PERMEABILITY TESTER

Fast, reliable and non-destructive measurement of the permeability of concrete structures

The permeability of concrete at the surface (concrete cover) has been recognized as a major factor in determining the durability of concrete structures. Many specialists emphasize the importance of this property and the possibility of measuring it reliably - not only in the laboratory but also at the building site.

Permeability measurements

The particular features of the TORRENT method are a two-chamber vacuum cell and a pressure regulator, which ensure that an air flow at right angles to the surface is directed towards the inner chamber. This permits the calculation of the permeability coefficient $k_T$ on the basis of a simple theoretical model.

The unit has a user-friendly menu technique and measures the pressure increase as a function of time according to a specific sequence. The associated data is automatically collected by the display unit and the permeability coefficient $k_T$ and the depth of penetration $L$ of the vacuum are calculated. The measurement takes 2-12 minutes, depending on the permeability of the concrete. In the case of dry concrete, the quality class of the concrete cover can be read from a table using the $k_T$ value. In the case of moist concrete, $k_T$ is combined with the electrical concrete resistance $\rho$ (rho) and the quality class is determined from a nomogram.

The TORRENT permeability tester is based on investigations which were carried out by the research centre of „Holderbank Management and Consulting Ltd.“, Switzerland. The result of these measurements, which were made in the laboratory and on the building site, are in good agreement with laboratory methods, such as oxygen permeability, capillary suction, chloride penetration, etc.

In the case of moist concrete, the measured permeability is lower, i.e. the concrete quality seems to be too good. This effect can be corrected using the electrical resistance $\rho$ of the concrete. The concrete quality class is determined from $k_T$ and $\rho$ in a nomogram.

Standard: SN 505 262/1, Annexe E
Technical Information Basic Unit

Display Unit with nonvolatile memory for 200 measured objects

DISPLAY: 128 x 128 graphic LCD

INTERFACE: RS232 or with adapter to USB

SOFTWARE: Integrated for printing out measured objects and transmission to PC

BATTERIES: 6 1.5V, LR 6 batteries for 60 hours operation

TEMPERATURE RANGE: -10° to +60° C

CARRYING CASE: 325 x 295 x 105 mm, total weight 2.1 kg

Control Unit with membrane pressure regulator and pressure sensor

VACUUM CONNECTION: small flange 16KF

CARRYING CASE: 520 x 370 x 125 mm, total weight 6.3 kg

The unit is operated with a commercial vacuum pump. Technical data according to DIN 28400:
Suction capacity 1.5 m³/h, final total pressure 10 mbar, suction-side connection: small flange 10 KF/16 KF, high water vapour tolerance.

Ordering Information

UNIT KIT
380 02 200 TORRENT Permeability Tester
Includes Display unit, printer cable, transfer cable for PC, carrying strap, operating instructions, control unit, two carrying cases

ACCESSORIES
380 02 500 Resistance probe WENNER-PROCEQ with 8 foam pads, cable and control plate
390 00 540 Adapter RS232/USB

REPLACEMENT PARTS
380 02 272 Carrying case to display unit
380 02 270 Carrying case to control unit
330 00 456 Transfer cable to PC
330 00 460 Printer cable serial interface
380 02 502 Resistance probe WENNER-PROCEQ without foam pads, without cable
380 02 510 Cable to resistance probe
380 02 508S Foam pad to resistance probe, 4 pieces
380 04 250 Control plate to resistance probe
380 00 079 Carrying strap to display unit
820 38 005E Operating instructions

Subject to change without notice.

All information contained in this documentation is presented in good faith and believed to be correct. Proceq SA makes no warranties and excludes all liability as to the completeness and/or accuracy of the information. For the use and application of any product manufactured and/or sold by Proceq SA explicit reference is made to the particular applicable operating instructions.