SLOVENSKI STANDARD

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Keramične ploščice - 5. del: Določanje odpornosti na udarec z merjenjem koeficienta izgub

Ceramic tiles -- Part 5: Determination of impact resistance by measurement of coefficient of restitution

Carreaux et dalles céramiques -- Partie 5: Détermination de la résistance au choc par mesurage du coefficient de restitution

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Ceramic tiles —

Part 5:
Determination of impact resistance by measurement of coefficient of restitution

Carreaux et dalles céramiques —

Partie 5: Détermination de la résistance au choc par mesurage du coefficient de restitution

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1 Scope.

This International Standard defines a method of test for determining the impact resistance of all ceramic tiles by measuring the coefficient of restitution.

1.1 Definition. For the purpose of this international standard the coefficient of restitution (e) between two impacting bodies is defined as the relative velocity of departure divided by the relative velocity of approach.

2 Principle.

Determination of coefficient of restitution by dropping a steel ball from a fixed height on to the test specimen and measuring the height of rebound.

3 Apparatus.

3.1 Chrome steel ball of 19 mm diameter.

3.2 Ball-release apparatus (Figure 1) consisting of a heavy steel base on levelling screws with a vertical steel bar to which is attached an electromagnet; a guide tube and test unit support.

The test unit is clamped firmly in a position so that the dropping steel ball impinges on the centre of the horizontal tile surface. A clamping device is shown but any suitable system may be used.

3.3 **Electronic timing device** which, by means of a microphone, measures the time interval between the first and second impacts when the ball is dropped on to the test specimen. This apparatus is optional.

4 Test Specimens.

4.1 **Number of test specimens.** A minimum of five pieces in dimensions 75 mm x 75 mm cut from five tiles. Tiles with facial dimensions less than 75 mm may be used.

4.2 **Brief description of test units.** The test units consist of test specimens adhered by means of rigid epoxide resin adhesive to mature concrete blocks.

4.3 **Concrete blocks.** The dense concrete blocks shall be of approximate dimensions 75 mm x 75 mm x 50 mm and prepared in moulds of this size or alternatively cut from large concrete slabs.

The concrete shall have a surface water absorption after 4 hours in the range of 0.5 cm^3 to 1.5 cm^3 in accordance with the method shown in Annex 1 and Figure 2.

Concrete blocks or slabs may be made from one part by weight of Portland cement to 5 parts by weight of aggregate. The aggregate shall be gravel sand of 0 to 8 mm particle size with a continuous grading curve between the limits A and B in Figure 3. The total fines of particle size below 0.125 mm in the mix of concrete, including Portland cement, should be about 500 kg per m^3.

The water/cement ratio shall be 0.5. Thoroughly mix the constituents in a mechanical mixer and trowel into moulds of the required size. Compact for 90 seconds at 50 Hz on a vibrating table.

Condition the slabs for 48 hours at 23 ± 2°C and 50 ± 5% RH before removing them from the moulds. Thoroughly rinse off any mould release agent. Throughout the