

AMERICAN SOCIETY FOR TESTING MATERIALS
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Standard Method of Test for
TOUGHNESS OF ROCK¹



ASTM Designation: D 3 - 18

ADOPTED, 1908; REVISED, 1918.

Reapproved in 1958 Without Change.

This Standard of the American Society for Testing Materials is issued under the fixed designation D 3; the final number indicates the year of original adoption as standard or, in the case of revision, the year of last revision.

NOTE.—This method was editorially revised and rearranged in 1939.

Scope

1 This method of test covers the procedure for determining the toughness of rock.

Toughness

2. Toughness, as applied to rock, is the resistance offered to fracture under impact, expressed as the final height of blow required of a standard hammer to cause fracture of a cylindrical test specimen of given dimensions.

Apparatus

3. Any form of impact machine which will comply with the following essentials may be used in making the test:

(a) A cast-iron anvil weighing not less than 50 kg, firmly fixed upon a solid foundation.

(b) A hammer weighing 2 kg, arranged

so as to fall freely between suitable guides.

(c) A plunger made of hardened steel and weighing 1 kg, arranged to slide freely in a vertical direction in a sleeve, the lower end of the plunger being spherical in shape with a radius of 1 cm.

(d) Means for raising the hammer and for dropping it upon the plunger from any specified height from 1 to not less than 75 cm, and means for determining the height of fall within approximately 1 mm.

(e) Means for holding the cylindrical test specimen securely on the anvil without rigid lateral support, and under the plunger in such a way that the center of its upper surface shall, throughout the test, be tangent to the spherical end of the plunger at its lowest point.

Sampling

4. Quarry samples of rock from which test specimens are to be prepared shall measure at least 6 in. on a side and at

¹ Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-4 on Road and Paving Materials.