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**RAILWAY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

TB/T 2922.5-2002

**Railway Concrete Accelerated Mortar Bar aggregate alkali
reactivity test methods for**

铁路混凝土用骨料碱活性试验方法 快速砂浆棒法

(English Translation)

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Foreword

This Standard was prepared according to ASTM C 1260-94 Standard Test Method for Potential Alkalization of Cement-Aggregate Mixture (Mortar-Rod Method) of American Society for Testing and Materials (ASTM), and combined with China's laboratory conditions and levels; its major technical content is equivalent to the ASTM C 1260-94;

but the test procedures and methods are appropriately modified. Therefore, this Standard is the modification and adoption of ASTM C 1260-94.

The serial standards that are relevant to this Standard include.

TB/T 2922.1 Test Methods for Alkali Reactivity of Aggregates for Railway Concrete -Petrographic Facies Method TB/T 2922.2 Test Methods for Alkali Reactivity of Aggregates for Railway Concrete -Chemical Method TB/T 2922.3 Test Methods for Alkali Reactivity of Aggregates for Railway Concrete -Mortar Bar Method TB/T 2922.4 Test Methods for Alkali Reactivity of Aggregates for Railway Concrete -Rock Column Method the specific operating procedures of different test methods in these serial standards are independent; but the evaluation of the test results is interrelated; the users shall select appropriate method to test and evaluate according to the actual situations.

This Standard was proposed and under the jurisdiction of Research Institute of Standards and Measurement, Ministry of Railways.

Drafting organizations of this Standard. Railway Engineering Research Institute of China

Academy of Railway Sciences.

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This Standard was entrusted to the Railway Engineering Research Institute of China Academy of Railway Sciences to explain.

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Test Method for Alkali Reactivity of Aggregates for Railway Concrete - Rapid Mortar-Bar Method

1 Scope

This Standard specifies the sampling method, apparatus, test procedures, result treatment method, etc. of using the rapid mortar bar method to inspect the alkali reactivity of aggregate for railway concrete.

This Standard is applicable to evaluate the alkali-silicate reactivity of siliceous aggregate; it is also applicable to the alkali-silicate reactivity of components in the carbonate aggregate.

2 Normative References

The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. At the time of publication, the editions indicated are valid. All standards are subject to revision. The parties who are using this Standard shall explore the possibility of using the latest version of the following standards.

GB/T 17671-1999 Method of Test Cements - Determination of Strength JC/T 681-1997 Mixer for Mixing Mortars JGJ 52-1992 Standard for Technical Requirements and Test Method of Sand and Crushed Stone (or Gravel) for Ordinary Concrete JGJ 53-1992 Quality Standard and Test Method of Gravel and Crushed Stone for Ordinary Concrete TB/T 2922.3-1998 Test Methods for Alkali Reactivity of Aggregates for Railway Concrete - Mortar Bar Method

3.1 Alkali reactivity

The characteristics of expansion, cracks, even damage of concrete caused by the chemical reaction between certain minerals in the aggregate and alkali (K_2O , Na_2O) in into the test mould; flatten the test-piece surface, number, and mark the test direction.

Three test-pieces shall be made against each aggregate according to the above method.

8.4 Preparation of test-piece curing solution

Weigh 40.00g of sodium hydroxide, dissolve into 1L volumetric flask containing 900mL of distilled water; titrate the distilled water into the flask till the solution volume reaches 1.0L,

then the 1N sodium hydroxide solution is the test-piece curing solution. The preparation amount of test-piece curing solution shall be confirmed according to the amount of test-pieces and provisions of 8.7.

8.5 Test-piece pre-curing

Place the formed test-piece with mold into the standard curing room for curing $24\text{h}\pm 2\text{h}$.

After taking out test mould and removing mold, rapidly place the test-piece into the test-piece holder in the curing container. Immerse the test-piece completely with water, cover the curing container; place the curing container into $80^{\circ}\text{C}\pm 2^{\circ}\text{C}$ water bath or oven for $24\text{h}\pm 2\text{h}$.

8.6 Measurement of the initial length of the test-piece

Take out the curing container from the water bath or oven one by one; untighten the cover of the curing container, take out test-piece one by one from the curing container;

quickly use a rag to wipe the test-piece surface and probe surface; then use the length measuring instrument to measure the test-piece length, which is the initial length of the test-piece. The time from the test-piece taken out of the water to after the initial length is read out shall be controlled within $15\text{s}\pm 5\text{s}$. Use wet rag to cover the test-piece with initial length read till the initial length of other test-pieces has been read.

NOTE 1: before measurement, place the length measuring instrument into $20^{\circ}\text{C}\pm 2^{\circ}\text{C}$ constant temperature room for 24h. Before each measurement, firstly calibrate the zero point of the length measuring instrument (the same below).

NOTE 2: The reading for the initial length of each test-piece shall be the initial reading when test-piece is just placed on the corresponding position of the length measuring instrument.

NOTE 3: Only when the lengths of all test-pieces in one curing container are measured and put into water bath or oven, can the next curing container be taken out.

8.7 Test-piece curing

Place the curing container with sufficient amount of curing solution into $80^{\circ}\text{C}\pm 2^{\circ}\text{C}$ water bath or oven till the temperature of curing solution in the curing container reaches $80^{\circ}\text{C}\pm 1^{\circ}\text{C}$. Vertically place the test-piece that has been measured initial length onto the test-piece holder in the curing container; immerse the test-piece totally into the