

Silver Schmidt Hammer

Traditional Hammers vs Silver Schmidt

The classical hammers suffer from the following insufficiencies:

1. The rebound value is dependent on the impact direction.
2. The rebound value is affected by internal friction.
3. Limited tightness of sealing causes premature loss of accuracy.

The unique design and high quality construction of the Silver Schmidt address all of these issues and makes Schmidt hammer testing quicker and more accurate than ever before. Conversion curves are provided for a wide range of concrete compressive strength, including low and high strength concrete $f_c < 10$ MPa (5MPa using Mushroom Head) and up to 100MPa. Conversion curves for different types of modern concrete are preset in the Silver Schmidt, based on Hammer tests performed by an independent institution

Operation

- Simple operation with the "one button" user interface
- Language independent through the use of graphic user interface
- Automatic conversion to the required measurement unit (MPa, kg/cm², psi),
- Various statistics to comply with standards or user specified procedures
- Custom presets of test parameters for various testing scenarios can be stored and later recalled
- Quick review of previous measurements
- Ergonomic, light weight design, facilitates reliable measuring:

- 1) Place the unit perpendicular to the test surface.
- 2) Load the unit by pushing it towards the test surface.
- 3) Impact is triggered when the end position is reached.

To obtain a reading in units of compressive strength select:

- Desired unit
- Length of series and averaging mode
- Carbonation depth (if applicable)
- Conversion curve for concrete mixture
- Form factor

Perform a test series of specified length. Manual cancellation of obvious outliers is possible. At the end of the series, the instrument will display the average converted to the desired unit.



Accurate Results

- High accuracy due to differential optical absolute velocity encoder
- Measurement inherently independent of impact direction, meaning no corrections necessary
- Built-in correction for carbonation and form factor gives increased test accuracy and dependability of test results
- Registration of true rebound coefficient yields extended resolution across a wider range
- Silver Schmidt can also display the classic R value

Functionality

- Automatic control of functionality by monitoring impact energy
- Low power consumption, high capacity lithium-ion battery
- The Mushroom Head attachment has a larger surface area and is used for early age strength or softer materials

Applications

- Suitable for testing a wide variety of concrete, mortar, rock, paper and plastics
- Ideally suited for on-site testing for the strength of concrete
- Handy for difficult to access or confined test areas (i.e. working overhead)
- Especially convenient for testing on tunnel linings as measurements are independent of impact direction

Silver Schmidt Hammer

Low Strength Concrete

Type L hammers strike with a lower impact energy and are suitable for testing of thin concrete sections and where the hammer is to be used primarily for low strength concretes down to 10mpa.

If concrete is softer than this the Mushroom Head accessory spreads the impact over a wider area and is suitable for testing concrete strengths as low as 5mpa.

Rock Testing

The Rock Schmidt is a dedicated version of the Silver Schmidt for rock testing applications, including correlations to unconfined compressive strength (UCS), young's modulus and weathering grade.

Measuring True Rebound Coefficient ("Q"-Value)

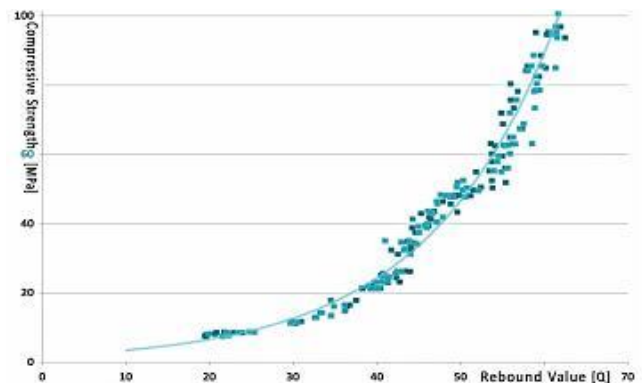
The classic "R"-value is the mechanical travel of the mallet on rebound. It is affected by its friction on the guide rod, the friction of the gauge, gravity, the relative velocity between unit and mechanical parts. This is true for all concrete test hammers currently on the market.

The Silver Schmidt acquires the "Q"-value by measuring the velocity (V) of impact and of rebound immediately before and after the impact. The "Q"-value need not be corrected for impact direction. There is a clear relationship between the "Q" and the "R"-value.

The "Q"-value [=rebound V divided by inbound V] represents the physical rebound coefficient. It is virtually free of all the above error sources. It is thus the indicator of choice to be used as a basis to convert to compressive strength.

New Improved Plunger

The lightweight hybrid design of the impact plunger is made from aerospace alloy, matched to the elastic properties of the concrete and equipped with a hardened steel cap. Independent validation testing by BAM in Berlin has shown the Silver Schmidt to have less dispersion than the classical hammer over the entire range.



Technical Specifications

Tester Hammer	Type N	Type L
Impact Energy	2.207 Nm	0.735 Nm
Compressive Strength Range	10-100 MPa	10-100MPa (5-100 MPa with Mushroom Head)
Weight (approx.)	600g	
Battery Life	>4000 impacts (before recharging)	

Silver Schmidt Hammer

Hammerlink

The ST Model Silver Schmidt only has the capacity to display the last 20 results. The PC Model Silver Schmidt on the other hand is the extended data logging model, it can log 1300 single impacts or over 465 measurement series, each with 10 readings. The data is then downloaded to PC using the Hammerlink application and a USB cable.

- Extended memory usage
- Rapid uniformity assessment with the summary view
- Sorting of data
- User-defined conversion curves
- User-defined statistical methods
- Highlighting of mean, median and outliers
- Carbonation correction
- Export to third party software

10th Percentile Conversion Curve

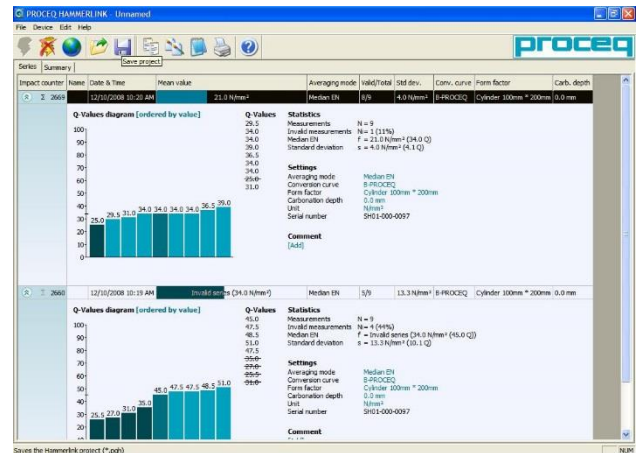
A lower 10th percentile curve is recommended by the major standards EN 13791 and ASTM C805/ACI 228.1 to provide a safety margin to take into account the various factors that may affect the in-situ tests. 90% of the data pairs lie above the curve and 10% lie below. This curve is intended to give a conservative estimate in those cases that the hammer is not calibrated for the specific mix under test. For older hammers firmware release v1.0.3 adds the new curve to your hammer.

Rock Testing

Schmidt hammers are used internationally for testing of rocks as well as concrete/cementitious material. ASTM D5873 (Rock) has been developed as a standard for this form of testing. Generally an L Type Hammers is used. Conversion to UCS also rely on the mineralogy of the rock in question. Many conversion curves exist, but none are included on the Silver Schmidt. Schmidt Hammers lend themselves to grading rock core in the lab and testing rocks in the field.

Compliance With Industry Standards

Data collection and processing of test results comply with major industry standards: EN 12504-2, ENV 206 ASTM C805, ASTM D5873 (Rock), BS 1881, part 202



About PCTE

PCTE have over 30 years' experience in the measurement and testing of construction materials. PCTE can provide more than just the equipment, they can provide expert training. PCTE have a service centre in Sydney in which they can provide calibration, repairs and warranty repairs.

Other Equipment

PCTE supply three main ranges: NDT, Lab and Geotech Instrumentation.

NDT includes: Rebound Hammers, Covermeters, Ultrasonics, GPR, Corrosion Testing, Coating Testing and Foundation Testing

Lab includes equipment for: Concrete, Cement, Aggregate, Soil, Asphalt and Metal

Geotech Instrumentation includes: Strain Gauges, Piezometers, Inclometers, Extensometers, Tiltmeters, Load Cells and Dataloggers