

**Slake Durability Apparatus  
SL910**

Impact Test Equipment Ltd  
[www.impact-test.co.uk](http://www.impact-test.co.uk) & [www.impact-test.com](http://www.impact-test.com)

User Guide  
**User Guide**  
**User Guide**

**Impact Test Equipment Ltd.  
Building 21 Stevenston Ind. Est.  
Stevenston  
Ayrshire  
KA20 3LR**

T: 01294 602626

F: 01294 461168

E: [sales@impact-test.co.uk](mailto:sales@impact-test.co.uk)

Test Equipment Web Site

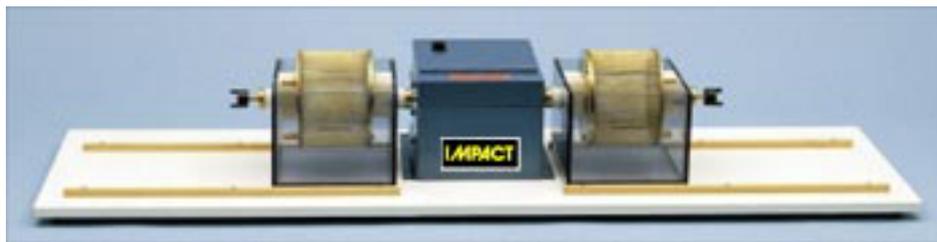
[www.impact-test.co.uk](http://www.impact-test.co.uk)

Test Sieves & Accessories Web Site

[www.impact-test.com](http://www.impact-test.com)

## Contents

Section	
1	Introduction
2	Apparatus
3	Procedure
4	Calculation
5	Reporting of Results



## 1 Introduction

The Slake Durability Index Test is intended to assess the resistance offered by rock samples to weakening and disintegration when subject to changes in water content. The technique forms part of the suggested methods of test compiled by Dr JA Franklin for the commission on standardisation of laboratory and field tests of the International Society for Rock Mechanics, Lisbon. This equipment was developed with the assistance of Professor Hoek and Dr Franklin at the Imperial College of Science and Technology, London. The technique itself forms an important part of tests to determine the weathering properties of rock when exposed on embankments and in open cast mining, as well as in many other applications.

## 2 Apparatus

The apparatus consists essentially of the following:

- 2.1 A pair of test drum assemblies manufactured in brass, comprising a 2 mm standard mesh cylinder of unobstructed length 100 mm and diameter 140 mm with a solid fixed base. The other face of the drum is removable to facilitate loading a sample for test.
- 2.2 A pair of transparent water tanks with suitably positioned horizontal axis drive shafts. The design is such that drum assemblies can be easily fitted to and removed from the tank.
- 2.3 A motor assembly, including a drive shaft rotating at  $20 \text{ rpm} \pm 1 \text{ rpm}$  mounted on a base board capable of accepting the standard pair of tank drum assemblies, automatically intercouple to form their own driving chain.
- 2.4 Electrical supply

### Safety

Whilst the test is in operation do not remove any covers or attempt to adjust any part of the machine.

Ensure all moving parts are thoroughly secured before attempting any maintenance.

### *Electrical safety*

**Warning:** Before removing any covers or performing maintenance repair and service, isolate from electrical supply by removing mains plug. Where mains supply is required during these activities, only competent persons should perform the work.

It is advised that this machine be connected via a residual current device (not supplied), and it should operate if earth leakage current exceeds 0.03 amps.

The power cable is coded as follows:

Brown wire	L	Live or Power
Blue wire	N	Neutral
Green/Yellow wire	E	Earth or Ground

**Note:** exercise extreme caution when using the machine with wet hands. Dry hands before operating machine.

### Portable Appliance Tests (PAT)

All Impact designed products are tested for electrical safety prior to sale.

Organisations have an obligation to ensure equipment is maintained and is safe for use. Regular PAT testing is one means of ensuring equipment continues to be electrically safe.

**Important: do not connect PAT leads to sensitive components such as PCBs, control switches and the like.**

**DO NOT FLASH TEST ELECTRONIC EQUIPMENT.**

**If in doubt as to the most suitable connection point (which will usually be an earth stud or an external earth connection) contact Impact Service Department for assistance.**

### **3 Procedure**

- 3.1 10 rock specimens each weighing 40 to 60 g, giving a total weight of 450 to 550 g, are selected to represent the sample.
- 3.2 The weight of a clean dry drum assembly 'C' is recorded.
- 3.3 The selected specimens are placed in the drum and dried to constant weight at a temperature of 105°C (this usually requires 3 to 12 hours in an oven). The weight 'A' of the drum plus specimens is recorded.
- 3.4 The drum assembly for each test is placed in the related water tank and coupled in series to the motor drive unit.

**Note:** the drum assemblies are marked 'left hand' and 'right hand' and should be placed accordingly, relative to the motor drive unit.

- 3.5 The tank is filled with slaking fluid to within 20 mm of the drum axle (indicated by a mark on the tank). The test is immediately set in motion for a period of 10 minutes.
- 3.6 At the end of the period the drive is immediately switched off, the drum assembly removed from the tank, and the assembly with the specimens dried to constant weight at 105°C. The weight 'B' of the drum plus the retained portion of the specimens is recorded.

### **4 Calculation**

- 4.1 The index  $I_d$  is calculated as the percentage ratio of the final to initial dry sample weights:

$$I_d = \frac{B-C}{A-C} \times 100\%$$

**Note:** an alternative method of weighing is to exclude the drum assembly. Under these conditions care must be taken not to damage the specimens when transferring them to the drying tray.

### **5 Reporting of Results**

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

- 5.1 The slake durability index.
- 5.2 The nature of the slaking fluid, for example distilled water.
- 5.3 The appearance of fragments retained in the drum.
- 5.4 The appearance of material passing through the drum.