



STANDARD OPERATING PROCEDURE (SOP)

FOR OPERATING SLAKE DURABILITY MACHINE



SLAKE DURABILITY MACHINE

STANDARD OPERATING PROCEDURE (SOP) FOR OPERATING THE SLAKE
DURABILITY TESTING APPARATUS FOR ROCK ABRESSION RESISTANCE
ANALYSIS PURPOSES

LOCATION - FACILITY	MOSELEY MORAMORO
SUBDIVISION	MINING – OK TEDI LABORATORY
REVISED EDITION	1 ST EDITION
REVIEW DATE	1 ST JULY 2022
DRAFTED BY	P. RUMINTS (SENIOR TECHNICAL OFFICER)

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NOTE

USAGE POLICIES & INSTRUCTIONS

- This equipment can only be operated upon approval from either the Laboratory Manager or a Technical Officer, or operated with the assistance or supervision of a technical officer.
- Strict compliance to operating procedures and safety requirements is required to operate this equipment. No Exceptions for substandard practices!
- If this equipment is acting unusual while operating STOP IMMEDIATELY! Please REPORT this malfunction to the Technical Officer and discuss the severity of the fault before proceeding or tag-out as faulty equipment.
- Any accidental damage to equipment or incidents encountered while operating this equipment must be reported immediately.



EQUIPMENT DETAILS

Slake Durability Testing Apparatus

Purpose:

This SOP ensures that the operator may operate this Slake Durability Testing Apparatus appropriately according to the operating procedures to get accurate and reliable output without damages to the equipment or causing injuries to the operator. The Slake durability test method has been developed to assess the deterioration of rocks over a period of time when subjected to water immersion.

Slake durability is a simulated weathering test to determine abrasion resistance during wetting and drying cycles of shale and similar soft rocks as used in embankments and other construction-related applications. Samples are alternately tumbled in mesh drums through a water medium and oven-dried for two cycles. The percent loss of mass is referred to as the slake durability index.

Slake Durability Apparatus consists of a motorized drive unit which is mounted on a baseplate and which can rotate two or four drums at a speed of 20 r.p.m. The tank assemblies are filled with water to a level 20 mm below the drum axis. The test drums are manufactured from 2.00 mm mesh, 140 mm dia. x 100 mm long.

Hazards:

- Footwear (Gum boots).

Safety Requirements:

Personal Protective Equipment (PPE)

1. Safety boots
2. Industrial Hardware Clothing (Reflector ware)

Tools & Materials Required:

Recommended Tools

1. Tray for rock samples

Test Specimen Prepared

1. River gravel samples
2. Crushed rock samples



Specifications

SPECIFICATIONS OF SLAKE DURABILITY APPARATUS

No	Specifications	Capacities
1	Motor power capacity	240 V
1	Maximum sample weight	450 - 500 grams
2	Rotation speed	2.5 Litres
3	Drums	3 drums

Compositions



SETTING UP

Setting-Up Procedures

Setting up Slake Durability Apparatus

Before operating the Slake Durability test is conducted there are few things of the equipments that needs to be set up before it can be operated.



1. To set up to conduct the slake durability test, first you'll take the drum to weigh it and record its weight. We can only work with samples between 450 – 500 grams.



2. The rock specimen have to be dried and moisture contents have to be removed. The rock samples have to be pebble sized rocks, and each piece of rock should not weigh more than 40 – 50 grams and the rock samples shouldn't be very angular.



3. The next step is to weigh the empty drum, then you'll place the rock specimens (samples) inside and take the total weight next.



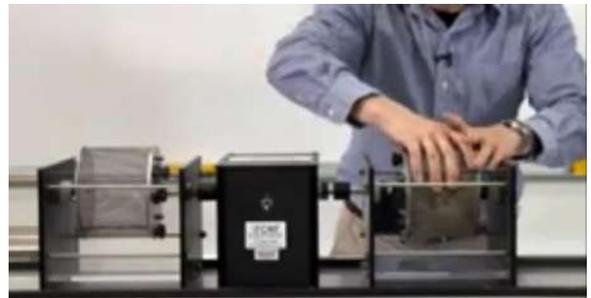
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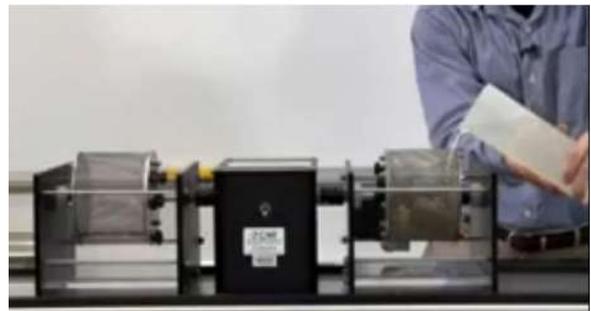
5. After taking the total weight of the drum with the samples inside, you'll close the lead by screwing it tightly to the drum.



6. Then you'll insert the drum into the apparatus box and fit it to shafts that drives the rotation of the drum.



7. The next step is to pour some water into the glass box, up to a reasonable height. The water height should not be more than 20 mm, below the center of the drum or to the height where half of the drum is submerged in the water. Water must be clean tap water.



OPERATING PROCEDURE

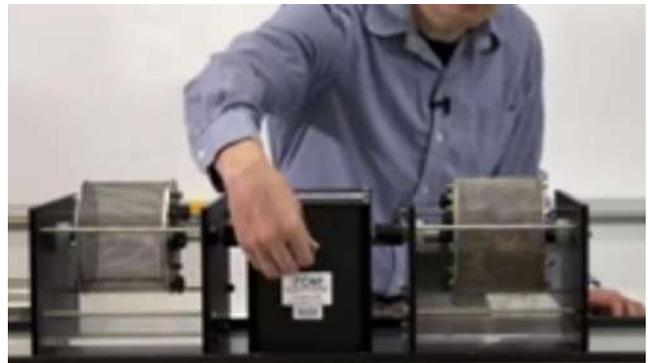
Operating Procedures

Operating Slake Durability Apparatus

For operating the Slake Durability Apparatus follow the equipment set up procedures below to set up the equipment before proceeding onto operating the Slake Durability Apparatus.



1. Now you'll connect the apparatus to the power supply to power the motor that drives the rotation and switch the power "On".
2. Now you'll run the test for 10 minutes then stop the test. After 10 minutes the water color will change from rock filings and fragments dissolve in the water.



3. Take out the drum with the rock samples in it dry it in the oven for 6 hours.

4. Now measure the weight of the drum with the rock samples in it to note the weight loss. The weight loss is used to calculate the Slake Durability Index for the cycle.



5. Now repeat the entire procedure for another cycle of test to compare results.

