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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 40380.2-2021

Metallic powders - Determination of apparent density and flow rate at elevated temperatures - Part 2: Determination of flow rate at elevated temperatures

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1.Structure and Drafting Rules of Standardization Documents" Drafting.

This document is the second part of GB/T 40380 "Determination of Bulk Density and Flow Rate of Metal Powder at High Temperatures". GB/T 40380 has been issued

The following parts are distributed.

---Part 1.Determination of loose density at high temperature;

---Part 2.Determination of flow velocity at high temperature.

This document is equivalent to ISO 18549-2.2009 "Determination of the bulk density and flow rate of metal powder at high temperature Part 2.At high temperature

Determination of flow rate".

A chapter "Terms and Definitions" has been added to this document.

Introduction

For processes such as warm press forming and additive manufacturing, the loose packing density and flow rate of the powder at high temperature are very important performance indicators.

There are only test standards for bulk density and flow rate at room temperature, and there are no relevant national standards for the determination of bulk density and flow rate at high

temperatures.

Standard or industry standard, GB/T 40380 aims to establish a complete and feasible method for measuring the bulk density and flow rate of powder at high temperature.

It consists of 2 parts.

---Part 1.Determination of loose density at high temperature;

---Part 2.Determination of flow velocity at high temperature.

This document can ensure the advancement of national standards, promote the progress of my country's testing technology, and ensure that industry practitioners are in production, application, and scientific research.

There are standards to be followed in the research and testing process, which fills the gap in the method of measuring the flow rate of metal powder at high temperature in my country.

Determination of loose density and flow rate of metal powder at high temperature

Part 2.Measurement of flow rate at high temperature

1 Scope

This document specifies two flow rate measurement methods for measuring a certain amount of heated powder mixture through a fixed aperture

Funnel time (flow rate), this powder is mainly suitable for warm-pressed steel powder.

Method A uses a funnel with a hole diameter of 2.5mm and a sample size of 50g, which is mainly based on the method specified in ISO 4490.This method only

It is suitable for powder mixture that can freely flow through 2.5mm aperture under heating.

Method B uses a funnel with a hole diameter of 5mm and a sample size of 150g.

The test temperature range of these two methods is 60 degrees C~180 degrees C, and the related parties can choose one of them after negotiation and determination.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. Among them, dated quotations

Only the version corresponding to that date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

This document.

ISO 4490.2008 Metallic powder standard funnel method for determination of fluidity (Hall

flow meter) [Metalicpowders-Determi-

nationofflowratebymeansofacalibratedfunnel(Halflowmeter)]

Note. GB/T 1482-2010 Standard funnel method for determination of metal powder fluidity (Hall flow meter) (ISO 4490.2001, IDT)

3 Terms and definitions

There are no terms and definitions that need to be defined in this document.

4.1 Heat shield

The test should be carried out in a heat shield.

4.2 Funnel

The funnel has two apertures, one aperture is 2.5mm (method A), and the other is 5mm (method B). See Figure 1 and Figure 2 respectively.

The funnel should be made of non-magnetic, corrosion-resistant metal materials, and should have sufficient wall thickness and hardness to avoid deformation and excessive wear.

The inner surface should be polished.

4.3 Stand and base

The bracket and base are used to support the funnel, as shown in Figure 3 (Method A and Method B).