

Resumen nº 100

EFFECT OF DIFFERENT TYPES OF MEMBRANES TO THE MECHANICAL IMPACT OF PORCELAIN TILES

G.Tok (1); A.Kara, (1,4); D.Kempster (2); R. Reichelt (3)

(1) Ceramic Research Center Co. Eskisehir, Turkey

(2) Schluter Systems, Canada

(3) Schluter Systems., Germany

(4) Eskisehir Technical University, Eskisehir, Turkey

Impact resistance is one of the most critical characteristics to be taken into account in assuring the suitability of ceramic tiles for use in severe conditions. ISO impact test is available now to evaluate ceramic tile's behaviour based on determining a quantitative parameter, coefficient restitution, and observing surface defects caused by defined weight of steel ball. This test method covers procedures for measuring impact properties of ceramic tile, bonded to a standardized concrete substrate. Steel ball is dropped from a specified height onto a bonded tile assembly, coefficient restitution is calculated and the diameter of impact area is observed visually.

On the other way installation of ceramic tiles under severe circumstances is very crucial so for a while uncoupling, flat and trowelled membranes are used for tile installation. Membranes are the latest products to install between subfloor and tile. The idea behind a membrane is that it can absorb the movement of a subfloor before that movement results in loose or cracked tiles.

Membranes considered to be used for crack Isolation and uncoupling membranes are being used as an alternative to mortar bed applications. If the subfloor moves and a crack opens, it will not be transmitted to the underlayment and through to the tiled surface.

A study was carried out to develop a new test method to verify the effect of different types of membranes to tile installation.

9 mm thick; cut 100 mm x 100 mm glazed and unglazed tiles were tested. ISO blocks is used to fix the tiles. Four uncoupling, Five flat and two trowelled membranes were assembled and tested. The mortar to be used to bond the membranes to the ISO block and then the tile to the membranes will meet ISO standard 13007 "C2F". For the trowelled type membranes the mortar is only used to bond the tile. ISO test assembly and steel ball is used for one of the samples to calculate the coefficient of restitution and visually examine the diameter of the circular impact area by optical microscopy. For other samples a new ball drop device is used. Test assembly is positioned under the ball drop device 1000 mm above the face the assembly and released it. After the first impact the diameter of the

circular impact area is observed by optical diameter. Individual and average diameters are reported.

Using the developed test method, it is thought that assesment would be initiated of the effect of different test parameters such as weight of steel ball, height of drop, type of product and type of membranes to be installed. Ultimately, the effects of high impact on a tile surface and the severity of the damage will be analyzed in relation to the type of membrane used.

Keywords: Impact resistance, Porcelain tiles, Membranes, Tile insallation