INTERNATIONAL STANDARD

ISO 12742

Third edition
2020-12

Copper, lead and zinc sulfide concentrates — Determination of transportable moisture limits — Flow-table method

Concentrés sulfurés de cuivre, de plomb et de zinc — Détermination des limites d'humidité transportable — Méthode de la table d'écoulement

Reference number
ISO 12742:2020(E)

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Published in Switzerland

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 183, *Copper, lead, zinc and nickel ores and concentrates*.

This third edition cancels and replaces the second edition (ISO 12742:2007), which has been technically revised. The main changes to the previous edition are as follows:

— Clause 3, 'Terms and definitions', added.

— 6.2: reference to 7.4.4 for partial drying in event that sample received above transportable moisture limit (TML) added.

— Clause 6: reference to ISO 12743 sampling procedures added.

— 7.3: description of the flow state changed for clarity.

— 7.4.2: permission to deviate from the sample mass requirements of ISO 10251 for moisture determination added.

— 7.4.4: procedure for partial drying of sample received above TML added.

— 7.6.1: inclusion of data points with greater than 12 mm displacements in the graphical method provided that the points fall on the linear portion of the graph.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The first edition of this document was published in 2000 as a guidance document because there had been insufficient test programme participants to allow precision data to be derived.

The second edition included the addition of the graphical method for determination of the flow point as a means of validating the bracket method. This version has been revised to make it easier to understand and follow.

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Copper, lead and zinc sulfide concentrates — Determination of transportable moisture limits — Flow-table method

WARNING — This document could involve hazardous materials, operations and equipment. It is the responsibility of the user of this document to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This document specifies a flow-table method for the determination of the transportable moisture limit (TML) of copper, lead and zinc sulfide concentrates, which can liquefy during transport.

It is applicable to the determination of the TML of concentrates containing 10 % to 80 % (mass fraction) of lead, 10 % to 65 % (mass fraction) of zinc or 10 % to 55 % (mass fraction) of copper and is applicable to TML values in the range 3 % to 28 % (mass fraction).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10251, *Copper, lead, zinc and nickel concentrates — Determination of mass loss of bulk material on drying*

ISO 12743, *Copper, lead, zinc and nickel concentrates — Sampling procedures for determination of metal and moisture content*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
flow moisture point
percentage of moisture at which a flow state is reached

3.2
transportable moisture limit
maximum percentage of moisture that a cargo can contain during transport without the risk of liquefaction

4 Principle

The moisture content of the sample is adjusted by mixing with water. The mixture is converted to a conical shape using a mould and tamper. The sample is placed on the flow table and the mould is removed. The flow characteristics are determined by repeated dropping of the flow table while observing the behaviour of the sample. When sufficient water has been added to the sample so that

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