



Standard Test Method for Jaw Crusher Gouging Abrasion Test¹

This standard is issued under the fixed designation G81; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers a laboratory procedure to determine the relative gouging abrasion resistance of materials. Materials homogeneous in structure and properties are the most appropriate test materials; however, surface-treated and composite materials can also be tested. The test involves a small laboratory jaw crusher that crushes presized hard rock materials, such as a hard morainal gravel, or some other crushable substance.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. (See 8.1 on Safety Precautions.)*

2. Referenced Documents

2.1 ASTM Standards:²

A128/A128M Specification for Steel Castings, Austenitic Manganese

A514/A514M Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding

A517/A517M Specification for Pressure Vessel Plates, Alloy Steel, High-Strength, Quenched and Tempered

E10 Test Method for Brinell Hardness of Metallic Materials

E18 Test Methods for Rockwell Hardness of Metallic Materials

E30 Test Methods for Chemical Analysis of Steel, Cast Iron, Open-Hearth Iron, and Wrought Iron (Withdrawn 1995)³

E140 Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell

Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness

E350 Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

G40 Terminology Relating to Wear and Erosion

3. Terminology

3.1 Definitions:

3.1.1 *gouging abrasion*—severe form of *abrasive wear* in which the force between an abrading body and the wearing surface is sufficiently large that a macroscopic gouge, groove, deep scratch, or indentation can be produced in a single contact.

3.1.2 The definitions of some other related terms may be found in Terminology G40.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *cheek plates*—wear liners that protect the sides of the crusher adjacent to the movable and stationary jaws.

3.2.2 *movable jaw*—part of the crusher that moves against the material being crushed.

3.2.3 *reference plate*—jaw plate made of a material uniform in microstructure and hardness and not varying significantly from one piece to another; such a plate will give highly reproducible results, to which other materials to be tested may be compared.

3.2.4 *stationary jaw*—part of the crusher that does not articulate, but is directly opposite the movable jaw and is in direct crushing contact.

3.2.5 *test plate*—jaw plate made of a material for which the gouging abrasion resistance is to be measured.

3.2.6 *toggle plate*—plate that holds the bottom edge of the movable jaw relative to the stationary jaw.

4. Summary of Test Method

4.1 A small laboratory jaw crusher with a feed opening of about 100 by 150 mm (4 by 6 in.) is modified to accept an easily machined identical pair of reference wear plates and a pair of similar test wear plates. One test plate and one reference plate are attached to the stationary jaw frame of the crusher,

¹ This test method is under the jurisdiction of ASTM Committee G02 on Wear and Erosion and is the direct responsibility of Subcommittee G02.30 on Abrasive Wear.

Current edition approved Nov. 15, 2013. Published November 2013. Originally approved in 1983. Last previous edition approved in 2007 as G81–97a(2007). DOI: 10.1520/G0081-97AR13.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.