



Standard Specification for Tool-Resisting Steel Flat Bars and Shapes for Security Applications¹

This standard is issued under the fixed designation A 629; 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.

^{ε1} NOTE—Section 10 was added editorially in June 1994.

1. Scope

1.1 This specification covers the requirements for performance characteristics including simulated service tests and testing equipment for determining the characteristics of homogeneous steel flat bars and shapes except those covered by Specification A 627, and Specification A 628. This does not preclude the possibility of severing or penetrating this material by cutting means other than that described herein. This material can be severed with tungsten/carbide coated or tipped saws.

2. Referenced Documents

2.1 ASTM Standards:

A 627 Specification for Homogeneous Tool-Resisting Steel Bars for Security Applications²

A 628 Specification for Tool-Resisting Composite Steel Plates for Security Applications³

E 329 Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction⁴

2.2 Other Documents:

U. S. Federal Specification GG-B-451d, dated April 11, 1960, and Amendments 1, 2, and 3: Blade, Hand Hacksaw and Blade, Power Hacksaw.⁵

3. Terminology Definitions

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

finished materials to produce a finished product fabricated into components and is responsible for all heat-treating and other fabricating processes to obtain the performance characteristics specified herein. The manufacturer is also responsible for fabricating and assembling ancillary items so as not to impair the performance characteristics of the product.

3.2 *homogeneous steel*—one which is nominally of uniform chemistry throughout.

3.3 *lot*—all flat bars and shapes of the same nominal dimensions from the same mill heat.

3.4 *testing laboratory*—a recognized testing laboratory capable of complying with Recommended Practice E 329, selected by the equipment manufacturer.

4. Ordering Information

4.1 Orders for products under this specification shall include the following information:

4.1.1 Name of material,

4.1.2 Dimensions (thickness, width, web thickness, and other descriptions of special shapes),

4.1.3 ASTM designation (A 629) and date of issue,

4.1.4 Test reports (if required),

4.1.5 Certifications (if required), and

4.1.6 Special requirements, if any.

5. Chemical Requirements

5.1 The selection of chemical composition shall be at the discretion of the equipment manufacturer.

6. Mechanical Requirements

6.1 Cutting Test:

6.1.1 *Requirements*—The flat bar or shape shall not be completely severed during the test.

6.1.2 Number of Specimens:

6.1.2.1 The equipment manufacturer shall take three heat-treated specimens no less than 7 in. (178 mm) in length from the lot for which the test is conducted.

6.1.2.2 The testing laboratory shall select one specimen for conduct of the cutting test.

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² *Annual Book of ASTM Standards*, Vol 04.07.

³ Discontinued; see 1982 *Annual Book of ASTM Standards*, Vol 01.03.

⁴ *Annual Book of ASTM Standards*, Vol 14.02.

⁵ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.



6.1.3 Test Method:

6.1.3.1 The testing laboratory shall be responsible for determining that all hacksaw blades used comply with U. S. Federal Specification GG-B-451d, Type 1, Grade A, Class 2, nominal length 12 in. (305 mm), 18 teeth/in. (710 teeth/m).

6.1.3.2 The test shall be conducted on a 6 by 6-in. or 152 by 152-mm, gravity-feed, power-hacksaw machine under the following conditions:

Blade tension	400 lbf (1779 N)
Gravity feed pressure	16 ± 1 lbf (71 ± 4 N)
Maximum lift on return strokes	0.125 in. (3.18 mm)
Speed	60 strokes/min
Length of stroke	6 in. (152 mm)
Cutting fluid	none

6.1.3.3 The cutting resistance of the specimen shall be determined by placing it firmly in a vice underneath the saw blade in the power hacksaw with the narrowest dimensions of the shape in contact with the saw blade, and causing 18 000 cutting cycles of the saw to be made on the shape at one point. The point at which the cutting test is conducted shall be not less than ½ in. (12.7 mm) from either end of the specimen. The direction of cut shall be perpendicular to the 7-in. (178-mm) axis of the specimen.

6.1.3.4 To assure uniform cutting action with no significant variations due to unusual saw-blade wear of any of the 18 000 cycles, a new blade shall be used for every 300 cutting cycles.

6.1.3.5 One cutting cycle of the power hacksaw shall be a complete forward motion and return motion of the position from which the cycle began.

6.1.4 All specimens used in all tests shall be durably marked for complete identification and held by the equipment manufacturer for no less than 3 years after the tests are completed.

6.2 Hardness Test:

6.2.1 The prior test specimen shall be used for the hardness test.

6.2.2 Location of Tests:

6.2.2.1 For plain flats, the test shall be made on both top and bottom of the flat within 0.040 in. (1 mm) of the midpoint between the longitudinal centerline and the edge of the flat.

6.2.2.2 For flats having holes, hardness tests shall be made on both top and bottom of the flats at points located on the transverse centerline of the hole, and positioned within 0.125 ± 0.040 in. (3.2 ± 1 mm) from the edges of the hole.

6.2.2.3 For squares, the bar shall be cut at right angles to the longitudinal centerline and the hardness test shall be made within 0.040 in. (1 mm) of the center of the transverse sectional area thus obtained.

6.2.3 The hardness measurements shall not exceed HRC 45.

6.2.4 There shall be no evidences of cracks in the specimen.

7. Retests

7.1 In the event of a specimen failure, the testing laboratory shall use the additional specimens prepared as required in 6.1.2.1 for the conduct of two additional tests. To be acceptable, the additional specimens tested must meet satisfactorily all test requirements in the two additional tests.

8. Inspection

8.1 All tests and inspection shall be made prior to shipment, unless otherwise specified or agreed upon by the purchaser and seller as a part of the purchase contract.

9. Certification and Reports

9.1 *Certification*— Upon request of the purchaser in the contract or order, a manufacturer's certification that the material was manufactured and tested in accordance with this specification together with a report of the test results shall be furnished by the equipment manufacturer at the time of shipment.

9.2 *Reports*—When required in the contract or order, reports shall be submitted containing the following information:

- 9.2.1 Name and address of laboratory,
- 9.2.2 Date laboratory completed tests,
- 9.2.3 Name and address of equipment manufacturer,
- 9.2.4 Mill heat number and description of identifying marking, and
- 9.2.5 Location of testing equipment.

9.3 *Rating*— Upon request, the following statement shall be furnished: "Specimens marked ____ met the specified performance characteristics as required in ASTM Specification A 629, for Tool-Resisting Steel Flat Bars and Shapes for Security Applications."

10. Keywords

10.1 security; steel flat bars; tool-resistance; tool-resisting steel flat bars; tool-resisting steel flat shapes

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