



West Cerchar Abrasivity Index Tester

Standards: [ASTM D7625-10](#)



ULTIMATE USER-FRIENDLINESS



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Description

The [West Cerchar Abrasivity Index Tester](#) is designed to determine the rock abrasivity index (CAI) for the purpose of quantifying the classification of rock materials abrasivity. This type of test is especially valuable in the mining industries, underground construction and various tunnelling excavation processes. The process of abrasion is the wear and tear of particles from solid surface materials. The apparatus comprises a stationary stylus, a deadweight (70N) placed on top of the stylus, a stiff load frame, a rigid vice to firmly clamp the rock sample and a cross table with 2 adjustable axes for specimen alignment along the two horizontal axes. You can



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The device comes with a graduated knob for 0.01 mm accurate scratch distance control. Options include an indenter visualization system, spare indenters and a sharpening tool. The former encompasses a digital camera with indenter support and inspection software to reveal the wear amount which is then correlated to the abrasiveness index (CAI). The sharpening tool rapidly sharpens a worn stylus for subsequent scratch tests.



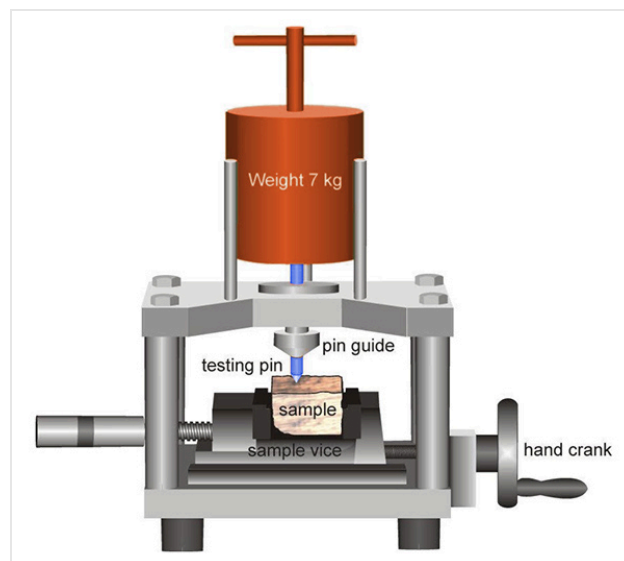
Test Method

First, the sample must be carefully scrutinized to infer the most appropriate scratch location and direction. This is particularly important for rocks exhibiting a high level of anisotropy; that is scratch location and direction should portray the sample's dominant mineralogy and texture. The sample is then firmly clamped in the vice and the stylus carefully lowered and positioned onto the rock surface so that it is perfectly orthogonal to the rock surface. The standard scratch length and test duration are 10.0 mm and 10 seconds, respectively. During testing, the operator must ensure constant contact between the stylus and rock surface. After testing, the stylus is carefully lifted from the rock surface and removed. Measurements of the tip wear flat are made using a microscope having a minimum magnification of 25x, and are executed by side- or top-view settings.

For each measurement of the wear flat, d , the Cerchar abrasivity index, CAI, is calculated as follows:

$$\text{CAI} = d \times 10$$

A minimum of five test replications are made on a rock surface, each time with a new or re-sharpened stylus. The dimensionless CAI value is reported as the arithmetic mean of five or more replications combined with the standard deviation.





System Benefits

- Compliant with ASTM D7625-10
- User-friendly and easy-to-use manual handling
- Features precision slide for smooth movement of the rock specimen over the required scratch distance
- Easy adjustment of the daylight for different specimen heights

Optional Accessories

West Cerchar Specialty Indenters



The tool includes a set of one hundred (100) sharp steel indenters (i.e. stylus pin). The tip of test pin comprises a conical angle of 90°.

Digital Microscope

After the test, the width of the wear flatness is measured on the stylus tip surface using a digital microscope. The device comprises an indenter holder equipped with digital micrometers, XY stage, a video camera and a dedicated video software (PC not included). The microscope reveals the wear amount which is then correlated to the abrasiveness index (CAI).



Steel Indenter Sharpening Tool



The sharpening tool rapidly re-sharpens a worn stylus with 90° cone of 1 mm long for subsequent scratch tests.

Technical Specifications

Standard	ASTM D7625-10
Load	70 N
Maximum specimen height	150 mm (6 inches)
Maximum specimen diameter	76 mm (3.0 inches)
Scratch distance precision	0.01 mm
Steel Stylus	Rockwell Hardness HRC 54/56
Weight	55 lbs. / 25 kg
Dimensions (WxLxH)	13" x 20" x 20" / 330 x 500 x 500 mm



Watch Video



Watch the West Cerchar Abrasivity Index Tester product video.

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