Kentucky Method 64-513-0~~82~~
Revised ~~11/19/02~~02/26/08
Supersedes KM 64-513-0~~20~~
Dated ~~1/21/00~~11/19/02

DETERMINATION OF SLAKE DURABILITY INDEX

1. SCOPE: The test procedures are intended to assess the resistance to weathering of rock samples after being subjected to two standard cycles of drying and wetting. The basis for the test is that weakly cemented or compacted argillaceous materials absorb moisture when subjected to a simulated weathering process. Moisture absorption by the soil-like rock may cause disaggregation in the form of powdering, spalling, or flaking of the sample surface, or separations along bedding planes.

2. APPARATUS:

   2.1. Slake durability testing machine.

      2.1.1. A test drum comprised of a 2.00 mm standard mesh cylinder of unobstructed length 100 mm and diameter 140 mm, with solid fixed base. The drum has a solid removable lid. The drum must be sufficiently strong to retain its shape during use, but neither the exterior of the mesh not the interior of the drum should be obstructed, for example by reinforcing members.

      2.1.2. A trough, to contain the test drum supported with axis horizontal in a manner allowing free rotation, capable of being filled with water to a level 20 mm below the drum axis. The drum is mounted to allow 40 mm unobstructed clearance between the trough and the base of the mesh. The principal feature of the trough and drum assembly are illustrated below.

      2.1.3. A motor drive capable of rotating the drum at a speed of 20 rpm, the speed must be held constant to within 5 per cent for a period of 10 minutes.

   2.2. An oven capable of maintaining a temperature of 230° ± 9°F for a period of at least 12 hours.

   2.3. A balance of suitable capacity capable of weighing to an accuracy of 1.0 grams.

   2.4. Beakers of at least 500 milliliter capacity.

3. PROCEDURE:

   3.1. Number and weigh beakers. (weight of beaker = B)

   3.2. Select samples and place them in numbered beakers. Use 10 pieces of material in each

beaker. Each piece should weigh approximately 40 - 50 grams. The total sample should weigh approximately 450 - 550 grams.

3.3. Oven dry sample for at least 12 hours.

3.4. Weigh and record the weight of the sample plus beaker (W_1).

3.5. Place the oven dried sample in the test drum and mount in the trough. Adjust water level in the trough to 20 mm below the horizontal drum axis and rotate the drum at 20 revolutions per minute for 10 minutes.

3.6. Remove the sample from the drum and repeat steps 3.3 and 3.5.

3.7. Remove the sample from the drum and repeat step 3.3.

3.8. Weigh and record the weight of the sample plus beaker (W_2).

4. CALCULATION: The slake durability index is calculated as the percentage ratio of final to initial dry sample weights as follows:

$$\textit{Slake Durability Index (SDI)} = \frac{W_2 - B}{W_1 - B} \times 100$$

5. REPORT: The report should include the following information for each sample tested:

5.1. The slake durability index (second cycle) to the nearest 0.1 percent.

5.2. The appearance of fragments retained in the drum.

APPROVED _____
DIRECTOR
DIVISION OF MATERIALS

DATE 02/26/08

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~~DATE 11/19/02~~