

Test to Determine the Mohs Hardness Number for Natural Coarse Aggregate

SC T 7

1. Scope

In order to obtain accurate results with the Windsor Probe System, it is necessary to know the hardness of the coarse aggregate, as expressed in “Mohs.” This test method covers the determination of the scratch hardness of natural coarse aggregates using the Mohs Hardness Scale. This involves the physical testing of the aggregate by comparing it to the nine Mohs minerals for scratch resistance.

2. Referenced Documents

- 2.1 Windsor Probe Test System Operating Instructions, NDT Windsor Systems Inc, Chicago, Illinois
- 2.2 On-Site Concrete Testing, NDT Windsor System Inc.
- 2.3 James Non-Destructive Testing Systems, Chicago, Illinois
- 2.4 Mohs Mineral Test Kit Documentation.

3. Apparatus

Mohs Hardness Test Kit: Kit contains nine mineral stones numbered from nine to one, the number nine mineral stone is the hardest and the number one mineral stone is the softest. The other mineral stones in descending order are from hard to soft.

4. Test Specimens

Test specimens will be natural aggregates coming from the source in question. These aggregates should be clean and free from foreign materials and be representative of the source. It is preferred that a smooth surface be present somewhere on the test specimen to aid in the ease of the testing.

5. Procedure

- 5.1 Obtain a natural aggregate that would be representative of the source in question. This aggregate should be collected by finding one with as smooth a surface as possible. This will aid in the ease of the testing procedure. Ideally, when planning to test a concrete that is in question for compressive strength, it is best to obtain aggregate samples directly from the mix or the actual concrete matrix whenever possible. When evaluating old concrete where a Mohs value has not been previously determined, it will be necessary to locate a piece of exposed aggregate, or to expose one if none is showing.
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5.2 Starting with the number nine mineral in the Mohs Hardness Kit, scratch the mineral aggregate being tested and visually inspect the aggregate being tested for a scratch mark made by the Mohs mineral. If this mark cannot be rubbed off, go to the number eight mineral and repeat this procedure. Continue in descending order of the other minerals until a mineral is found that the scratch on the surface of the aggregate rubs off. The number of the stone that allows the scratch to be rubbed off will be the Mohs Hardness Scale Value. This number will be used to aid in the estimation of the in-situ compressive strength of hardened concrete using the Windsor Probe.

5.3 Record the Mohs Value determined in the previous step of this procedure.

6. Calculations

None

7. Report

The Mohs Value will be reported on the Form AGG215 or AGG216.
