

One Baseline, Fewer Errors

Why aerospace shot peening specifications should converge on AMS2430 and AMS2432

HOW I ARRIVED AT THIS VIEW

Before 2001, before shot peening became a special process audited through Nadcap, prime audits often lacked a clear, consistent structure. In my experience, one audit could look very different from the next, and findings sometimes seemed based more on individual interpretation than on a clearly defined specification requirement.

I became involved with Nadcap from the beginning, helping develop the initial shot peening audit checklists. Our facility in East Hartford, Connecticut, became the first Nadcap-accredited shot peening facility. That was a major improvement: the audit process became more consistent, and the experience helped us strengthen our own internal procedures and documentation. But it was also obvious that more work remained.

That led me to the SAE committees responsible for writing and revising the AMS and J specifications. For more than 20 years, I have worked with those committees to bring lessons from audits, customer specifications, and actual processing experience back into the industry standards. The long-term goal has been simple: strengthen the common standards enough that customers do not need to recreate the same process controls in separate proprietary specifications, reducing redundant requirements while preserving legitimate engineering differences.

HOW MANY SPECIFICATIONS DO WE REALLY NEED?

Ask a shot peening supplier how many specifications govern the process, and the answer is rarely one or two. Many aerospace processors are expected to maintain dozens of customer, program, and legacy documents that address essentially the same operation.

A lot of those documents substantially duplicate AMS2430 or AMS2432. Some use different terminology for equivalent controls. Others carry forward old provisions or provide less technical detail than the AMS standards they are meant to supplement.

At some point, that fragmentation becomes a risk of its own. Every document must be reviewed, flowed down, trained to, revised, and audited, while every drawing and purchase order must be matched to the right requirement and revision. Small

wording differences can become compliance issues even when the underlying process has not changed.

MORE DOCUMENTS DOES NOT AUTOMATICALLY MEAN MORE CONTROL

More documentation can look like more rigor, but document count and process control are not the same thing.

Good shot peening control comes from the fundamentals: qualified equipment, competent people, stable processes, media control, intensity, saturation curves, coverage verification, reliable records, change management, and effective oversight.

Repeating those controls across dozens of documents does not make them stronger. Duplication can create conflicts, preserve obsolete language, complicate training, and pull attention away from the variables that determine process capability and repeatability.

WHERE THE RISK SHOWS UP

Document control is one pressure point. Each customer revision must be evaluated for its effect on procedures, training, equipment, inspection, media, parameters, records, and notifications.

Contract review has the same problem. Planners may need to reconcile specifications, revisions, drawings, purchase-order clauses, supplements, deviations, part requirements, and industry standards. Each overlap creates another opportunity for the wrong requirement to enter the work plan.

Operators and inspectors then face multiple instructions for the same process, often with different terms, forms, test frequencies, or acceptance provisions. That complexity can make the truly important requirements harder to see.

THERE IS ALSO A TECHNICAL GAP

The issue is also technical: some customer and legacy specifications are less complete than AMS2430 or AMS2432.

A proprietary specification may be detailed in one area while saying little about media testing, contamination control, equipment qualification, saturation curves, coverage, periodic verification, personnel competency, change control, corrective action, or traceability.

Those controls still have to exist. If the specification does not define them, responsibility shifts to the supplier, customer, auditor, or engineer, which can produce different control systems among approved suppliers working to the same requirement.

START WITH A COMMON TECHNICAL FOUNDATION

A more sustainable model is to use AMS2430 and AMS2432 as the common technical foundation for shot peening, then clearly identify the requirements that genuinely need to be different.

If a legacy or proprietary specification contains no unique technical requirements, it can be retired in favor of direct reference to the applicable AMS standard. If legitimate customer, regulatory, or program-specific differences must remain, those differences can be captured in a short, clause-specific exception document.

That does not reduce customer authority. The design organization still decides what the part requires. The change is simply that general process-control requirements are separated from the engineering exceptions that are truly unique.

THREE DOCUMENTS, THREE CLEAR JOBS

The structure can be straightforward. AMS2430 or AMS2432 governs the general process: media, equipment, intensity, coverage, monitoring, verification, personnel, records, and the related system controls.

A concise exception document contains only the additions, deletions, or replacements that are genuinely unique. The product definition - the drawing, repair document, or similar record - contains the requirements that belong to the part itself, such as intensity and tolerance, coverage, peening boundaries, masking, media restrictions, inspection criteria, and special handling.

MAKE EXCEPTIONS EASY TO SEE

An exception document should begin by identifying AMS2430 or AMS2432 as the governing baseline: "Shot peening shall be performed in accordance with AMS2430 [or AMS2432], except as specifically modified herein."

From there, each exception should identify the affected AMS paragraph, state the exact addition, deletion, or replacement, and include the technical basis when appropriate. A simple table can make those differences immediately visible to suppliers, engineers, planners, and auditors.

Just as important, requirements already covered by AMS

should not be copied into the exception document. Once baseline language is repeated, revisions can get out of sync and minor wording changes can create questions about technical intent. An exception document should contain exceptions - not a second version of the standard.

KEEP PART REQUIREMENTS WITH THE PART

The design organization should continue to define exactly what each part needs. Intensity and tolerance, coverage, masking, peening boundaries, surface-finish limits, media restrictions, acceptance criteria, special test specimens, and post-peening handling should remain on the drawing, repair document, or another product-specific record whenever practical.

Keeping part requirements with the product improves clarity and configuration management. It also supports electronic planning, automated contract review, and compliance databases because requirements begin to appear in consistent, predictable locations.

TRANSITION WITHOUT DISRUPTING PRODUCTION

This does not need to be an abrupt change. A controlled transition can start with a clause-by-clause comparison between each legacy specification and the applicable AMS standard. That review identifies duplication, conflicts, omissions, and the requirements that are genuinely unique.

Organizations can then decide which specifications should be retired, which can be replaced by direct AMS reference, and which need a concise exception document. Affected drawings, purchase orders, repair documents, supplier approvals, procedures, training materials, and audit checklists can be updated on a planned schedule.

New contracts and new designs can transition first. Legacy products can be converted through a defined risk-assessment process, with approved equivalency statements or controlled supplements used where immediate drawing revision is impractical. The important point is to make the change deliberate, documented, and communicated.

A PRACTICAL INDUSTRY PATH FORWARD

A practical industry effort would inventory active shot peening specifications and compare each with AMS2430 or AMS2432 to identify duplication, conflicts, technical gaps, and unique requirements.

Specification owners could then decide what should remain, be retired, directly reference AMS, or become a concise

INDUSTRY INSIGHTS *Continued*

exception document, while moving part-specific requirements to product-definition records and managing future AMS revisions through a defined transition process.

PUT THE FOCUS BACK ON PROCESS PERFORMANCE

In my experience the biggest benefit of standardization is not paperwork reduction, although that would certainly help. The stronger argument is risk reduction. Over the past 30+ years I've attended and participated in numerous shot peening workshops and training events around the world. It's clear to me that gaps in documentation, standardization and training have long been and continue to be a problem in the shot peening industry.

We already see the practical benefit with customers that specify AMS2430 or AMS2432 directly. Contract review is considerably leaner, shop personnel are well versed in the standard, and work moves through the shop faster. Clear, concise, familiar requirements benefit everyone - processor and customer alike. ●

ABOUT THE AUTHOR

Walter Beach has served as Vice President of Peening Technologies, based in East Hartford, Connecticut, since 1991. The company, which traces back to Hydro-Honing Laboratories, founded by his father Walter Alden Beach Sr. in 1966, provides shot peening services and equipment for the aerospace sector and other high-performance applications.

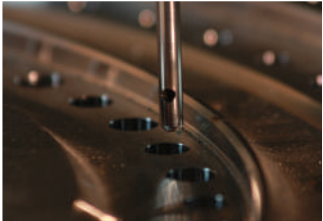
Walter has over 34 years of hands-on experience in shot peening. As the company's Director of Quality Assurance, he helped lead it to become the first Nadcap-accredited shot peening facility, in 2001, and he holds a U.S. patent (US 9,063,049 B2) for a method of quantifying metal surface treatment.

Active with SAE International since the early 2000s, Walter has contributed to Nadcap checklist development and, in 2025, was appointed Chairperson of both the SAE Surface Enhancement Committee and the Aerospace Surface Enhancement Committee, succeeding Jack Champaigne. In this role, he has sponsored revisions to AMS2430, AMS2432, and ARP7488. He also serves on the Board of Directors of the Aerospace Component Manufacturers (ACM).



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