

Testing the frost resistance of
facing bricks and clinker blocks
Freezing of bricks arranged in test blocks

DIN
52 252
Part 2

Prüfung der Frostwiderstandsfähigkeit von Vormauerziegeln
und Klinkern; Befrostung von Ziegeln in Prüfblöcken

Supersedes November 1982 edition.

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

The DIN 52 252 standards series has been subdivided as follows:

- DIN 52 252 Part 1 Testing the frost resistance of facing bricks and clinker blocks;
freezing of single bricks on all sides
- DIN 52 252 Part 2 Testing the frost resistance of facing bricks and clinker blocks;
freezing of bricks arranged in test blocks
- DIN 52 252 Part 3 Testing the frost resistance of facing bricks and clinker blocks;
freezing of test walls on one side

In this standard, the symbol % means percentage by mass.

Continued on pages 2 to 5

Dimensions in mm

1 Scope and field of application

The freeze-thaw test method described in this standard serves to assess the frost resistance of facing bricks and clinker blocks used in the outer walls of buildings, where water, frost and thawing do not act on all the sides of the bricks or blocks but instead mainly on the header and stretcher faces.

2 Principle

This method simulates freeze-thaw cycles to which walls made from bricks are subjected in service when saturated with water and then exposed to the effects of frost (cf. Explanatory notes).

Specimens are assembled to form a test block consisting of four bricks and, in this form, saturated with water and exposed, mainly on their header and stretcher faces, to the effects of frost in a programme-controlled refrigerator, after which they are thawed by spraying with preheated water.

The freeze-thaw cycles are repeated until clear signs of damage appear on the specimens or 50 freeze-thaw cycles have been completed.

3 Designation

Designation of the method of determining the frost resistance of facing bricks and clinker blocks by freezing bricks arranged in test blocks (2):

Test DIN 52 252 – 2

4 Apparatus

4.1 Oven, e.g. as specified in DIN 50 011 Part 1, with forced air circulation, rated for temperatures up to at least 120 °C.

4.2 Balance, accurate to within 1 g.

4.3 Water tank made of plastics or steel.

4.4 Prewetting basin of plastics or steel in which the test block can be mechanically rotated around its longitudinal axis (see figure 1).

4.5 Device for holding the bricks forming the test block, with removable plastic cover and power-driven axis (see figure 2).

4.6 Programme-controlled refrigerator

The refrigerator shall consist of a freezing chamber, cooling unit, slats for storing the test blocks, jets for sprinkling, fan, water level control, water outlet and programme control unit. The freezing chamber, with a removable cover or a side door for filling, shall have a minimum volume of 0,50 m³.

The cooling unit shall be so designed that the formation of ice in the inserted specimens forming the test block can take place at least as quickly as described in subclause 8.3.

Spray nozzles shall be fitted in the refrigerator which can uniformly spray the faces of the specimens with water.

In order to achieve a steady and reproducible sequence of the freeze-thaw cycle, the refrigerator shall be fitted with a programme control unit permitting both the cooling process and the thawing process to be adjusted and to run according to schedule.

4.7 Reference bricks¹⁾

The reference bricks shall be standardized solid facing bricks without perforations, thin format (MZ solid bricks, type 1 DF as specified in DIN 105 Part 1), which shall be combined to form a test block as specified in subclause 8.1. When setting the refrigerator, the reference bricks shall be saturated with water as specified in subclauses 7.1 to 7.3 so that the water absorption is equal to $(10 \pm 2) \%$.

A hole 5 mm in diameter and about 125 mm long shall be drilled at right angles to the header face of one of the centre bricks. The hole shall be located so that its centre is halfway up the height of the brick and about 15 mm from the stretcher side.

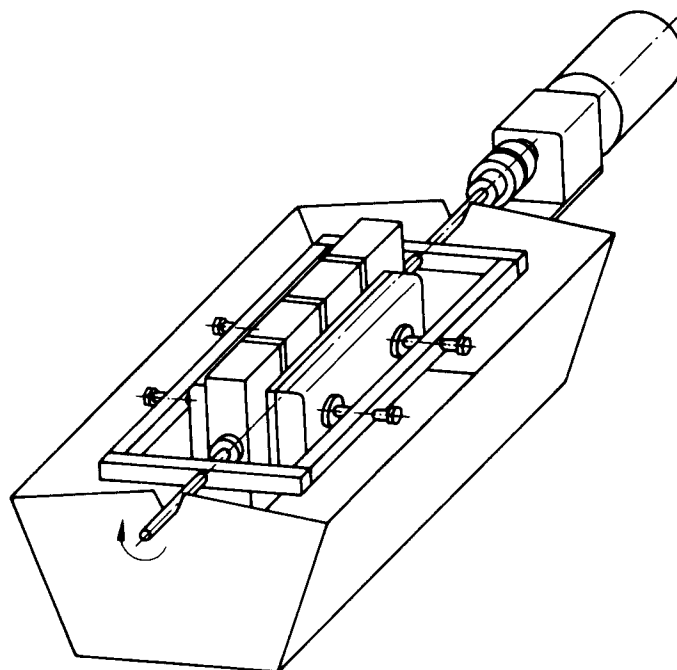


Figure 1. Prewetting basin

A temperature sensor (thermocouple or resistance thermometer) shall be inserted into this hole and located as shown in figure 3. The hole shall then be plugged with a flexible compound.

The reference brick shall be located in the test block so that the temperature sensor is approximately in the centre of the test block.

5 Freezing of reference brick

When setting the refrigerator, the air temperature shall be adjusted so that the temperature of the reference brick changes as a function of time as shown in figure 4.

¹⁾ Information on sources of supply is obtainable from: *DIN-Bezugsquellen für normgerechte Erzeugnisse* of *DIN Deutsches Institut für Normung e.V.*, Burggrafenstraße 6, D-1000 Berlin 30.