



# HUMBOLDT

## Giatic Perma™ Rapid Chloride Permeability

Perma™ is a laboratory test device for measuring the electrical resistance of concrete against the penetration of chloride (RCPT) according to the standard methods such as ASTM C1202, AASHTO T277 and ASTM C1760. The measurement data derived from this test method can be used to estimate the chloride diffusion coefficient of concrete in service life predictions and structure design, as well as durability-based quality control of concrete. Perma™ is electrically certified for rapid chloride penetrability testing in concrete laboratories and is the only RCPT device that meets the specifications of ASTM and AASHTO specifications.

Perma™ provides an easy-to-use, stand-alone testing device, which is accurate to  $\pm 0.1$  mA. It can test up to 4 samples at a time with a flexible logging time of 1-10 minutes depending on test and sample parameters. It also features automatic temperature control and customizable setups. Optional, user-friendly PC software and USB connection to computers is also available.

### 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

### Features:

- Stand alone operation
- Easy-to-assemble
- 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



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## Technical Specifications

### General

Type	Value
Applied Voltage	60 ± 0.1 V
Range of current measurement	0 ~ 500 mA ± 0.1 mA
Temperature measurement range	0 ~ 100°C
Measurement channels	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 Perma™ Device	280 x 240 x 104 mm
Weight	2 Kg

### Operating Conditions

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

### Ordering Information

Model#	Description
HG-9036 or HG-9036.4F	Perma™ unit, Complete set of test cells , Temperature sensors, Test cables, Power cord, USB cable, User manual, Communication software, Gauged vacuum pump assembly, Desiccator assembly
HG-9020.3F	Perma™ Test Package, less pump and desiccator
HG-9044.3F	Perma™ Device
HG-9021	Perma™ Test Cell
HG-9027	Stainless Steel Mesh - Pair
HG-9042	Sample Prep Package, 115V
HG-9042.4F	Sample Prep Package, 230V
HG-9028	Rubber Gasket Cast - Pair, 4" (100mm) Dia.
HG-9039	Rubber Gasket Core - Pair 3.75" (95mm) Dia.
HG-9022	Test Cable Set
HG-9023	Temperature Sensor

Perma™ is a trademark of Giatec Scientific, Inc.



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