



## WSDOT Test Method T 501

### *Test Method to Determine Durability of Very Weak Rock*

#### 1. Scope

- 1.1 This test method covers the determination of the Jar Slake Index,  $I_j$ , of weak rock.
- 1.2 The values stated in SI units are regarded as the standard.
- 1.3 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

#### 2. Referenced Documents

##### 2.1 ASTM Standards

- D 653 Terminology Relating to Soil, Rock, and Contained Fluids
- D 2113 Practice for Rock Core Drilling and Sampling of Rock for Site Investigation
- D 5079 Practices for Preserving and Transporting Rock Core Samples

#### 3. Terminology

- 3.1 For terminology used in this test method, refer to Terminology D 653.
- 3.2 Definitions of terms specific to this test method:
  - 3.2.1 Jar Slake Index,  $I_j$  – the visual determination of degradation of weak rock at some elapsed time after immersion in water or polymer slurry. This value is an integer ranging from 1 to 6.

#### 4. Significance and Use

- 4.1 The Jar Slake test is a simple test developed to determine the reaction of weak rock material to water and/or polymer slurry during a certain period of time which can be tested on irregular bulk samples. Results of this test have implications on the porosity, grain interactions and density of the material.
- 4.2 This test method is used to qualitatively estimate and assign durability values to weak rocks.

#### 5. Apparatus

- 5.1 300 ml to 600 ml clear glass laboratory jar, no taper.
- 5.2 Drying Apparatus – Any suitable device capable of drying samples at a temperature not exceeding 60°C [140°F].

#### 6. Test Sample and Specimen

- 6.1 Collect, transport, and store test samples in such manner to retain the natural water content using the guidelines in ASTM D 2113 and D 5079.
- 6.2 Test specimen shall be an air dried intact rock fragment with minimum dimensions of 25 mm × 25 mm and maximum dimensions of 65 mm × 50 mm. Specimen may be dried in an oven not exceeding 60°C [140°F].

## 7. Procedure

- 7.1 Place the specimen into an empty jar taking care not to break or fracture any part of it.
- 7.2 Photograph the specimen in the empty jar.
- 7.3 Add enough distilled water to cover the specimen by at least 15mm taking care not to disturb the specimen. A pre-mixed polymer slurry conforming to construction industry standards may be used in place of distilled water to investigate the retardation effects the polymer may have on the slaking process.
- 7.4 After two minutes of immersion, visually inspect the specimen to determine the Jar Slake Index,  $I_j$ , using the criteria contained in Table 1 and record the  $I_j$  for the reading.
- 7.5 Repeat Step 7.4 after 4, 6, 8, 10, 15, 20, 60, and 1440 minutes.
- 7.6 Take a final photograph of the specimen.

| Jar Slake Index, $I_j$ | General behavior during test                     |
|------------------------|--|
| 1                      | Degrades rapidly into a pile of flakes or mud    |
| 2                      | Breaks readily and/or forms many chips           |
| 3                      | Breaks slowly and/or forms few chips             |
| 4                      | Breaks rapidly and/or develops several fractures |
| 5                      | Breaks slowly and/or develops few fractures      |
| 6                      | Very little or no change                         |

### Jar Slake Index Descriptions

*Table 1*

## 8. Report

- 8.1 The report shall include the following:
  - 8.1.1 Specimen identification and description, test date, and test fluid used.
  - 8.1.2 Jar Slake Index value for all required readings.
  - 8.1.3 The Jar Slake Index Table (Table 1).
  - 8.1.4 Beginning and final photographs.