

# A new method of testing the abrasion resistance of cement-based materials

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## Summary

The object of the invention is the method of determination of abrasion resistance of floor sleepers, mainly made of concrete, under pressure from the beeching wheel.

Known methods and equipment for their implementation are not predisposed to determine the wear resistance of the floor substrate resulting from the friction of the beeching wheel on its frontal surface. These methods do not allow the wear of floor materials to be edible when the wheel rotates around its axis and is pressed against the floor and does not turn.

The method of determination of abrasion resistance of floor sleepers, according to the invention, consists in the fact that a sample of flooring with dimensions of min. 150x150 mm and min. thickness 40 mm shall be subjected to a load of 600 to 1800 N driven and rotating in place at a speed between 30 and 60 rpm with a full rubber wheel, under which, for the effect of the load on the desired area of the sample face, the laden sample moves in mutually perpendicular directions, the abrasion resistance being determined by the value of the change in sample volume, which is determined by the quotient of the change in mass and specific density.

The wear model carried out by the invention is different from the known models, since it assumes that, as a result of a significant increase in the surface temperature of the floor and friction, there is a change in the surface structure of the material, which results in a decrease in surface strength as a result of the friction of the sconqueling wheel against the material layer. The wear model is sudden, often in the form of a floor crush, and not as in known ways in the form of successive abrasion of materials from the surface of the floor sleeper.

After preliminary testing with the device and the development of the results, assumptions about temperature increases and changes in abrasive surface morphology have been confirmed.

The poster representation shall show the operation of the device and the test method and the results obtained by the test and the conclusions obtained after the experiment.