

# Abrasion testing machine assists in SABS compliance

**M**anufacturer of block and brickmaking machines 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 new South African Bureau of Standards (SABS) abrasion requirements for concrete pavers.

The new SABS standard, which has been established by the CMA, will make way for concrete pavers that are specified not only in crushing

and breaking strength but also in abrasion resistance.

The new standard, SANS 1058 concrete paving blocks, is in its publishing stage, and should be finalised in the next few months.

PMSA director **Walter Ebeling** says that, once the standard is implemented, the company's abrasion testing machine will allow users to carry out their own testing of this portion of the SABS certification, which eliminates the need to send products to external laboratories and, in

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## ABRASION TESTING

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turn, reduces down time.

"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 new standard specifies a measurable standard for abrasion resistance," explains Ebeling.

After carrying out extensive research, the CMA determined that the most 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, stockyards and intersections,

where abrasion is a problem," adds Ebeling.

The abrasion testing machine is a square-shaped drum onto which four pavers can be bolted to each face of the machine. A small opening allows the surface of the paver to be exposed to the inside of the drum. The steel ball bearings sit inside the drum, while the pavers are clamped onto each of the faces. When the drum turns, the ball bearings fall onto and slide across the pavers, thereby simulating abrasion.

After a specified number of revolutions, the pavers are weighed and the mass loss is



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measured against their weight before the test started. CMA director **John Cairns** says that, for a set of eight pavers, the average weight loss must not exceed 12 g. If the weight loss falls below 12 g, the pavers will be considered abrasion resistant.

Pan Mixers' abrasion testing 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, dangerous moving parts. Further, the machine is backed by PMSA and is built to last for many years. All the components are machined on Pan Mixers' in-house computer numeric controlled machine.

Cairns adds that alternative 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, achieving comprehensive test results.

The current standard does not take into account abrasion.

"Prior to conducting research, it was thought that a paver with a higher compressive strength would offer better abrasion resistance properties.

"However, this has proved to be incorrect, as 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 that are manufactured according to the new standard will provide the consumer with the means 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.

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The greatest and noblest pleasure which men can have in this world is to discover new truths; and the other is to shake off old prejudices.