

## Rapid Chloride Permeability of Concrete

**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.**

### Overview

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.

### Applications

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

The ASTM C1760 test provides an 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.



### Features

- Stand-alone operation
- Easy assembly
- Auto-sealable cells with rubber gasket and spacer (i.e. does not require caulking)
- Accurate ( $\pm 0.1$  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



Stand Alone Operation



Automatic temperature control system

## Applications

- 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

## Compliance

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

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

Chloride Penetration	56-Day Rapid Chloride Permeability Charge Passes as per ASTM C1202 (Coulombs)
High	>4000
Moderate	2000-4000
Low	1000-2000
Very Low	100-1000
Negligible	<100