Amendment No.01 approved on 2012- 11-28 to SLS 1425 PART 2:2011

SRI LANKA STANDARD SPECIFICATION FOR CONCRETE PAVING BLOCKS

SLS 1425 PART 2:2011

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4.2.2.1.2 Length and width

Delete the word, “three” in the second line of the paragraph and substitute “two”.

4.2.2.2.2 Length and width

Delete the words, “declared by the manufacturer to define the shape” in the first line of the paragraph

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4.2.2.2.2 Length & Width

Delete existing FIGURE 1, and substitute the following diagrams as FIGURE 1.

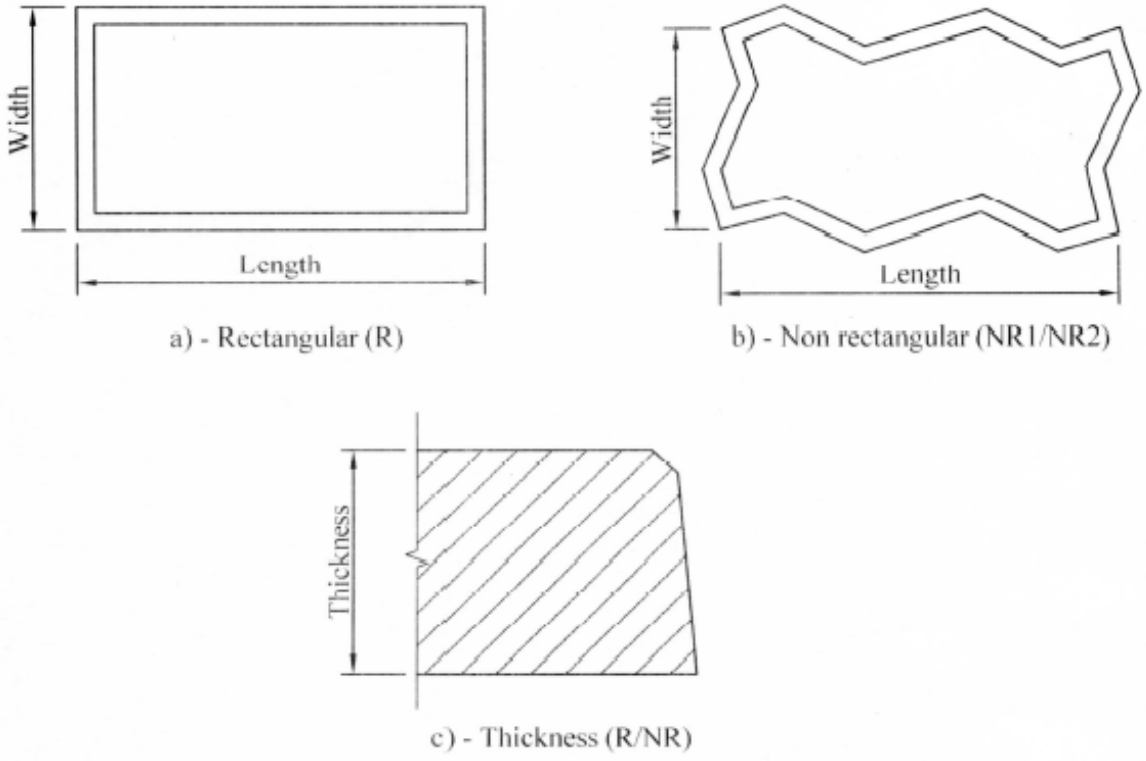

FIGURE 1 - Length, width and thickness of concrete paving units

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4.4.2.2 Measurement of Plan Area

Entire paragraph to be changed as follows.

"Weigh a rectangle measuring 250 mm x 150 mm, cut accurately from a cardboard of uniform thickness, to the nearest 0.01 g. Place the block, wearing surface uppermost, on the cardboard cut to 250 mm x 150 mm and trace around its perimeter with a pencil. Cut out the shape accurately and weigh it to the nearest 0.01 g, using the balance.

Calculate the plan area of the paving block, A to the nearest 10 mm^2 either by using the equation:

$$A = \frac{37\,500\ m_2}{m_1}$$

where

m_1 is the mass of a 250 mm x 150 mm cardboard rectangle in g

m_2 is the mass of a cardboard shape matching the block in g

or by using other means capable of measuring to 10 mm^2.

Add a new clause as

10 MEASURING OF ABRASION ACCORDING TO THE BÖHME TEST.

10.1 Principle

Square sheets or cubes are placed on the Bohme disc abrader, on the test track of which standard abrasive is strewn, the disc being rotated and the specimens subjected to an abrasive load of 294 ± 3 N for a given number of cycles (see 10.5).

The abrasive wear is determined as the loss in specimen volume.

10.2 Abrasive material

The standard abrasive used shall be fused alumina (artificial corundum) designed to produce an abrasive wear of 1.10 mm to 1.30 mm when testing standard granite specimens and of 4.20 mm to 5.10 mm when testing standard limestone specimens. Conformity with these requirements, the homogeneity of the material and the uniformity of bulk density and grading of the abrasive shall be checked.

Note: artificial corundum - Supply source and information can be obtained at: Material prüfungsamt Nordrhein-Westfalen, Marsbruchstrage 186, D-44287 Dortmund, Germany.

10.3 Apparatus

10.3.1 ***Thickness measuring device.*** To establish the reduction in thickness, a dial gauge, the plunger of which shall have a spherical bearing and an annular contact face of 8 mm outside and 5 mm inside diameter, and a measuring table, shall be used.

10.3.2 ***Disc abrader.*** The Bohme disc abrader as shown in Figure10.1 consists essentially of a rotating disc with a defined test track to receive the abrasive, a specimen holder and a loading device.\

10.3.3 ***Rotating disc.*** The rotating disc shall have a diameter of approximately 750 mm and be flat and positioned horizontally. When loaded, its speed shall be 30 ± 1 revolutions per minute.

The disc shall be provided with a revolution counter and a device that switches off the disc automatically after 22 revolutions.

10.3.4 ***Test track.*** The test track shall be annular, with an inside radius of 120 mm and an outside radius of 320 mm (i.e. be 200 mm wide), and be replaceable.

The track shall be made of cast iron with a perlitic structure, a phosphorus content not exceeding 0.35% and a carbon content of more than 3 %. The track shall have a Brinell hardness of 190 to 220 HB 2.5/187.5 (as defined in ISO 6506-1, ISO 6506-2 and ISO 6506-3), determined as the mean from measurements taken at not less than ten points along the edge of the track.

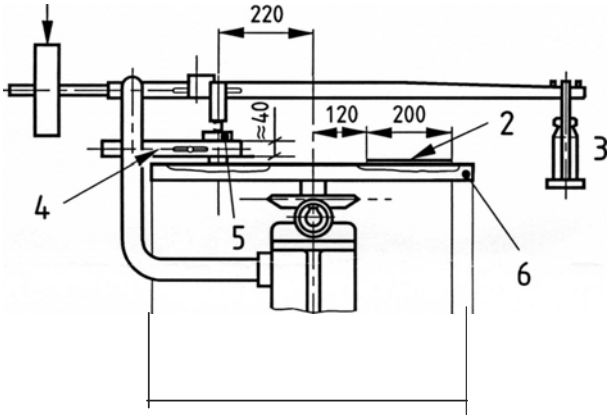
The track surface is subject to wear in service; the resulting reduction in thickness shall not exceed 0.3 mm and any grooves not deeper than 0.2 mm. If these values are

exceeded, the track shall be replaced or refinished. When the track has been refinished three times, its hardness shall be determined anew.

10.3.5 ***Specimen holder.*** The specimen holder shall consist of a U-frame approximately 40 mm high, with a clear distance of 5 ± 1 mm from the test track. The frame shall be positioned so that the centreline distance between specimen and disc is 220 mm and the angle bead of the specimen holder, which supports the specimen, is located at a distance of 4 ± 1 mm above the disc. The mounting of the specimen holder shall ensure that, during testing, no vibration occurs.

10.3.6 ***Loading device.*** The loading device shall consist of a lever of two arms of different length, a loading weight and a counterweight, the lever being pivoted with as little friction as possible and positioned almost horizontally during the test. The system shall be designed to ensure that the load is transferred vertically via the plunger to the centre of the specimen. The self-weight of the lever is balanced by the counter-weight and the scale to receive the loading weight. The force acting on the specimen results from the loading weight multiplied by the leverage ratio, the mass of the weight being selected to produce a test force of 294 ± 3 N (corresponding to about 0.06 N/mm^2), which shall be verified by calculation.

Dimensions in millimetres



Key
1. Counterweight
2. Test track
3. Loading weight
4. Specimen holder
5. Specimen
6. Rotating disc

Figure 10.1 -Principle of Böhme disc abrade

10.4 Preparation of specimens

Use square slabs or cubes with an edge length of 71.0 ± 1.5 mm as specimens.

The contact face and the opposite face of the specimen shall be parallel and flat. For determining the reduction in thickness as described in 10.6, the opposite face shall, if appropriate, be ground parallel or otherwise machined so as to be parallel. Generally the specimens shall be dried to constant mass at a temperature of 105 ± 5 ^{o}C, pre-grinding of the contact face by four cycles (see 10.5) being usually required. Prior to testing, determine the density of the specimen, ρ by measurements, to the nearest 0.1 mm, and by weighing, to the nearest 0.1 g.

In case of two-layer specimens (with a facing layer - see **4.1** of part 1 of this standard, determine the density ρ for the facing layer by a separate test specimen with suitable dimensions taken from the facing layer. Such specimen shall be cut from the remaining part of the same block from which the abrasion resistance test specimen was taken .Where necessary, such specimens shall be ground prior to testing.

10.5 Procedure

Prior to the abrasion test and after every four cycles (see 10.4), weigh the specimen to an accuracy of 0. 1 g.

Pour 20 g of standard abrasive on the test track. Clamp the specimen into the holder and, with the test contact face facing the track, load centrally with 294 ± 3 N.

Start the disc taking care that the abrasive on the track remains evenly distributed over an area defined by the width of the specimen.

Test the specimen for 16 cycles, each consisting of 22 revolutions.

After each cycle, clean both disc and contact face, and turn the specimen progressively through 90^0 and pour new abrasive on the track as described in 10.2.

10.6 Calculation of test results

Calculate the abrasive wear after 16 cycles as the mean loss in specimen volume ΔV, from the equation:

$$\Delta V = \frac{\Delta m}{\rho}$$

where

ΔV is the loss in volume after 16 cycles in mm^3;

Δm is the loss in mass after 16 cycles in g;

ρ is the density of the specimen or, in case of two-layer specimens, the density of the facing layer in g/mm^3.

Calculate the density ρ for specimen or in case of two-layer specimen, the density of the facing layer, from the equation:

$$\rho = \frac{m}{V}$$

where

m is the mass of the specimen prior to abrasion or in case of two-layer specimens, the mass of the specimen taken separately from the facing layer in g;

V is the volume of the specimen prior to abrasion or, in case of two-layer specimens, the volume of the facing layer in mm^3.

Calculate the volume V by the measured dimensions (length, width and thickness) of the specimen. Take measurements for each dimension at the following positions as appropriate.

for length/width – three positions ; closer to two edges of the face at a minimum of 10 mm from the edge and along the centre line of the face parallel to the relevant dimension, and

for thickness – five positions; closer to four corners at a minimum of 10 mm from adjacent edges of the relevant corner and at the centre of face.

Average the measured values of each dimension separately and calculate the volume of the specimen.

10.7 Test report

Report the abrasive wear to the nearest whole number of 1 000 mm^3 per 5 000 mm^2