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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 15445.5-2011

**Representation of results of particle size analysis -- Part 5:
Methods of calculations relating to particle size analyses using
logarithmic normal probability distribution**

粒度分析结果的表述 第5部分：用对数正态概率分布进行粒度分析的计算方法
(English Translation)

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Foreword

GB/T 15445 "Size Analysis of the expression" divided into the following six sections.

- Part 1. graphical representation;
- Part 2. particle size distribution calculated by the average particle size/diameter and each order moments;
- Part 3. Determination of the cumulative particle size distribution curve fit to the standard mode;
- Part 4. Characterization of a classification process;
- Part 5. logarithmic normal probability distribution calculation method of particle size analysis;
- Part 6. particle shape and morphology description and quantitative characterization.

This section GB/T 15445 Part 5.

This part identical with ISO 9276-5:2005 "presentation - Part 5 Size Analysis. The lognormal probability distribution of grain Calculation Method "degree of analysis (in English).

This part of ISO 9276-5:2005 compared to do the following editorial changes.

- With "this Part" instead of "this International Standard";
- Renumbered;
- Deleted international standards foreword;

Appendix A of this section is an informative annex.

This part of the characterization and sorting by the National Standardization Technical Committee and mesh particles (SAC/TC168) and focal points.

Drafting this Part. Steel Research Institute, the machine Productivity Promotion Center.

Introduction

Many cumulative particle diameter distribution system $Q_r(X)$, in a dedicated graph paper, it is represented as a straight line. FIG longitudinal and transverse Coordinate conversion performed by various mathematical formulas. In this section, the cumulative size of the particles is assumed that the system obeys lognormal probability distribution.

In this section, a particle diameter of x , with the diameter of the ball is represented; Depending on the circumstances, the particle diameter of x , may also represent the equivalent diameter is some other form of particles.

Particle size analysis results presentation Part 5. logarithmic normal probability distribution Calculation Method for Particle Size Analysis

1 Scope

GB/T 15445 in this section is to particle characterization lognormal probability distribution of the particle system provides cumulative particle size distribution obedience Theoretical basis, can clearly verify the distributed computing function made of particle size.

This section explains the lognormal probability graph paper design and moments, median diameter, mean particle size and volume - than the surface area of \u200b\u200bcomputing method. Lognormal probability distribution is often applied to express the cumulative particle size distribution of any dimension.

This section applies to the number, length, area, volume or mass cumulative distribution of the reference characterization can be by a series of parallel lines table it shows, and from any location in a line can be known to determine the location of all other lines.

2 Normative references

The following documents contain provisions which, through reference GB/T 15445 in this section constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 15445.1 size analysis results presentation Part 1 graphical representation (GB/T 15445.1-2008, ISO 9045.

1990, MOD)

Presentation - Part 2 GB/T 15445.2 particle size distribution analysis by calculating the

average particle size/diameter and each order moments (GB/T 15445.2-2006, ISO 9276-2:2001, IDT)

3 Symbol

The following symbols apply to this section.

c Cumulative percentage;

e = 2.71828 natural logarithm of;

k x Moment in the index;

M_k, r is the dimension of the frequency distribution r closed k-th moment;

Dimension p distribution (type of quantity);

p = 0. number, p = 1. length, p = 2. area, p = 3. mass or volume;

q_r (x) of dimension r frequency distribution;

Q_r (x) of dimension r cumulative distribution;

Dimension r distribution (type of quantity);

r = 0. number, r = 1. length, r = 2. area, r = 3. mass or volume;

s frequency standard deviation of the distribution;

sg geometric standard deviation, the standard deviation of the exponential function;

SV volume - than the surface area;

x particle size, diameter of the ball;

x_{min} given minimum particle size distribution;