PERMA2™

RAPID CHLORIDE PERMEABILITY OF CONCRETE

OVERVIEW

Giatec Perma2™ is a laboratory test device for the measurement of the resistance of concrete against the penetration of chloride (RCPT) according to ASTM C1202, AASHTO T277 and ASTM C1760 standards. The measurement data can be used to estimate the chloride diffusion coefficient of concrete for the service life prediction and durability-based design of concrete structures as well as the durability-based quality control of concrete.

The ASTM C1202 test provides an indication of concrete resistance to the penetration of chloride. The correlations between the results of this test (charged passed) and the long-term chloride penetrability of concrete established by ASTM C1202 are presented in Table 1.

(ES) Equipements Scientifiques SA - Département Bio-Tests & Industries - 127 rue de Buzenval BP 26 - 92380 Garches
Tél. 01 47 95 99 90 - Fax. 01 47 01 16 22 - e-mail: bio@es-france.com - Site Web: www.es-france.com

The ASTM C1760 test provides estimation for the bulk electrical conductivity of saturated specimens of hardened concrete. The results reveal a rapid indication (i.e., in one minute) of the concrete's resistance to the penetration of chloride by diffusion. The results of this test method can be also related to the apparent chloride diffusion coefficient that is determined using ASTM C1556 test method.

Table 1: Chloride ion penetrability based on charge passed (ASTM C1202)

Chloride Penetration	56-Day Rapid Chloride Permeability Charge Passed as per ASTM C1202 (Coulombs)
High	>4,000
Moderate	2,000-4,000
Low	1,000-2,000
Very Low	100-1,000
Negligible	<100

APPLICATION

Perma2™ device can be used for testing the durability of concrete exposed to chloride-contaminated environment including:

- Concrete's ability to resist chloride ion penetration (ASTM C1202, AASHTO T277)
- Bulk electrical conductivity of concrete (ASTM C1760)
- Performance-based quality control of concrete
- Estimation of chloride diffusion coefficient of concrete
- Estimation of chloride migration coefficient of concrete
- Service life design of concrete structures
- Estimation of the remaining life of concrete structures

FEATURES

The followings are unique features of this device:

- Stand alone operation
- Easy-to-assemble
- Auto-sealable cells with rubber gasket and spacer (i.e. does not require caulking)
- Accurate (±0.1 mA)
- Flexible logging interval time (1 to 10 min)
- Automatic temperature control system
- Four measurement channels
- User-friendly PC software
- Customizable setup
- USB connection to computer
- Verification kit

COMPLIANCE

- The only RCPT device in the market that meets the specifications of ASTM and AASHTO standard for sample cell
- Perma2™ has CSA electrical safety certification mark for use in concrete laboratories

TECHNICAL SPECIFICATIONS

General

Type	Value
Applied Voltage*	60 ± 0.1 V
Range of Current Measurement*	0 – 500 mA ± 0.1, ±0.2% (whichever greater)
Temperature Measurement Range	0 - 100 ± 1°C
Measurement Channel	4
Short Circuit Protection System	Yes
Measurement Display on LCD	Yes
Remaining Time Display on LCD	Yes
LCD Display Area	65 × 33 mm
Dimensions of Device	280 × 240 × 104 mm
Weight	2 Kg

** When the ASTM C1202 test is operated.*

Operating Conditions

Type	Value
Operating temperature	15°C - 45°C
Operating humidity	30 % - 80 %
Storage temperature	0°C - 70°C
Storage Humidity	5% - 90%
Operating voltage/current	100 - 240 V, 50/60 Hz

Note: Specifications are subject to change without notice.