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Metallic powders — Determination of acid-insoluble content in iron, copper, tin and bronze powders

Poudres métalliques — Détermination de la teneur en insolubles dans les acides pour les poudres de fer, de cuivre, d'étain et de bronze

Reference number
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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/ TC 119, *Powder metallurgy*, Subcommittee SC 2, *Sampling and testing methods for powders (including powders for hardmetals)*.

This second edition cancels and replaces the first edition (ISO 4496:1978), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

— "ashless grade (less than 0,01 % residual ash [1])" has been added in 6.3;

— general formatting of the structure.

Metallic powders — Determination of acid-insoluble content in iron, copper, tin and bronze powders

1 Scope

This document specifies methods for determining, in iron, copper, tin and bronze powders, the approximate content of non-metallic materials which are insoluble in the ordinary mineral acids.

The insoluble matter referred to is generally considered to be acid-insoluble silica and silicates, carbides, alumina, clays or other refractory oxides which are either present in the raw material from which the powders are manufactured or introduced during the manufacturing process.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

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

4 Field of application

The methods are applicable to lubricant-free metallic powders of iron, copper, tin, alloy bronze and elemental mixtures of copper and tin.

5 Reagents

During the analysis, use only reagents of recognized analytical grade, and only distilled water or water of equivalent purity. See Table 1 for the required reagents.

Table 1 — Required reagents

Type of powder	Reagent	Density, ρ g/ml	Concentration of solution
Iron	Hydrochloric acid (5.1)	1,19	1 + 1
	Hydrochloric acid (5.2)	1,19	1 + 25
	Potassium thiocyanate (5.3)	—	5 %
	Nitric acid (5.4)	1,42	concentrated
Copper Tin Bronze	Hydrochloric acid (5.5)	1,19	concentrated
	Nitric acid (5.6)	1,42	1 + 1
	Hydrogen peroxide (5.7)	—	30 %
	Ammonium acetate (5.8)	—	200 g/l
Copper Bronze	Sodium diethyldithiocarbamate (5.9)	—	4 %
Tin	Sodium sulfide (5.10) Hydrogen sulfide (5.11)	—	—

6 Equipment

Ordinary laboratory equipment and the following.

6.1 Laboratory balance, of sufficient capacity and capable of weighing to an accuracy of ± 0,000 1 g.

6.2 Glass filter funnel, diameter approximately 70 mm.

6.3 Filter paper, ashless grade (less than 0,01 % residual ash [1]) for medium precipitates, diameter approximately 110 mm.

6.4 Furnace, capable of operating between 900 °C and 1 000 °C.

6.5 Fused silica or porcelain crucibles, pre-treated to constant mass at 900 °C to 1 000 °C and stored in a desiccator.

7 Sampling

7.1 Number of test portions

Determine the content of insoluble matter on two test portions.

7.2 Mass of test portion

The mass of the test portion shall be approximately 5 g.