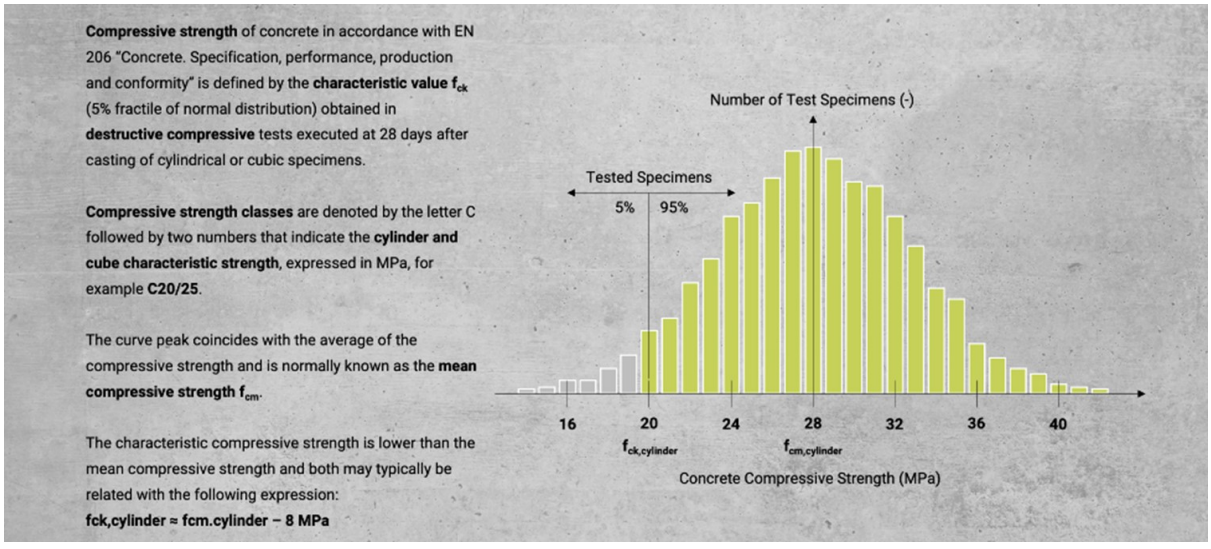
Concrete Strength Testing Methods

The strength of concrete is an important parameter. However, testing the strength of concrete is not so straight forward.

For new constructions, you can pour concrete cylinders or cube samples and cure them, or for existing structures, you can extract core samples. Thereafter you destructively crush-test a series of those samples in a testing machine.

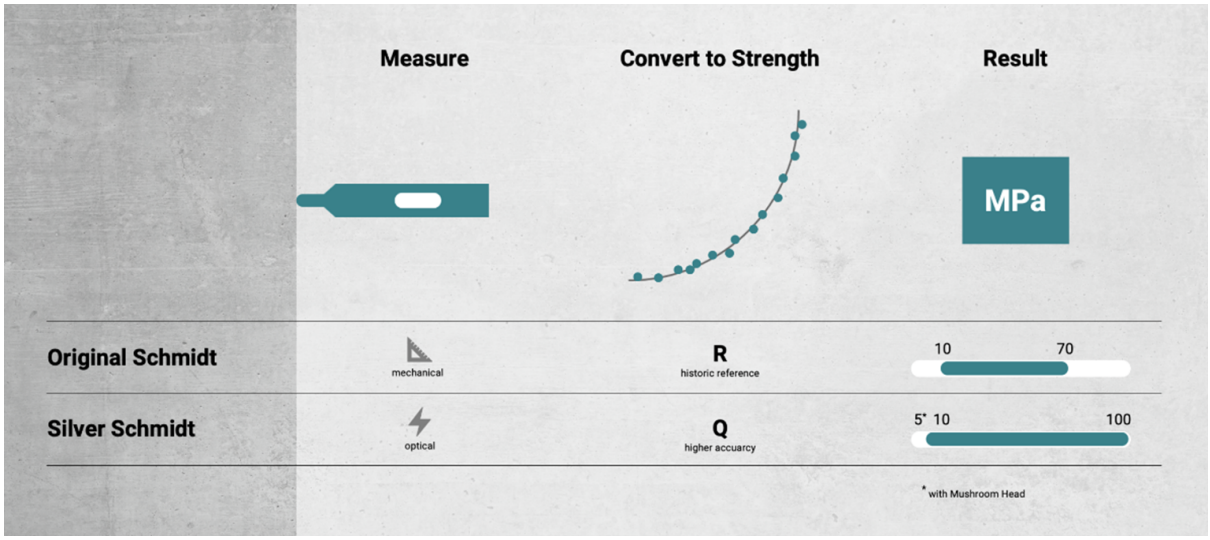
Using statistical methods, you can then determine the characteristic strength of the concrete. For example, according to EN, cast concrete is a value where 206, 95% of the test values need to be above this characteristic strength value.



It is true, traditional methods of concrete strength testing is not that straight-forward and is pretty costly. Furthermore, concrete is never uniform. If you take samples while pouring concrete, these samples are not placed, compacted or cured like the concrete placed in the real structure. Meanwhile core samples from an existing structure are disturbed during the extraction process. All these factors affect the estimated strength value.

As you can see, there is no such thing as the one true concrete strength value, but it is a statistical method. But don't worry - for a design, additional safety or resistance factors are applied to the destructively tested characteristic strength values mentioned. Overall, a pretty safe and conservative approach.

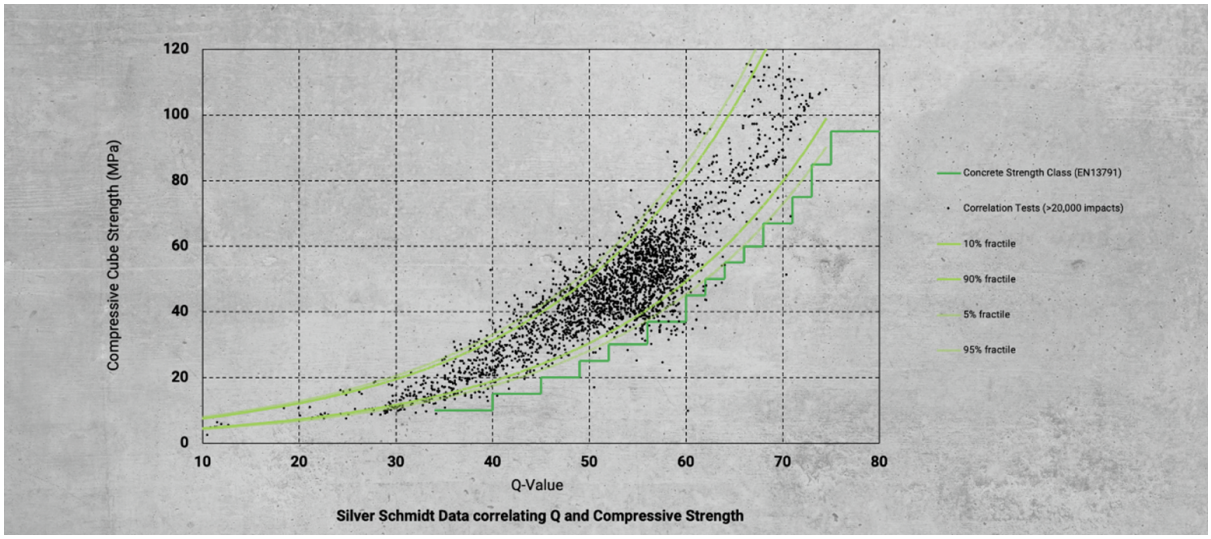
Are there other methods that can reduce the number of destructive tests or even eliminate them completely?



Yes, there are - and this is where the Schmidt Rebound Hammers for the estimation of concrete strength and uniformity come into play. We invented the Schmidt principle over 60 years ago and the method is completely non-destructive.

Original Schmidt Live relies on mechanical principles to measure the rebound of a plunger hitting the concrete surface and the Silver Schmidt Live is an optical principle that measures the rebound of the plunger. This rebound value can then be translated into concrete strength using various correlation curves.

According to many international standards you can correlate our Schmidt Live rebound values with the statistical values from crush testing, reducing the number of expensive and time-consuming destructive tests. It is great to be able to save money for your customer while delivering even more reliable results.



As with obtaining the result from crush tests, the rebound method is also statistical. When used correctly, it gives you more reliable, holistic, and much more cost-effective concrete strength estimation when combined with a few crush tests.

For advanced users, based on the latest international standards, and to determine a conforming compressive strength class of the concrete, you can eliminate all destructive core samples and only use the Schmidt Live. How efficient is that!?

How to optimize the workflow for concrete strength testing

1. Schmidt Live enables an entirely digital workflow that can easily be done by a single person.

2. Each rebound value is displayed on the hammer including a quick statistical evaluation.

3. All the conversions from the rebound value to concrete strength according to the selected standards, or based on your own conversion curves, are done on a mobile application.

4. This also includes one-click reporting and the ability to add some pictures of the tested object to the report as well.

What takes days for crush tests, hours with an analogue hammer, now only takes minutes with the Schmidt Live. It covers a wider range of concrete strengths - thanks to the optical method it has reduced wear and due to its patented mythology, it is extremely accurate.

If you have always been used the Original Schmidt and feel comfortable with the R value, the Original Schmidt Live certainly does an excellent job in full compliance to standards and it has all the digital benefits.

Visit our Tech Hub for more tips on otimizing the workflow for concrete strength testing and many other related topics to help protect the built world.