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Particle-Measurement of crush strength

颗粒 抗压强度的测量

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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 for standardization documents" Drafting is required.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

This document is proposed and coordinated by the National Technical Committee for Particle Characterization and Sorting and Sieve Standardization (SAC/TC 168).

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Introduction

The compressive strength of particles is one of the basic physical properties of particles. The compressive strength is related to the preparation process of particles, including the initial particle size distribution and shape of the material, the material ratio and molding parameter selection, the processing technology and storage process after the particle molding, etc.

The size of the particle will affect the performance of the particle, including the service life and efficiency of the particle, the transmission and reaction rate of the medium in the particle, the transportation and storage. The selection of storage method and process parameter design, etc. Appropriate compressive strength is the key to ensure good performance of particles. Correctly measuring the compressive strength of particles is the key to ensuring good performance of particles.

Compressive strength is of great importance.

Due to the diversity of particle composition and morphology, a set of compressive strength measurement standards applicable to different types of particles should be developed to standardize the measurement process.

The results and methods provide a basis for correctly evaluating the compressive strength of particles.

Measurement of particle compressive strength

1 Scope

This document describes the principle of compressive strength measurement of granules, measuring equipment, sample preparation, measurement steps, calculation of compressive strength, measurement Coefficient of variation of the results, factors affecting uncertainty, and test report.

This document is applicable to spherical, cylindrical and strip particles with a particle size of 1.0 mm to 20.0 mm and a compressive strength of 0.5 N to 10 000 N.

Measurement of particle compressive strength.

2 Normative references

GB/T 41948

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 crush strength

The pressure value when particles break, rupture or/and deform relatively under specified conditions.

3.2 brittle particles

Broken particles will be produced under the action of external force.

Note. The relationship between pressure and measurement time during the compressive strength measurement is shown in Figure 1.

3.3 plastic particles

Particles that will deform/crack under external forces but generally will not break.

Note. There are three types of relationships between pressure and relative particle deformation during compressive strength measurement, as shown in Figures 2, 3, and 4.

3.4 relative deformation

The percentage of the change in particle size in a certain dimension under the action of external force to the original size of the corresponding dimension.

3.5 characteristic value of relative deformation

The critical relative deformation at which particles can maintain their original function/performance.

Note. The user determines this value based on the characteristics and application of the particles.