AEROSPACE MATERIAL SPECIFICATION

AMS2585™	REV. B

Issued 2010-05
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Revised 2024-07

Superseding AMS2585A

Peening Media for Ultrasonically Activated Shot Peening

RATIONALE

AMS2585B results from a Five-Year Review and update of this specification with changes to the Title and Material Type and Properties (see 3.2), Common peening ball materials (see Table 1), and Usable sizes updated to current industry standards (see Tables 4A and 4B).

1. SCOPE

1.1 Purpose

The complete requirements for procuring the product shall consist of this document and the latest Issue of the basic specification, AMS2431.

1.2 Application

Peening balls conforming to this specification are typically intended for use in ultrasonically activated shot peening of metal surfaces to impart compressive stresses to these surfaces, thereby increasing resistance to fatigue and stress-corrosion cracking. These balls can also be used in the peen forming process.

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

AMS7766 Terms Used in Aerospace Metals Specifications

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/AMS2585B

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 A751 Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

ASTM E18 Rockwell Hardness of Metallic Materials

ASTM E140 Standard Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness

ASTM E384 Microindentation Hardness of Materials

2.3 ANSI Accredited Publications

Copies of these documents are available online at https://webstore.ansi.org/.

ANSI/ABMA/ISO 3290 Rolling Bearings - Balls

2.4 BNAE Publications

Available from BNAE, Technopolis 54, 199, rue Jean Jacques ROUSSEAU, 92138 Issy les Moulineaux cedex, France, www.BNAE.asso.fr.

BNAE NFL 06 834 Metallic parts - Inducement Compressive Surface Stresses - Tungsten Carbide Spherical Beads

2.5 DIN Publications

Copies of these documents are available online at https://www.din.de/en/.

DIN 5401 Rolling bearings - Balls for rolling bearings and general industrial use

2.6 ISO Publications

Available from International Organization for Standardization, ISO Central Secretariat, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, Tel: +41 22 749 01 11, www.iso.org.

ISO 3290 Rolling Bearings - Balls

2.7 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Peening balls shall conform to AMS2431 and the requirements specified herein.

3.2 Material Type and Properties

3.2.1 Material type of peening balls shall conform to Table 1 or an alternative composition approved by the cognizant engineering organization. Any proposed alternatives shall conform to an AISI, SAE, ASTM, DIN, or ISO standard.

Table 1 - Common peening ball materials

Material	Alloy	AFNOR/ISO/DIN equivalent	Hardness
Steel	52100	100C6	60-67 HRC
	M50		60-66 HRC
	1010/1015	XC10/XC15	60-66 HRC
	1055/1065/1085		60-66 HRC
Stainless Steel	440C	Z100CD17	58-65 HRC
	304	Z7CN18-09	25-39 HRC
	304L	Z2CN18-10	25-39 HRC
	316	Z6CND17-12	25-39 HRC
	316L	Z2CND17-12	25-39 HRC
Tungsten Carbide	n/a	BNAE NFL 06-834	1400-1800 HV
Ceramic High Density	$ZrO_2 + HfO_2 + Y_2O_3$		1100-1400 HV

3.2.2 The percentage variation by weight ranges of the main constituents of ceramic ball shall conform to requirements in Table 2:

Table 2 - Ceramic balls composition

Constituent	Min	Max
Zirconium Oxide + Hafnium Oxide	90	95
Yttrium Oxide	3	7
Others		3

3.2.3 The surface finish, shape, and tolerances for steel, stainless steel, and tungsten carbide media shall conform to a grade of ANSI/ABMA/ISO 3290 or ISO 3290 or DIN 5401 defined in Table 3.

Table 3 - Required grades of peening balls

Standard	Grade
AISI/ABMA/ISO 3290	up to 200
ISO 3290	up to 200
DIN 5401	up to class III

3.2.4 Ceramic media shall be predominantly spherical in shape, and 90% of media shall have sphericity higher than 0.8. Balls with sharp angle, twins, tear drop, or satellite are classified as defective media.

3.2.5 Hardness of peening balls shall conform to Table 1, unless otherwise agreed upon by the user and manufacturer.

3.2.6 Density of ceramic media shall be not less than 5.90 g/cc.

3.2.7 Contamination

3.2.7.1 Balls shall be clean and free of dust, grit, oil, and grease.

3.2.7.2 Surface discolorations shall be determined microscopically using magnification per 4.1.5. Not more than 5% of ceramic media shall show foreign discolorations. A particle shall be considered objectionable for foreign discoloration when more than 25% of its surface area is discolored.

3.3 Size

For metal alloy or carbide media, peening balls shall conform to the size requirements in Table 4. Ceramic media shall conform to the size requirements of Table 5.

Tabel 4A - Usable sizes (inch)[1]

Nominal diameter (inch)	Nominal diameter (inch)	Nominal diameter (inch)
1/64	1/8	1/4
1/32	9/64	17/64
3/64	5/32	9/32
1/16	11/64	5/16
5/64	3/16	11/32
3/32	7/32	3/8
7/64	15/64	25/64

[1] Most commonly used sizes are shaded in gray.

Tabel 4B - Usable sizes (mm)[1]

Nominal diameter (mm)	Nominal diameter (mm)	Nominal diameter (mm)
0.3	1.8	3.3
0.4	1.9	3.4
0.5	2	3.5
0.6	2.1	4
0.7	2.2	4.5
0.8	2.3	5
0.9	2.4	5.5
1.0	2.5	6
1.1	2.6	6.5
1.2	2.7	7
1.3	2.8	7.5
1.4	2.9	8
1.5	3	8.5
1.6	3.1	9
1.7	3.2	9.5

[1] Most commonly used sizes are shaded in gray.

Table 5 - Ceramic media for shot peening - sizes and sphericity

Designation	Nominal Sizes, Millimeters	Nominal Sizes, Inch	Sieve Size, Millimeters Maximum 0.5% Retained	Sieve Size, Millimeters Maximum 5% Retained	Sieve Size, Millimeters Maximum 5% Passing	Sieve Size, Millimeters Maximum 0.5% Passing
CB 1.1	1.0/1.2	0.039/0.047	1.40	1.18	1.00	0.9
CB 1.5	1.4/1.6	0.055/0.062	1.70	1.60	1.40	1.18
CB 1.9	1.8/2.0	0.070/0.078	2.24	2.00	1.80	1.70
CB 2.2	2.0/2.5	0.078/0.098	2.80	2.50	2.00	1.80
CB 3.0	2.6/3.3	0.102/0.129	3.55	3.35	2.80	2.36