

REBOUND HAMMER TEST FOR CONCRETE EVALUATION

OVERVIEW

The Rebound Hammer Test (also known as the Schmidt Hammer Test) is a non-destructive evaluation (NDE) method used to estimate the uniformity and relative strength of concrete surfaces. The device measures the rebound distance of a spring-loaded mass impacting the concrete, producing a Rebound Number correlated to surface strength.

Surface Preparation

- Test only on clean, bare concrete—free of coatings, sealers, laitance, or loose material.
- Avoid weak or deteriorated surface layers; grind lightly if necessary.

How to Perform the Test

- Hold the hammer perpendicular to the concrete surface.
- Press the hammer firmly until the plunger triggers and records a rebound.
- Take at least 10–12 readings per test area, spaced uniformly.
- Discard outliers and calculate the average Rebound Number.
- Compare values against the hammer’s conversion chart for estimated compressive strength.

Interpretation of Results

- Relative strength differences between areas
- Detection of weak, damaged, or variable concrete zones

Typical Guidelines

- Higher rebound numbers = harder/stronger surface
- Low or inconsistent values may indicate weak concrete, poor curing, contamination, or delamination

Limitations

- Results can be influenced by surface finish, carbonation, aggregate type, moisture, temperature, and angle of impact
- Should be used as a screening tool, not a sole acceptance test.

Best Practices

- Calibrate hammer before use per manufacturer instructions.
- Maintain consistent testing orientation (horizontal, vertical, or overhead).
- Test multiple locations and map results for uniformity.
- When weak or variable zones are found, follow up with core testing or additional NDE methods.