



COMPARISON OF THE INTERNATIONAL STANDARDS FOR TESTING CEMENT AND CONCRETE ON THE COMPRESSIVE STRENGTH, ADAPTABILITY OF CST INSTRUMENTS

The CemTest and ConcTest of CST Instruments are designed to conform to EN BS standards, which are compatible with most of Western & Eastern European countries standards, including the Russian GOST standard.

Our instruments test results will conform to these standards and will be acceptable throughout industries within these countries.

However, some characteristics of cement according to ASTM C150 / C150M – 15 standard specification for Portland cement are significantly different from those adopted in the norms of the Russian and European industry;
For example:

- a) Physical characteristics of cement according to the European standards, respectively EN196-1: 1995; EN196-9:1995, EN197-1: 2011 and EN197-2: 2014, in comparison to the Russian Federation GOST 31108-2016 and methods of cement testing according to GOST 30744-2001 are almost completely harmonized, with the results being practically the same.
 - b) The methods for determining the specific surface and setting time for cements are relatively close to each other according to the standards adopted in the cement industry worldwide, so the characteristics of the cements according to ASTM C150/C150M-05 can be comparable with cements to EN & GOST standards;
- The compressive strength of cement samples in accordance with EN196-1:1995 and GOST 30744-2011 is determined by a cement-sand mortar with a composition of 1:3 at a W/C ratio = 0.5 by testing the halves of 4 x 4 x 16 cm prisms cured in water at a temperature of 20 ± 2 °C.
 - In accordance to ASTM C109/109M-05, the compressive strength is determined by testing the cubes with an edge of 50 mm, made from a cement-sand mortar with a composition of 1:2.75 with W/C ratio = 0.485; samples are cured in water at a temperature of 23 ± 3 °C.

Therefore, cement compressive strength results according to the standards of the EN and GOST against ASTM will be not the same and can only be compared approximately, although the difference should be minimal.



The CemTest instrument can be utilised for testing cement compressive strength according to the ASTM standards by using the cement characteristic values determined by same standard, which are as follows:

Water/cement ratio: 0.485

Curing temperature: 23 °C

There is only a slight difference in the cement-sand composition 1:3 v 1:2.75; But as we are working with the acceptable approximate margin, this is not significant, as the cement compressive strength results will be similar with only a minimal difference.

Testing concrete on its compressive strength by EN BS 12390-3 standard uses either 10 or 15 cm edge cube specimens, whereas compared to ASTM standards tests using cylinder concrete specimens.

The ConcTest instrument can be utilised to test compressive strength of freshly mixed concrete according to the ASTM standards by using the concrete characteristic values determined by same standard, which are as follows:

Cement actual compressive strength according the ASTM standard

Water / cement ratio: 0.485

Cement normal paste by the ASTM standard

Curing temperature: 23 °C

In industry practice it is assumed that concrete cube test results according to EN standards are usually lower by 25 % to compare the cylinder spacemen tests according to ASTM standards.

Compressive strength test results on freshly mixed concrete samples by our ConcTest instrument standards conforms to this assumption.

Therefore, it is safe to say that the ConcTest instrument can be utilised for tests in accordance with both EN and ASTM standards.