



AEROSPACE MATERIAL SPECIFICATION

AMS2432™**REV. E**

Issued 1990-01
Reaffirmed 2010-05
Revised 2022-10

Superseding AMS2432D

Shot Peening, Computer Monitored

RATIONALE

AMS2432E is the result of a Five-Year Review and update of this specification with the addition of aerospace/nonaerospace to ordering information, addition of wording regarding base requirements of AMS2430 (Section 3), added requirements for media (3.1), clarified requirements for continuously monitored (3.2.1.1), clarified Table 1 requirements, reworded to sync with Table 1 (3.2.1.3), added unless otherwise specified to dust and particle extraction (3.2.1.4), added media requirements to peening machine (3.2.1.5 and 3.2.1.6), reworded to remove redundant information (3.2.2), deleted Table 2 "Media size and intensity guidelines for various materials" as this information is to be specified or found in ARP7488, deleted media hardness requirement as this is already specified in SAE J442 (Rev D 3.2.2.1), test gages and procedures defaulted to SAE J442 and SAE J443 (3.2.3), added allowance for other methods when approved by CEO (3.2.5), deleted redundant information (3.2.6), updated requirements for peening intensities and test strip locations (3.5.1), added new requirements for agorting the peening process (3.5.2), deleted old Table 2 as this is covered by ARP7488 or shall be specified, deleted old 3.6.1 and 3.6.2 as these are covered in SAE J443 and ARP7488, added coverage requirements (3.6.1), updated process parameter sheet requirements (Table 2), added testing requirements for impact sensitive fluorescent or dye marker coatings (4.2.1.1), added preproduction test for process parameter sheet (4.2.3), updated process approval requirements (4.3.1), and revised calibration requirements adding minimum frequency (4.3.3).

NOTICE

ORDERING INFORMATION:

1. The following information should be provided to the shot peen processor by the purchaser. If the purchaser does not provide any of the following, the processor shall use the specification provisions herein.
 - AMS2432E
 - Purchase order number and revision level
 - Part number and revision level
 - Part alloy and tensile strength and/or hardness
 - Quantity of parts
 - If parts are aerospace or non-aerospace (see 4.3.1.2)

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Documents

Document Sharing Hub

- Media type, hardness, size in accordance with AMS2431 (see 3.1)
- Test strip type (see 3.2.2)
- Pre-shot peen cleaning method (see 3.3)
- Intensity requirement (see 3.5.1 and 3.6)
- Intensity verification locations (see 3.5.1)
- Coverage requirement (see 3.6.1)
- Coverage verification method and if use of fluorescent tracer or dye marker inks requires cognizant engineering organization approval (see 3.6.1 and 4.2.1.1)
- Part locations to be shot peened, free from peening, or peening optional (see 3.4)
- If externally applied loads are permitted on part during processing (see 3.5)
- If purchaser requires approval of the processor's shot peening process parameter sheet(s) (see 4.3.1)
- If purchaser allows the use of alternative intensity verification methods (see 3.8.1)
- Post-shot peen cleaning method: include instruction and procedure to remove iron contamination, if applicable, and if purchaser requires peening processor to perform this operation (see 3.9)
- Part preservation/shipping method (see Section 5)

1. SCOPE

1.1 Purpose

This specification establishes the requirements for computer-monitored shot peening of part surfaces by impingement of media, including metallic, glass, or ceramic shot. Computer-monitored peening is intended to provide a method of process observation, traceability, and response for all process input settings, in real time, during the entire peening process to ensure with objective evidence, the desired process outputs. AMS2430 forms an integral part of this specification.

1.2 Application

Shot peening is typically used to induce residual compressive stress in the surface layers of parts, and may be used to increase fatigue strength and resistance to stress-corrosion cracking. Shot peening with computer monitoring is typically used to provide control of the peening process to ensure consistent, repetitive peening coverage and intensity on parts. Computer-monitored processing is typically required so that the traceability steps specified herein can be utilized by the design authority to take full credit for the benefits of shot peening in the design life.

- 1.2.1 Related peening processes, such as tumble peening, slurry peening, manual peening, peen forming and straightening, peening for prevention of intergranular corrosion, and peening to produce a surface texture, are beyond the scope of this specification.

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 +1 724-776-4970 (outside USA), www.sae.org.

AMS2431	Peening Media, General Requirements
AMS2430	Shot Peening
ARP7488	Peening Design and Process Control Guidelines
AS7766	Terms Used in Aerospace Metals Specifications
SAE J442	Test Strip, Holder, and Gage for Shot Peening
SAE J443	Procedures for Using Standard Shot Peening Almen Test Strip

3. TECHNICAL REQUIREMENTS

AMS2430 provides the base requirements for the shot peening stated in this specification and is referenced throughout this document.

3.1 Peening Media

New and in-process media shall be in accordance with AMS2430. Media type and size shall be specified. Storage of media shall prevent the mixing of media type, size, or hardness. Mixing of media type or hardness within the peening machine is not permitted unless approved by the cognizant engineering organization (CEO) (see 3.2.1.6).

3.2 Equipment and Materials

3.2.1 Peening Machine

- 3.2.1.1 The peening machine shall run automatically and may be computer controlled. It shall be capable of controlling the process within the parameter tolerances stated in Table 1 and the ability to abort the peening process when necessary (see 3.5.2). Peening machines shall be equipped with computers for continuously monitoring and recording the parameters shown in Table 1 within the tolerance indicated at a minimum rate of 0.5 second scans and shall include the date and time of the processing. Recording shall be digitally recorded or in hard copy and retained in accordance with 4.4.
- 3.2.1.2 The peening machine shall provide a means of propelling, at a controlled rate, media with air pressure against the part. Alternatively, metallic media may be propelled by centrifugal force. The machine shall provide a means of moving, at a uniform speed, either the part through the media stream or the media stream over the part in either translation, rotation, or both, as required. The part shall not be subjected to any random movement during the process. The machine shall be capable of consistently reproducing the required shot peening intensities.