

English Version

**Methods of test for masonry units - Part 22: Determination of
freeze/thaw resistance of clay masonry units**

Prüfverfahren für Mauersteine - Teil 22: Bestimmung des
Frost-Tau-Widerstandes von Mauerziegeln

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Foreword

This Technical Specification (CEN/TS 772-22:2006) has been prepared by Technical Committee CEN/TC 125 "Masonry", the secretariat of which is held by BSI.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This Technical Specification specifies a method for determining the freeze/thaw resistance of clay masonry units that are declared by the manufacturer as meeting the requirements for HD units and as suitable to be subjected to severe (F2) exposure.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references the latest edition of the referenced document (including any amendments) applies.

EN 771-1, *Specification for Masonry Units — Clay Masonry Units*

3 Principle

A panel of clay masonry units is assembled either from units which have been immersed in water for a prescribed period of time and which are separated from one another by a specified rubber jointing material or from units and rapid hardening mortar which when sufficiently hardened is immersed in water for a prescribed period of time. The panel is subsequently cooled for a specified period and the water near to one face is repeatedly thawed and refrozen. Damage caused by the freezing and thawing action is assessed and used to determine the freeze/thaw resistance of the bricks.

4 Symbols

m_d is the mass of the specimen after drying, in grams (g)

m_w is the wet mass of the specimen, in grams (g)

w_m is the water absorption of an individual specimen, in mass percent (%)

5 Apparatus

An appropriate **testing machine** capable of generating the freeze-thaw cycles specified in clause 8.3 and ensuring unidirectional freezing and thawing through one face of the units.

Several different designs of testing machine are suitable all of which use a fan to circulate air in the machine. It is important that the machine circulates the air such that the flow is essentially parallel to the face of the panel under test.

A **water tank**, made of plastic or steel.

A **drying oven** capable of maintaining a temperature of $105\text{ °C} \pm 5\text{ °C}$ and of providing forced air circulation.

A **weighing instrument** capable of weighing specimens to an accuracy of 1 g.

A **heat flow meter** suitable for carrying out the calibration procedure. A suitable heat flow meter can be constructed by bonding an electrically heated resistance mat of appropriate rating to an aluminium plate of the same shape and size, typically 2 mm thick \times 200 mm \times 400 mm and a sheet of extruded polystyrene foam 100 mm thick (see Figure 1). The polystyrene sheet should be of sufficient size to fill the opening in the cabinet which is normally occupied by the test panel of masonry units. The aluminium plate, which shall be painted matt black, is sealed to the centre of this opening with a thermocouple attached to its external surface