of powder or granules through a special funnel placed at a fixed height above a completely flat and level plate.

5 APPARATUS

Only the dimensions given in the text are mandatory.

5.1 Measuring equipment, consisting of the following parts (see the figure) :

5.1.1 Glass funnel, having an internal stem diameter of 10 mm.

5.1.2 Agitator, comprising two rods placed opposite one another along the whole length of the interior wall of the funnel (5.1.1), and extending into the stem; these rods should be capable of being turned easily by means of a handle.

5.1.3 Base-plate, of minimum length 220 mm and minimum width 158 mm. The base-plate shall be completely rigid and shall have a polished surface or be engraved with concentric circles of diameters of from 10 to 100 mm, the centres of which shall be coaxial with the axis of the funnel.

5.1.4 Transparent plastic vessel, of minimum diameter 100 mm and minimum height 25 mm, placed 75 mm below the lower end of the funnel (5.1.1). Its internal surface shall be slightly rough. It shall be positioned on the base-plate (5.1.3) in such a way that the centre of the vessel and the axis of the funnel coincide, the centring being facilitated by the graduation of the concentric circles on the base-plate.

5.1.5 Funnel support, fixed and positioned so that the axis of the funnel (5.1.1) is the vertical line passing through the centre of the concentric circles engraved on the base-plate (5.1.3).

5.1.6 Supporting rod, comprising a scale graduated in millimetres from 0 to 100, starting from the base-plate (5.1.3). A rod integral with a horizontal slide moves on this scale, allowing the height of the cone to be measured.

The whole apparatus shall be protected against vibration.

5.2 Graduated measuring cylinder, of capacity 250 ml, complying with the requirements of ISO 4788.

1) In preparation. (Revision of ISO/R 607.)