

IRF Cement & Concrete Testing Training program

Introduction:

Concrete is widely used in domestic, commercial, recreational, rural and educational construction. Communities around the world rely on concrete as a safe, strong and simple building material. It is used in all types of construction; from domestic work to multi-storey office blocks and shopping complexes. Despite the common usage of concrete, few people are aware of the considerations involved in designing strong, durable, high quality concrete. The Cement and Concrete Testing program is for use in training construction engineers and technicians. It focuses on the correct test procedures for Physical Tests of Hydraulic Cement and Field and Laboratory Tests of Concrete. It also provides background the construction personnel need to understand and perform the tests competently. Each test is described separately and can be shown individually if desired. This course conforms to the International Road Federation (IRF) standards.

Who Should Attend?

Construction Engineers, Senior Construction Engineers, Construction Supervisors, Construction General Supervisors, Construction Project Managers, Engineering Technologists, Supervision Engineer, Inspection Engineers, Civil Inspectors, Foremen.

Course Objectives:

By the end of this course delegates will be able to:

- Learn about the correct test procedures for Physical Tests of Hydraulic Cement and Field and Laboratory Tests of Concrete
- Understand the correct procedure for performing standard ASTM

Course Outline:

Physical Tests of Hydraulic Cement Fineness Test

- Correct procedure for performing standard ASTM (American Society for Testing and Materials)
- Test C430-Fineness of Hydraulic Cement by the No. 325 Sieve
- Test C204-Fineness of Portland Cement by Air Permeability Apparatus

Physical Tests of Hydraulic Cement Paste Tests

- Correct and detailed procedure for performing standard ASTM tests
- C187-Normal Consistency of Portland Cement
- Test C1919-Time of Setting of Hydraulic Cement by Vicat Needle
- C266-Time of Setting of Hydraulic Cement by Gilmore Needles
- C151- Autoclave Expansion of Portland Cement
- C451-Early Stiffening of Portland Cement (Paste Method)

Physical Tests of Hydraulic Cement Mortar Tests

- Correct procedure for performing standard ASTM tests
- C109-Comprehensive Strength of Hydraulic Cement Mortars Using 2-inch Cube Specimens
- C185-Air Content of Hydraulic Cement Mortar
- C452-Potential Expansion of Portland Cement Mortars Exposed to Sulfate
- C359-Early Stiffening of Portland Cement (Mortar Method)

Field Tests for Quality Control of Fresh Concrete

- Correct procedure for conducting standard ASTM tests
- C172-Sampling Freshly Mixed Concrete
- C143-Slump of Portland Cement Concrete
- C138-Unit Weight, Yield, and Air Content (Gravimetric)
- C231-Air Content of Freshly Mixed Concrete (Pressure Method)
- C173-Air Content of Freshly Mixed Concrete (Volumetric Method)
- C31-Making and Curing Test Specimens in the Field
- C1064-Temperature of Freshly Mixed Portland Cement Concrete

Concrete Laboratory Testing 1

- Correct procedure for conducting standard ASTM tests
- C617-Capping Cylindrical Concrete Specimens
- C39-Compressive Strength of Cylindrical Concrete Specimens
- Background information needed to understand and perform the tests competently

Concrete Laboratory Testing 2

- Correct procedure for performing standard ASTM tests
- C702-Reducing Field Samples of Aggregate to Testing Size
- C117-Material Finer Than No. 200 Sieve in Mineral Aggregates by Washing
- C136-Sieve Analysis of Fine and Coarse Aggregate
- C29-Unit Weight and Voids in Aggregate
- C127-Specific Gravity and Absorption of Coarse Aggregate
- C128-Specific Gravity and Absorption of Fine Aggregate
- C566-Total Moisture Content of Aggregate by Drying
- Background information t needed to understand and perform the tests competently

Concrete Laboratory Testing 3

- Correct procedure for performing standard ASTM tests
- C78-Flexural Strength of Concrete
- C123-Lightweight Pieces in Aggregate
- C192-Making and Curing Concrete Test Specimens in the Laboratory
- Background information t needed to understand and perform the tests competently