



Standard Specification for Automated Controlled Shot Peening of Metallic Articles Prior to Nickel, Autocatalytic Nickel, or Chromium Plating, or as Final Finish¹

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1. Scope

1.1 This specification covers the requirements for automated, controlled shot peening of metallic articles prior to electrolytic or autocatalytic deposition of nickel or chromium, or as a final finish, using shot made of cast steel, conditioned cut wire, or ceramic media. The process is applicable to those materials on which test work has shown it to be beneficial within given intensity ranges. It is not suitable for brittle materials. Hand peening and rotary flap peening are excluded specifically.

1.2 Shot peening induces residual compressive stresses in the surface and near-surface layers of metallic articles, controlling or limiting the reduction in fatigue properties that occurs from nickel or chromium plating of the article, or the fatigue properties of unplated articles.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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

- [B183 Practice for Preparation of Low-Carbon Steel for Electroplating](#)
- [B242 Guide for Preparation of High-Carbon Steel for Electroplating](#)

¹ This specification is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.02 on Pre Treatment.

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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.

[B320 Practice for Preparation of Iron Castings for Electroplating](#)

[B322 Guide for Cleaning Metals Prior to Electroplating](#)

[B607 Specification for Autocatalytic Nickel Boron Coatings for Engineering Use](#)

[B650 Specification for Electrodeposited Engineering Chromium Coatings on Ferrous Substrates](#)

[B656 Guide for Autocatalytic \(Electroless\) Nickel-Phosphorus Deposition on Metals for Engineering Use \(Discontinued 2000\) \(Withdrawn 2000\)](#)³

[B689 Specification for Electroplated Engineering Nickel Coatings](#)

[B733 Specification for Autocatalytic \(Electroless\) Nickel-Phosphorus Coatings on Metal](#)

[E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

[E165 Practice for Liquid Penetrant Examination for General Industry](#)

[E709 Guide for Magnetic Particle Testing](#)

2.2 Federal Standards:⁴

[QQ-N-290 Nickel Plating \(Electrodeposited\)](#)

[QQ-C-320 Chromium Plating \(Electrodeposited\)](#)

2.3 Military Standards:⁴

[MIL-S-851 Steel Grit, Shot, and Cut Wire Shot, and Iron Grit and Shot Blast Cleaning and Peening](#)

[MIL-S-13165 Shot Peening of Metal Parts](#)

[MIL-C-26074 Coating, Electroless Nickel](#)

[MIL-STD-45662 Calibration System Requirements](#)

2.4 SAE Standards:⁵

[SAE J441 Cut Steel Wire Shot](#)

[SAE J442 Test Strip, Holder and Gage for Shot Peening](#)

[SEA J827 Cast Steel Shot](#)

[SAE J1830 Size, Classification and Characteristics of Ceramic Shot for Peening](#)

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

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

⁵ Available from Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.