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**JIS A 5002** : 2003

(ALA/JSA)

**Lightweight aggregates for  
structural concrete**

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## Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by Artificial Light-weight Aggregate Association (ALA)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS A 5002 : 1999** is replaced with this Standard.

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## Lightweight aggregates for structural concrete

**1 Scope** This Japanese Industrial Standard specifies the lightweight aggregates used for structural lightweight concrete (hereafter referred to as “lightweight aggregates”). The structural lightweight concrete here refers to the concrete used for the main parts of structure such as the reinforced lightweight concrete construction, pre-stressed lightweight concrete construction, steel framed reinforced lightweight concrete construction, precast lightweight concrete product.

**2 Normative references** Standards listed in Attached Table 1 contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) shall be applied.

### 3 Type, class and designation

**3.1 Type** The type of lightweight aggregate shall be as given in Table 1.

**Table 1 Type**

| Type                              |                   | Brief                                                                                        |
|-----------------------------------|-------------------|----------------------------------------------------------------------------------------------|
| Artificial lightweight aggregates | Coarse aggregates | Main raw materials of aggregates are expanded shale, expanded clay, expanded slate, fly ash. |
|                                   | Fine aggregates   |                                                                                              |
| Natural lightweight aggregates    | Coarse aggregates | Lapilli and its processed aggregates.                                                        |
|                                   | Fine aggregates   |                                                                                              |
| By-product lightweight aggregates | Coarse aggregates | By-product lightweight aggregates such as expanded slag and their processed aggregates.      |
|                                   | Fine aggregates   |                                                                                              |

### 3.2 Class

**3.2.1 Class by density in oven-dry condition** The class by density in oven-dry condition of lightweight aggregates shall be as given in Table 2.

**Table 2 Class by density in oven-dry condition of aggregates**

| Class | Density in oven-dry condition g/cm <sup>3</sup> |                              |
|-------|-------------------------------------------------|------------------------------|
|       | Fine aggregates                                 | Coarse aggregates            |
| L     | under 1.3                                       | under 1.0                    |
| M     | 1.3 or over to and excl. 1.8                    | 1.0 or over to and excl. 1.5 |
| H     | 1.8 or over to and excl. 2.3                    | 1.5 or over to and excl. 2.0 |

**3.2.2 Class by solid content** The class by solid content of lightweight aggregates shall be as given in Table 3.

**Table 3 Class by solid content of aggregates**

| Class | Solid content of fine aggregates in mortar % | Solid content of coarse aggregates % |
|-------|----------------------------------------------|--------------------------------------|
| A     | 50.0 or over                                 | 60.0 or over                         |
| B     | 45.0 or over to and excl. 50.0               | 50.0 or over to and excl. 60.0       |

**3.2.3 Class by compressive strength of concrete** The class by the compressive strength of concrete shall be as given in Table 4.

**Table 4 Class by compressive strength of concrete**

| Class | Compressive strength N/mm <sup>2</sup> |
|-------|----------------------------------------|
| 4     | 40 or over                             |
| 3     | 30 or over to and excl. 40             |
| 2     | 20 or over to and excl. 30             |
| 1     | 10 or over to and excl. 20             |

**3.2.4 Class by density of fresh concrete** The class by density of fresh concrete shall be as given in Table 5.

**Table 5 Class by density of fresh concrete**

| Class | Density kg/m <sup>3</sup>        |
|-------|----------------------------------|
| 15    | under 1 600                      |
| 17    | 1 600 or over to and excl. 1 800 |
| 19    | 1 800 or over to and excl. 2 000 |
| 21    | 2 000 or over                    |

**3.3 Designation** The designation of lightweight aggregates shall be as follows:

Example:

**Artificial lightweight aggregates M A - 4 17**

