

ABRASION TESTING MACHINE FOR NEW PAVING REGULATIONS



Pan Mixers South Africa (PMSA), in partnership with the Concrete Manufacturers Association (CMA), has manufactured a robust abrasion testing machine to assist customers in complying with the revised South African Bureau of Standards (SABS) abrasion requirements for concrete pavers.

The revised standard – SANS 1058 2010 – which was initiated by the CMA, will make way for concrete pavers that are specified - not only in crushing and breaking strength, but in abrasion resistance too.

PMSA director, Walter Ebeling, says the abrasion testing machine allows users to carry out their own testing of this portion of the SABS certification, thus eliminating the need to send products to external laboratories and, in turn, minimising downtime.

"In the past, paving has sometimes failed - not because of the paving block strength, but because the abrasion resistance of the pavers was not adequate. The revised standard specifies a measurable standard for abrasion resistance," notes Ebeling.

After carrying out extensive research, the CMA determined that the most

A new paving block abrasion testing machine manufactured locally by Pan Mixers South Africa in collaboration with the Concrete Manufacturers Association (CMA).

uniform method of testing abrasion to the new SABS standard would be to use ball bearings. "This technique simulates high-traffic areas such as loading yards, stock yards and intersections where abrasion is a problem," adds Ebeling.



A set of paving blocks after a run on the abrasion testing machine.

The abrasion testing machine is a square-shaped drum, onto which four pavers can be bolted to each face. A small opening allows the surface of the paver to be exposed to the ball bearings in the drum. When the drum rotates, the ball bearings fall onto and rub against the pavers, thereby simulating abrasion.

After a specified number of revolutions, the pavers are weighed and the mass loss measured. Former CMA director, John Cairns, says that on a set of eight pavers, the average weight loss must not exceed 12gm. If it does, the pavers will not be considered abrasion resistant.

The machine has been built with replaceable liners, as well as safety guarding, which prevents any part of an operator's body from making contact with, or coming close to moving parts. Furthermore, the machine is backed up by PMSA and is built to last many years. All the components are machined on Pan Mixers' in-house computer numerically controlled (CNC) machine.

Cairns adds that alternate methods of testing – such as wire brushing – are inferior, as there are too many variables that could influence the amount of wear on a paving surface. By using steel ball bearings, these variables are covered, and a comprehensive test result is achieved.

Cairns observes that prior to the CMA's research, it was thought that a paver with a higher compressive strength would offer better abrasion resistance properties. This has, however, proved to be incorrect - there is no relationship between compressive strength and abrasion resistance. Our charts show that even a block of 59 MPa can have very poor abrasion resistance, while a block of only 25 MPa can have excellent abrasion resistance," notes Cairns.

He says that concrete paving blocks which are manufactured according to the

new standard will provide the consumer with the means of being able to compare the performance of the various pavers on the market with more accuracy.

"The new abrasion standard is good news all round, as the industry has been pushing for higher standards for many years," Ebeling concludes. ■