

Peening Media  
Case Hardened Steel Peening Balls

RATIONALE

AMS 2431/5A is a Five Year Review and update of this specification.

1. SCOPE

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

1.2 Application

Peening balls conforming to this specification are typically intended for use in peening metal surfaces to impart compressive stresses to these surfaces thereby increasing resistance to fatigue and stress-corrosion cracking. Generally, peening balls, because they are available in much larger sizes than cast steel or cut wire shot, are used where very high intensities are required to produce a very deep compressive layer. Peening balls are also frequently used in the peen forming process.

2. APPLICABLE DOCUMENTS

See AMS 2431.

3. TECHNICAL REQUIREMENTS

3.1 Peening balls shall conform to AMS 2431 and the requirements specified herein.

3.2 Composition shall conform to AISI 1022 or similar steels of lower carbon content.

3.2.1 Surface shall be carburized and surface hardness shall be 636 to 739 HV (57 to 62 HRC) or equivalent.

3.2.2 Case depth shall be in accordance with Table 1.

3.2.3 Contamination

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

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### 3.3 Workmanship

#### 3.3.1 Shape

Peening balls shall be essentially spherical with no sharp edges or malformed product. Small surface flats, cuts and pits are acceptable.

#### 3.3.2 Microstructure

Case shall be normal carburized microstructure, free from grain boundary ferrite and cementite.

### 3.4 Size

Peening balls shall conform to the requirements of Table 1.

### 3.5 Test Methods and Procedures

3.5.1 Composition shall be determined in accordance with ASTM A 751.

3.5.2 Hardness shall be determined in accordance with ASTM E 384.

TABLE 1 – PEENING BALLS

Nominal Size	Minimum Case Depth Inch	Minimum Case Depth Millimeters	Maximum Case Depth Inch	Maximum Case Depth Millimeters	Size Tolerance plus and minus Inch	Size Tolerance plus and minus Millimeter
APB 3/32	0.020	0.51	0.025	0.64	0.008	0.20
APB 1/8	0.025	0.64	0.030	0.76	0.010	0.25
APB 3/16	0.030	0.76	0.035	0.89	0.010	0.25
APB 7/32	0.035	0.89	0.040	1.02	0.010	0.25
APB 1/4	0.045	1.14	0.055	1.40	0.010	0.25
APB 3/8	0.055	1.40	0.065	1.65	0.010	0.25
APB 7/16	0.065	1.65	0.075	1.90	0.010	0.25

## 4. QUALITY ASSURANCE PROVISIONS

See AMS 2431 and the following:

### 4.1 Sampling

Two samples of approximately 800 grams each shall be selected from separate containers chosen at random. Each sample shall be split to the following test quantities.

#### 4.1.1 Composition

Not less than two samples from each shipment.

#### 4.1.2 Hardness

Twenty microhardness readings shall be made from each sample with no more than one impression from any single ball.

4.1.2.1 Samples for hardness testing shall be prepared as for microhardness testing by encapsulating a single layer of balls in a plastic mount and polishing down to nominal half spheres. Case microhardness at 0.002 and 0.003 inch (0.05 and 0.08 mm) depth shall be equivalent to 636 to 739 HV (57 to 62 HRC). Core hardness shall not exceed 383 HV (40 HRC), or equivalent.

#### 4.1.3 Microstructure

The sample population used for hardness testing shall also be used for microstructure evaluation.

4.1.4 Case depth shall be determined visually by measurement on microhardness sample using a 3 to 5% nital etch. Not less than 90% of sample shall meet case depth values of Table 1.

#### 4.1.5 Size

Two representative samples of 30 balls shall be measured with standard micrometer.

4.1.6 Shape shall be determined visually from randomly selected sample of approximately 100 balls.

### 5. PREPARATION FOR DELIVERY

See AMS 2431 and the following:

#### 5.1 Packaging and Identification

Peening balls shall be packaged in 80 pounds (36 kg) boxes.

### 6. ACKNOWLEDGMENT

See AMS 2431.

### 7. REJECTIONS

See AMS 2431.

### 8. NOTES

See AMS 2431.