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

GB/T 17431.1-2010

**Lightweight aggregates and its test methods -- Part 1:
Lightweight aggregates
(English Translation)**

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Foreword

GB/T 17431 Lightweight Aggregates and Its Test Methods consists of the following two parts.

--- Part 1. Lightweight Aggregates;

--- Part 2. Test Methods for Lightweight Aggregates.

This Part is Part 1 of GB/T 17431; and its degree of consistency with EN 13055.1.2002

Lightweight Aggregates - Part 1. Lightweight Aggregates for Concrete, Mortar and Grout is not equivalent.

This Part replaced GB/T 17431.1-1998 Lightweight Aggregates and Its Test Methods - Part 1.

Lightweight Aggregates.

Compared with GB/T 17431.1-1998, the major changes of this Document are as follows.

--- Revise Terms and Definitions (Clause 3 of the 1998 Edition; Clause 3 of this Edition);

--- Revise the upper limit of the density grade of lightweight coarse aggregates to 1200 kg/m³ (3.1 of the 1998 Edition; 3.1 of this edition);

--- Revised the classification of lightweight aggregates (Clause 4 of the 1998 Edition; Clause

4 of this Edition);

--- Change the sieve used for sieve analysis has to a square-hole sieve; and revise the particle

size distribution table (5.1.2 of the 1998 Edition; 5.1.2 of this Edition);

--- Add particle size distribution with a nominal size of 5 mm to 25 mm (5.1.2 of the 1998 Edition; 5.1.2 of this Edition);

--- Add technical indicators for the gradation of mixed lightweight coarse and fine aggregates (5.1.3 of this Edition);

--- Cancel the homogeneity index (5.2 of the 1998 Edition);

--- Cancel the product grades (4.2, 5.3.1, 5.3.2, and 5.5.1 of the 1998 Edition; Clause 4, 5.3.1,

and 5.5.1 of this Edition);

--- Revise the specifications for particle shape coefficient (5.5.1 of the 1998 Edition; 5.5.1 of this Edition);

--- Add technical requirements for chloride content in lightweight aggregates (5.6 of this Edition);

--- Revise technical requirements for mud content (5.6 of the 1998 Edition; 5.6 of this Edition).

Lightweight Aggregates and Its Test Methods - Part 1.

Lightweight Aggregates

1 Scope

This Part of GB/T 17431 specifies the terms and definitions, classification, requirements, test

methods, inspection rules, product certificates, stockpiling and transportation of lightweight aggregates.

This Part applies to lightweight aggregates used in concrete, primarily including artificial lightweight aggregates, natural lightweight aggregates, and industrial waste slag lightweight aggregates. It may also be used as a reference for lightweight aggregates of other categories or

intended for other applications.

2 Normative References

The provisions in following documents become the provisions of this Part through reference in

this Part of GB/T 17431. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document

applies.

GB 6566 Limits of radionuclides in building materials

GB/T 14684-2001 Sand for building

GB/T 17431.2-2010 Lightweight aggregates and its test methods - Part 2. Test methods for lightweight aggregates

JGJ 51 Technical specification for lightweight aggregate concrete

3 Terms and Definitions

For the purposes of this Part of GB/T 17431, the following terms and definitions apply.

3.1 Lightweight aggregate

A collective term for coarse and fine aggregates with a bulk density not exceeding 1200 kg/m³.

3.2 Artificial lightweight aggregate

Lightweight coarse aggregates (such as ceramisite, etc.) and lightweight fine aggregates (such

as ceramisite sand, etc.) produced by processing, granulating, and high-temperature firing inorganic materials.

3.3 Natural lightweight aggregate

Lightweight aggregate that is produced by crushing and screening porous rock formed by volcanic eruptions, such as pumice and scoria, etc.

3.4 Industrial waste slag lightweight aggregate

Lightweight aggregate produced from industrial by-products or solid waste through crushing and screening.

3.5 Cinder

A type of industrial waste slag lightweight aggregate made specifically from the porous residue

left after coal burns in a boiler through crushing and screening.

3.6 Spontaneous combustible coal gangue

A type of industrial waste slag lightweight aggregate made specifically from coal gangue discharged during coal mining and processing through a process involving stockpiling, spontaneous combustion, crushing, and screening.

3.7 Super-lightweight aggregate

Lightweight coarse aggregates for thermal insulation or structural thermal insulation with a bulk density not exceeding 500 kg/m³.

3.8 High strength lightweight aggregate

Lightweight coarse aggregate for structural use complying with the requirements specified in

Table 4 of this Standard.

4 Classification

It is classified as follows by method of formation.

a) Artificial lightweight aggregate. lightweight coarse aggregate (e.g., ceramisite) and lightweight fine aggregate (e.g., ceramisite sand);

7.1.1 Exit-factory inspection

Inspection items for lightweight coarse aggregate. particle size gradation, bulk density, particle

shape coefficient, cylinder compressive strength, and water absorption; for high-strength lightweight coarse aggregate, the strength grade shall also be tested.