



Laboratory equipment co.,limited

Deval Abrasion Machine 48-D5242

PRODUCT MANUAL



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I. Overview

This Micro-Deval Abrasion Machine is used to determine the resistance to wear of aggregates.

II. Structure

The machine consists of a steel frame suitable to house four 200 mm dia. x 154 mm length drums (EN 1097-1) or two 200 mm dia. x 400 mm length drums (EN

13450). The top machine is enclosed in a sound proof and safety cabinet stops automatically when the cover is open. The machine is equipped with an automatic counter, which can be preset to the required number of revolutions of the drum or the total working time.

III. Technical Parameters

Drum inside dimension	200 mm dia. x 154 mm length or 200 mm dia. x 400 mm length
Rotating speed	100±5 rpm
Steel spheres	Stainless steel made, 10 mm dia., pack of 20 kg; or 30mm dia., pack of 10; or 18mm dia., pack of 50.
Overall dimension	1100 x 470 x 1200mm
Weight	170kgs
Power	AC 220V 50HZ, single phase, 750 W

IV. Operation

Preparation

- ①. Prepare test specimen according to the test requirement, sieve the sample using the 10mm, 11.2mm (or 12.5mm) and 14mm sieves to give separate fractions in the range 10mm to 11.2mm (or 12.5mm) and 11.2mm (or 12.5mm) to 14mm. Wash each fraction separately and dry them in the oven at 110±5°C to constant mass.

Allow the fraction to cool to ambient temperature. Mix the two fractions to provide a modified



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10mm to 14mm laboratory sample. the test portion should consist of two specimens, each having a mass of $500\pm 2g$. The grading of test portion shall comply with one of the requirements given in below:

- a) between 30% and 40% passing a 11.2mm sieve, or
- b) between 60% and 70% passing a 12.5mm sieve.

②. Before the experiment, should check the machine and confirm whether it is in normal condition.

Test Procedure

Place each test specimen into a separate drum. Add sufficient steel balls to each drum to give a charge of $5000\pm 5g$.

Add $2.5\pm 0.05L$ water to each drum.

Fit a lid to each drum, and place each drum on the two shafts.

Rotate the drums at a speed of 100 ± 5 rpm for 12000 ± 10 revolutions.

Note: Before the test, the counter should adjust to zero.

After the test, collect the aggregate and balls in a pan, taking care the loss of any aggregate. Using a washing bottle, carefully wash the inside of the drum and the lid, and retain the washings.

Empty the material and all the washings on to the 1.6mm sieve protected by an 8mm guard sieve. Wash the materials in a stream of clean water.

Carefully separate the aggregate particles retained on the 8mm guard sieve from the steel balls, taking care not to lose any aggregate materials. The aggregate particles should be picked out by hand, or the balls should be removed from the sieve using a magnet.

Place the aggregate particles retained on the 8mm guard sieve onto a tray. Add the material retained on the 1.6mm sieve to the same tray.

Dry the try and its contents in the oven at $110\pm 5^{\circ}C$ to constant mass. Weigh and record the mass (m) retained on the 1.6mm sieve to the nearest gram.



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V. Calculation

For each test specimen calculate the micro-Deval coefficient, M_{DE} to the nearest 0.1 units using the following formula:

$$M_{DE} = \frac{500 - m}{5}$$

Where

M_{DE} is the micro-Deval coefficient (in the wet condition)

m is the mass of oversize fraction retained on 1.6mm sieve, in grams


Using the value obtained for the two specimens, calculate the mean value of micro-Deval coefficient.


VI. Packing List


NO.	Item	Qty.
1	48-D5242 Micro-Deval Abrasion Machine	1 pc
2	Stainless steel drum, 200mm dia. X 154mm long	4 pcs
3	Stainless steel spheres, pack of 20kg	1 pack
4	Product Manual	1 pc
5	Certificate of Quality	1 pc



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