Testing rocks and aggregates are rarely covered in soil testing books and there are no separate books on rock or aggregate testing. Laboratory Testing of Soils, Rocks and Aggregates includes laboratory testing methods for most tests for soils as well as rocks and aggregates, which are becoming increasingly common in professional practice and university teaching. Part A gives a general overview of laboratory measurements, equipment, units, safety and standards. Part B covers soil tests from grain size distribution to consolidation, triaxial and direct shear tests. Part C covers rock tests, which include the indirect tensile strength test and point load test. Part D covers the common tests carried out routinely on aggregates, which includes the aggregate impact value test and Los Angeles abrasion test. Each test consists of the following descriptive parts: Objective, Standards, Introduction, Procedure, and Cost. References are made to ASTM International, Australian, British and International Society of Rock Mechanics standards and any differences are noted.

About the Lead Author

Dr. Nagaratnam Sivakugan is an associate professor and the head of Civil & Environmental Engineering in the School of Engineering and Physical Sciences at James Cook University, Townsville, Australia. As a chartered professional engineer and registered professional engineer of Queensland, he does substantial consulting work, including extensive laboratory and in situ tests for geotechnical and mining companies. He is also a co-author of Geotechnical Engineering: A Practical Problem Solving Approach, a popular textbook adopted by many universities worldwide.

Key Features

- Contains virtually all current laboratory tests for soils, rocks and aggregates in one volume
- Presents the tests with the most concise and reader-friendly explanation possible, but in adequate detail for both professionals and students
- Includes references to international standards: ASTM, ISRM, BS, and AS
- The authors are practicing consulting engineers as well as university professors
- offers downloadable spreadsheets that can be used to develop laboratory specific datasheets and easily modified to your style — available from the Web Added Value™ Download Resource Center at www.jrosspub.com
LABORATORY TESTING OF SOILS, ROCKS AND AGGREGATES

Table of Contents

Part A: Introduction

Part B: Soil Testing

B1 Visual Identification and Classification of Coarse Grained Soils
B2 Visual Identification and Classification of Fine Grained Soils
B3 Water Content
B4 Specific Gravity of Soil Grains
B5 Sieve Analysis
B6 Hydrometer Analysis
B7 pH
B8 Organic Content
B9 Liquid Limit—Casagrande’s Percussion Cup Method
B10 Liquid Limit—Fall Cone Method
B11 Plastic Limit
B12 Linear Shrinkage
B13 Compaction Test
B14 Maximum and Minimum Densities of a Granular Soil Field Density Test
B15 Hydraulic Conductivity of a Coarse Grained Soil
B16 Hydraulic Conductivity of a Fine Grained Soil
B17 One-dimensional Consolidation by Incremental Loading
B18 Unconfined Compression Test
B19 Direct Shear Test

B20 Consolidated Undrained Triaxial Test
B21 Unconsolidated Undrained Triaxial Test
B22 Unconfined Compression Test

Part C: Rock Testing

C1 Water Content
C2 Density and Porosity
C3 Uniaxial Compressive Strength
C4 Point Load Test
C5 Indirect (Brazilian) Tensile Strength
C6 Schmidt Hammer Rebound Hardness
C7 Slake Durability Test
C8 Triaxial Test on a Rock Specimen
C9 Direct Tensile Strength

Part D: Aggregate Testing

D1 Water Absorption of Aggregates
D2 Flakiness Index
D3 Fines Content
D4 Aggregate Impact Value (AIV)
D5 California Bearing Ratio (CBR)
D6 Large Direct Shear Box Test
D7 Los Angeles Abrasion Loss

Part E: References

Index