

Peening Media
General Requirements

RATIONALE

AMS 2431B is a Five Year Review and update of this specification.

1. SCOPE

- 1.1 This specification and its supplementary detail specifications cover the requirements for media to be used in controlled shot peening of metal parts.
- 1.2 Reference to AMS 2431 with the appropriate slash number on a purchase order constitutes a requirement to conform to the applicable specification in 2.1.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS 2431/1	Peening Media, Cast Steel Shot, Regular Hardness (45 to 52 HRC)
AMS 2431/2	Peening Media, Cast Steel Shot, High Hardness (55 to 62 HRC)
AMS 2431/3	Peening Media, Conditioned Carbon Steel Cut Wire Shot, Regular Hardness (45 to 52 HRC)
AMS 2431/4	Peening Media, Conditioned Stainless Steel Cut Wire Shot
AMS 2431/5	Peening Media, Peening Balls
AMS 2431/6	Peening Media, Glass Shot
AMS 2431/7	Peening Media, Ceramic Shot
AMS 2431/8	Peening Media, Conditioned Carbon Steel Cut Wire Shot, High Hardness (55 to 62 HRC)
SAE J441	Cut Wire Shot
SAE J444	Cast Shot and Grit Size Specifications for Peening and Cleaning
SAE J445	Metallic Shot and Grit Mechanical Testing
SAE J827	High Carbon Cast Steel Shot
SAE J1173	Size Classification and Characteristics of Glass Beads for Peening
SAE J1830	Size Classification and Characteristics of Ceramic Shot for Peening

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2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 214	Sieve Analysis of Granular Metal Powders
ASTM C 169	Chemical Analysis of Soda-Lime and Borosilicate Glass
ASTM E 11	Wire-Cloth Sieves for Testing Purposes
ASTM E 18	Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E 140	Hardness Conversion Tables for Metals (Relationship Between Brinell Hardness, Vickers Hardness, Rockwell Hardness, Rockwell Superficial Hardness, and Knoop Hardness)
ASTM E 350	Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron
ASTM E 353	Chemical Analysis of Stainless, Heat-Resisting, Maraging, and Other Similar Chromium-Nickel-Iron Alloys
ASTM E 384	Microhardness of Materials

3. TECHNICAL REQUIREMENTS

3.1 Detail Specification

The requirements for a specific product shall consist of all requirements specified herein in addition to requirements specified in the applicable detail specification. In case of conflict between requirements of this basic specification and the applicable detail specification, requirements of the detail specification shall govern.

3.2 Quality

Peening media, as received by purchaser, shall be uniform in quality and condition, clean, and free from foreign materials and from imperfections detrimental to usage of the peening media.

3.3 Test Methods

3.3.1 Composition shall be determined in accordance with ASTM C 169, ASTM E 350, or ASTM E 353.

3.3.2 Hardness shall be determined in accordance with ASTM E 18 or ASTM E 384 for metallic shot and as described in the applicable detail specification for nonmetallic peening media. Conversion to Rockwell C values shall be in accordance with ASTM E 140.

3.3.3 Quality shall be determined visually and in accordance with the applicable detail specification(s).

3.3.4 Size shall be determined in accordance with ASTM E 11, ASTM B 214, and the applicable detail specification.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The supplier of peening media shall supply all samples for supplier's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the peening media conforms to specified requirements.

4.2 Classification of Tests

All technical requirements are acceptance tests and shall be performed on each lot.

4.3 Sampling for testing shall be in accordance with the applicable detail specification; a lot shall consist of peening media of the same nominal alloy or chemical composition, condition, size, and hardness. If production is continuous, a lot shall be the product of not more than eight hours. Alternatively, Statistical Process Control methods may be used to monitor the quality of the product so that it meets the requirements of the applicable detail specification.

4.4 Reports

The supplier of peening media shall furnish with each shipment a report stating that the media conforms to the size distribution, number of marginal/defective shapes, density, chemical composition, hardness, and other technical requirements and the applicable detail specification. This report shall include the purchase order number, lot number, code letters, size, quantity, and AMS 2431B, including the applicable detail specification number.

4.5 Records

All manufacturing records and all records of testing and inspection shall be retained and available for inspection for not less than two years after manufacture. The records shall contain all data, including statistical process control reports, necessary to verify conformance to the requirements of this specification and the applicable detail specification.

5. PREPARATION FOR DELIVERY

5.1 Identification

Each container of peening media shall be permanently and legibly marked with not less than the following information:

Manufacturer and address

Description of peening media (cast steel, cut wire, etc)

Peening media hardness, if applicable (equivalent HRC for steel shot)

Specification number, code, and size

Lot number

Example of line 4: "AMS 2431/1C - ASR170" (See Table 1).

TABLE 1 - PEENING MEDIA AND IDENTIFICATION CODES

Specification	Description	Code
AMS 2431/1	Cast Steel Shot, Regular Hardness (45 to 52 HRC)	ASR
AMS 2431/2	Cast Steel Shot, High Hardness (55 to 62 HRC)	ASH
AMS 2431/3	Conditioned Carbon Steel Cut Wire Shot, Regular Hardness (45 to 52 HRC)	AWCR
AMS 2431/4	Conditioned Stainless Steel Cut Wire Shot	AWS
AMS 2431/5	Peening Balls	APB
AMS 2431/6	Glass Shot	AGB
AMS 2431/7	Ceramic Shot	AZB
AMS 2431/8	Conditioned Carbon Steel Cut Wire Shot, High Hardness (55 to 62 HRC)	AWCH

5.2 Packaging

Peening media shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the peening media to ensure carrier acceptance and safe delivery.

5.2.1 Packaging containers shall be tightly sealed and impermeable to moisture to prevent deterioration of product.

6. ACKNOWLEDGMENT

A supplier shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS

Peening media not conforming to this specification or the applicable detail specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES

8.1 A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of a specification. An (R) symbol to the left of the document title indicates a complete revision of the specification, including technical revision. Change bars and (R) are not used in original publications, nor in specifications that contain editorial changes only.

8.2 Terms used in AMS are clarified in ARP1917 and as follows:

8.2.1 Parts

Finished or semifinished metal parts.

8.2.2 Peening Media

Spherical or quasi-spherical material used in the controlled shot peening process. See Table 1 for descriptions, specifications, and codes.

8.2.3 Cognizant Engineering Organization is the term applied to the engineering organization responsible for the design of the parts or a designee of this organization.

8.3 Dimensions and properties in inch/pound units and the Fahrenheit temperatures are primary; dimensions and properties in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.

8.4 Durability and Transmitted Peening Energy

Testing in accordance with SAE J445 is recommended as a means of comparing the quality of peening media. Durability should be measured by the number of cycles required for 100% replacement (by weight). Transmitted peening energy can be determined from the test strip arc height after exposure to 40 cycles. Manufacturers of peening media should furnish results of such test for their media.

8.5 Purchase documents should specify not less than the following:

AMS 2431B

Quantity of product required

Size of container

Type of media with applicable slash number (See Table 1)

Size of media.

8.6 Similar Specifications

This specification used in conjunction with the detail specification for the media in Table 1 meets or exceeds the minimum technical requirements of MIL-G-9954, MIL-S-851, MIL-S-13165, SAE J441, SAE J444, SAE J827, SAE J1173, and SAE J1830. In areas of disagreement, the requirements of this specification shall govern.

8.7 Key Words

Shot peening, glass shot, cast steel shot, ceramic shot, stainless steel conditioned cut wire shot, carbon steel conditioned cut wire shot, identification codes