GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

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GB/T 19077-2016 / ISO 13320:2009

Replacing GB/T 19077.1-2008

Particles Size Analysis – Laser Diffraction Methods

(ISO 13320:2009, IDT)

粒度分布 激光衍射法

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Standardization Administration of the People's Republic of China.

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Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard replaced GB/T 19077.1-2008 *Particle Size Analysis - Laser Diffraction Methods - Part 1: General Principles*.

Compared with GB/T 19077.1-2008, the major changes of this Standard are as follows:

--- Corresponding to ISO 13320, combine the contents of Part 1 and Part 2 under this Standard;

--- Add and modify some terms and symbols;

--- Add some test methods and procedures for accurate measurement;

--- Add part of the theoretical background of laser diffraction in Annex A;

--- Add Annex E;

--- Modify the partial refractive index of solid particles in Annex D.

This Standard uses translation method to equivalently adopt ISO 13320:2009 *Particle Size Analysis – Laser Diffraction Methods*.

The Chinese documents that have a consistent correspondence with the international documents normatively cited in this Standard are as follows:

--- GB/T 15445.1-2008 Representation of Results of Particle Size Analysis - Part 1: Graphical Representation (ISO 9276-1:1998, IDT);

--- GB/T 15445.2-2006 Representation of Results of Particle Size Analysis - Part 2: Calculation of Average Particle Size/Diameters and Moments from Particle Size Distributions (ISO 9276-2:2001, IDT);

--- GB/T 15445.4-2006 Representation of Results of Particle Size Analysis - Part 4: Characterization of a Classification Process (ISO 9276-4:2001, IDT);

--- GB/T 20099-2006 Sample Preparation - Dispersing Procedures for Powders in Liquids (ISO 14887:2000, IDT).

This Standard was proposed by and under the jurisdiction of National Technical Committee for Standardization of Particle Characterization, Sorting and Screening (SAC/TC 168).

Drafting organizations of this Standard: Shanghai Institute of Measurement and Testing Technology; University of Shanghai for Science and Technology; China Productivity Center for Machinery; Dandong Bettersize Instruments Ltd.; Zhuhai OMEC Instruments Co., Ltd.; and

Particles Size Analysis – Laser Diffraction Methods

1 Scope

This Standard provides guidance on instrument qualification and size distribution measurement of particles in many two-phase systems (e.g., powders, sprays, aerosols, suspensions, emulsions and gas bubbles in liquids) through the analysis of their light-scattering properties. It does not address the specific requirements of particle size measurement of specific materials.

This Standard is applicable to particle sizes ranging from approximately 0.1μm to 3 mm. With special instrumentation and conditions, the applicable size range can be extended above 3 mm and below 0.1μm.

For non-spherical particles, a size distribution is reported, where the predicted scattering pattern for the volumetric sum of spherical particles matches the measured scattering pattern. This is because the technique assumes a spherical particle shape in its optical model. The resulting particle size distribution is different from that obtained by methods based on other physical principles (e.g., sedimentation, sieving).

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this document.

ISO 9276-1 Representation of Results of Particle Size Analysis – Part 1: Graphical Representation

ISO 9276-2 Representation of Results of Particle Size Analysis – Part 2: Calculation of Average Particle Size/Diameters and Moments from Particle Size Distributions

ISO 9276-4 Representation of Results of Particle Size Analysis – Part 4: Characterization of A Classification Process

ISO 14887 Sample Preparation – Dispersing Procedures for Powders in Liquids

ISO 14488 Particulate Materials – Sampling and Sample Splitting for the Determination of Particulate Properties

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