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INTERNATIONAL
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 2431/3B

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Superseding AMS 2431/3A

Submitted for recognition as an American National Standard

PEENING MEDIA (AWCR)
Conditioned Carbon Steel Cut Wire Shot, Regular Hardness (45 to 52 HRC)

1. SCOPE:

The complete requirements for procuring the product shall consist of this document and the latest issue of the basic specification, AMS 2431.

2. APPLICABLE DOCUMENTS:

See AMS 2431.

3. TECHNICAL REQUIREMENTS:

3.1 Conditioned carbon steel cut wire shot, regular hardness, shall conform to AMS 2431 and the requirements specified herein.

3.2 Composition:

(R) Shall conform to the percentages by weight shown in Table 1, determined in accordance with ASTM E 350.

TABLE 1 - Composition

Element	min	max
Carbon	0.45	0.85
Manganese	0.60	1.20
Silicon	0.10	0.30
Phosphorous	--	0.045
Sulfur	--	0.05

3.3 Hardness:

(R) Not less than 90% of the readings, using a microhardness tester with a minimum 500 gram load, shall fall within the range of 45 to 52 HRC, or equivalent, determined in accordance with ASTM E 384. Hardness testing shall be performed after the shot has been conditioned for shape.

3.4 Wire Quality:

Shot shall be manufactured from wire that is free from shear cracks and laps and shall not contain excessive seams or burrs.

3.5 Weight:

(R) Fifty pieces of the conditioned media shall conform to Table 3; 100 pieces of the media shall conform to Table 4.

3.6 Contamination:

Shot shall be clean and free of dirt, grit, oil, or grease.

3.7 Quality Requirements:

Shall conform to 3.7.1, 3.7.2, 3.7.3, and 3.7.4 determined in accordance with 3.9.2.

3.7.1 Shape: Shall be predominantly spherical as a result of conditioning or rounding.
(R)

3.7.2 Acceptable Shapes: Shapes conforming to Figure 1 shall be in accordance with Table 2.
(R)

3.7.3 Marginal Shapes: Shapes conforming to Figure 2 are permissible to the extent specified in
(R) Table 2.

3.7.4 Unacceptable Shapes: Shapes conforming to Figure 3 are permissible to the extent specified
(R) in Table 2.

3.7.5 Conditioning is accomplished by impacting the as-cut wire cylinders against a hardened target
(R) until a predominantly round shape (See Figure 1) has been obtained.

3.8 Size:

(R) Shall conform to the requirements of Table 3 and Table 4, determined in accordance with 3.9.1.

(R) TABLE 2 - Shape Requirements

Shot Size	Area per Field Square Inch (mm^2)	Number of Fields Viewed	Number of Marginal Particles All Fields max(1)	Number of Unacceptable Particles All Fields max(2)
AWCR 62	1(645)	9	63	2
AWCR 54	1(645)	7	66	2
AWCR 47	1(645)	5	68	2
AWCR 41	1(645)	4	70	2
AWCR 35	0.25(161)	14	67	2
AWCR 28	0.25(161)	7	67	2
AWCR 23	0.25(161)	5	70	2
AWCR 20	0.25(161)	4	76	2
AWCR 17	0.0625(40)	11	70	2
AWCR 14	0.0625(40)	6	60	2
AWCR 12	0.0625(40)	5	68	2

Notes: (1) Maximum number of marginal shapes is approximately 3% of the total number of particles viewed.
(2) Maximum number of unacceptable shapes is approximately 0.1% of the total number of particles viewed.

(R) TABLE 3 - Size Requirements

Shot Size	Wire Diameter Inch	Wire Diameter Millimeters	Weight of 50 pieces Gram
AWCR 62	0.0625 ±0.002	1.588 ± 0.05	0.98 to 1.20
AWCR 54	0.054 ± 0.002	1.37 ± 0.05	0.65 to 0.79
AWCR 47	0.047 ± 0.002	1.19 ± 0.05	0.43 to 0.52
AWCR 41	0.041 ± 0.002	1.04 ± 0.05	0.28 to 0.35
AWCR 35	0.035 ± 0.001	0.89 ± 0.025	0.18 to 0.22
AWCR 32	0.032 ± 0.001	0.81 ± 0.025	0.12 to 0.16
AWCR 28	0.028 ± 0.001	0.71 ± 0.025	0.09 to 0.11
AWCR 23	0.023 ± 0.001	0.58 ± 0.025	0.045 to 0.060
AWCR 20	0.020 ± 0.001	0.51 ± 0.025	0.035 to 0.045

(R) TABLE 4 - Size Requirements

Shot Size	Wire Diameter Inch	Wire Diameter Millimeter	Weight of 100 pieces Gram
AWCR 17	0.017 ± 0.001	0.43 ± 0.025	0.040 to 0.055
AWCR 14	0.014 ± 0.001	0.36 ± 0.025	0.015 to 0.030
AWCR 12	0.012 ± 0.001	0.30 ± 0.025	0.010 to 0.020

3.9 Test Methods and Procedures:

3.9.1 Size: The size of shot shall be determined by the use of a wire with a diameter as specified in Table 3 or Table 4. Fifty pieces of the conditioned media shall meet the weight requirements of Table 3. One hundred pieces of the conditioned media shall meet the weight requirements of Table 4.

3.9.2 Shape: Visual evaluation, at a minimum magnification of 10X for sizes CW 23 and larger and a minimum magnification of 30X for sizes finer than CW 23, shall be performed using the areas and number of fields specified in Table 2 for each respective shot size.

4. QUALITY ASSURANCE PROVISIONS:

See AMS 2431 and the following:

4.1 Sampling and Testing:

Two samples of 800 grams each shall be selected from separate containers chosen at random from each lot. Each sample shall be split to test quantities as follows:

4.1.1 Composition: Not less than two samples from each lot shall be evaluated.

4.1.2 Hardness: Not less than 20 microhardness readings shall be made from each sample with no more than one impression on any one shot.

4.1.2.1 Samples for microhardness testing shall be prepared by encapsulating a representative sample of each lot in a plastic mount and polishing down to nominal half spheres.

4.1.3 (R) Size: Two representative samples of not less than 100 grams each shall be used for size evaluation.

4.1.3.1 (R) Alternate methods for size evaluation may be utilized provided that they can be correlated to the weight method and are acceptable to purchaser.

4.1.4 (R) Shape: A representative sample shall consist of a number of shot, in one layer, which completely fills the areas specified in Table 2. The number of areas, or fields, viewed at 10X or 30X (See 3.9.2) evaluated for each shot size shall be as indicated in Table 2.

4.1.4.1 (R) Alternate methods of inspection for shape are permitted provided that they can be correlated to the optical method and are acceptable to purchaser.

5. PREPARATION FOR DELIVERY:

See AMS 2431 and the following:

5.1 Packaging and Identification:

Steel shot shall be packaged in 40 to 55 pound (18 to 25 kg) units in plastic coated bags or pails.

6. ACKNOWLEDGMENT:

See AMS 2431.

7. REJECTIONS:

See AMS 2431.