



Standard Test Methods for Tool-Resisting Steel Bars, Flats, and Shapes for Detention and Correctional Facilities¹

This standard is issued under the fixed designation A627; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 These test methods cover requirements for simulated service tests and testing equipment for determining the performance characteristics of various types and shapes of steels designated for use in detention and correctional facilities as fixed barriers to prevent egress and to control passage.

1.2 It is the intent of these test methods to help ensure that opening assemblies such as detention security windows, grilles, bar grating, and other physical barriers incorporating steel bars perform at or above minimum acceptable levels for control of passage to unauthorized or secure areas, for confinement of inmates and to delay or frustrate escape attempts. To meet the intent of these test methods, opening assemblies must perform to grade requirements shown in [Tables X1.1 and X1.2](#) in [Appendix X1](#).

1.3 These test methods apply primarily to the steels used as essential components of detention security windows, grilles, bar grating, and so forth, in opening assemblies enclosing or separating secure areas of detention/correctional facilities.

1.4 The values stated in inch-pound units are to be regarded as standard. The SI values given in parentheses are for information only.

1.5 This standard updates and combines two previous standards, ASTM Specifications A627-95 and [A629-94](#), establishing new security grades and time durations.

1.6 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

[A629 Specification for Tool-Resisting Steel Flat Bars and Shapes for Security Applications](#) (Withdrawn 2004)³

[C39/C39M Test Method for Compressive Strength of Cylindrical Concrete Specimens](#)

[E4 Practices for Force Verification of Testing Machines](#)

[E18 Test Methods for Rockwell Hardness of Metallic Materials](#)

[E329 Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection](#)

3. Terminology

3.1 Definitions:

3.1.1 *bars, n*—round, ribbed, hexagonal, or other shaped bars that can be readily reduced to a round cross-sectional shape, $\frac{7}{8}$ -in. (22.2-mm) or 1-in. (25.4-mm) diameter (see [Fig. 1](#)). Also flat bars: $\frac{1}{4}$ by 2 in. (6.4 by 50.8 mm); $\frac{5}{16}$ by $2\frac{1}{4}$ in. (7.9 by 57.2 mm) or $\frac{3}{8}$ by $2\frac{1}{2}$ in. (9.6 by 63.5 mm).

3.1.2 *composite tool-resisting steel bar/flat, n*—a bar/flat that is a composite of a tungsten carbide or other hard material, for cutting resistance and of a high strength, low alloy steel, heat treated up to HRC 45 max. hardness for impact and deflection resistance.

3.1.3 *cutting test, n*—a simulated service test in which the rating is based on the number of a specific type of tungsten carbide rod saws required to cut through the bar.

3.1.4 *effective tool-resisting (ETR) area, n*—the cross-sectional area of the portion of the bar that is tool resistant.

3.1.5 *equipment manufacturer, n*—a manufacturer who fabricates and assembles security products, including tool-resisting steel bars, for installation in areas requiring security against ingress and egress. This manufacturer processes the

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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.