

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

METHOD OF PREPARATION AND EVALUATION
OF AGGREGATE FOR SOAK TEST

1. PURPOSE

- 1.1 Various rock types may react differently to the presence of interstitial water. Material that is above the phreatic zone in the crust may undergo physical changes when subjected to a saturated environment and, if used in Portland cement concrete, these changes might be injurious to the strength of the concrete. This test is strictly qualitative, in that only physical and megascopic changes are noted. Since test results are descriptive, no decision on the acceptability of the material can be made without corroborating qualitative test results. This test gives an indication of what happens to the aggregate in a saturated environment and what may happen to the aggregate when mixed in Portland cement concrete.

Note: Portland cement concrete does not represent a saturated environment but since water is used in the mixing process, the external surface may become saturated and physical changes may take place. Such changes as increased friability may occur and, subsequently, this could change the percent of fines in the mix and the gradation of the aggregate, both of which could affect the strength of the concrete.

2. SCOPE

- 2.1 This method of preparation and evaluation is applicable to all material to be used for coarse aggregate in Portland cement concrete. The test is usually performed on limestone and sandstone samples since these types are usually above the phreatic zone when quarried or mined. River gravel is excluded because it is usually found in a saturated environment; (either in a river, (as in dredging operations) or very near a river (as in a pit operation)). The test is applied when required by the governing specifications and is a standard quarry investigation test.

3. EQUIPMENT

- 3.1 Containers - Pans or buckets large enough to accommodate the aggregate, which will be filled with water.

4. SAMPLES

- 4.1 Washed and oven dried samples are received from the Preparation Laboratory when the soak test is required for crusher run aggregate. For quarry investigations, samples of ledge rock (rock barrow) taken at the quarry site at the time of the investigation are used.

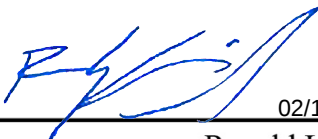
- 4.2 There is no definite sample weight to be used, but a sample of 3000-5000 grams will be sufficient for a representative sample.

5. PROCEDURE

- 5.1 Make a lithologic description of the material including such things as color, hardness, toughness, friability, presence of fracture and bedding planes, presence of inclusion or clastic material, etc. After the description, place the material in the bucket and fill with water until the water level is about 2 inches above the aggregate. Set aside and let soak for 24 hours.
- 5.2 After the soaking period is finished, drain the water and note any changes in the physical character of the material as described in Section 5.1

6. EVALUATION

- 6.1 Results of the test are to be reported on the appropriate Division form. No conclusion about the applicability or non-applicability should be made. For a quarry investigation the test results should be put in a quarry investigation file for later incorporation into the final report. This result, along with other quality test results will be used in making recommendations for the applicability of the material for highway use.


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Ronald L. Stanevich, P.E.
Director
Materials Control, Soils and Testing Division