

**AIBeMet[®] MATERIAL
AMI62 Rolled Sheet**

Effective: March 23, 2012

Rev. A

1.SCOPE

This specification defines the requirements for a grade of Aluminum-Beryllium alloy entitled “AM162 Rolled Sheet”. The alloy contains nominally 62 weight % beryllium and is produced by powder metallurgy processes.

2.CHEMICAL COMPOSITION

2.1. The chemical composition shall conform to the following:

Element	Weight %	
	Maximum	Minimum
Aluminum	-----Balance-----	
Beryllium	64.0	60.0
Oxygen	1.0	0.0
Carbon	0.1	0.0
Other Metallics, each	0.2	0.0

2.2. Beryllium shall be determined by titration, Oxygen by Leco inert gas fusion, Carbon by Leco combustion, other metallics by spectrochemical methods, and aluminum by difference.

2.3. Chemical analysis will be performed on a powder blend basis.

3.DENSITY

3.1. The bulk density of the alloy shall range between two values. The density range for all AM162 is listed below:

MATERIAL	Density in g/cm (lbs/in ³)	
	Minimum	Maximum
AM162	2.071 (0.0748)	2.122 (0.0767)

3.2. Density shall be determined using the water displacement method.

- 3.3. Sheet is not density checked in the rolled condition. Sheet is rolled from extruded block with acceptable density. The density reported for sheet will be from input rolling block. The density of the extruded block will be determined after heat treatment at 24 hours \pm 2 hours at 1100°F \pm 45°F 593°C \pm 25°C).

4.MECHANICAL PROPERTIES

- 4.1. Minimum tensile properties at room temperature, as determined in accordance with ASTM E8 and MAB-205M, shall be:

PROPERTY

Ultimate Strength Ksi(Mpa)	56(386)
Yield Strength Ksia(Mpa)	40(276)
Elongation %	5

- 4.2. Mechanical properties shall be determined for each material lot. Material lots are defined as a combination of extruded bar lot, rolling session and heat treatment. AM162 rolled sheet tensile properties will be determined in both the in-plane transverse and longitudinal directions.
- 4.3. All mechanical testing of rolled sheet material will be done on material subjected to a heat treatment of 24 hours \pm 2 hours at 1100°F \pm 45°F (593°C \pm 25°C).

5.TOLERANCES

- 5.1. Materials furnished under this specification shall conform to the dimensions and dimensional tolerances as established by the purchase order and applicable drawings. If tolerances are not specified by purchase order, the following standard tolerances shall apply employing ANSI 14.5M:

<u>Width and/or Length</u>	<u>Tolerance</u>
Up to 508mm (20"), inclusive	-0+0.125"(-0+3.175mm)
Over 508mm (20")	-0+0.250"(-0+6.350mm)

<u>For Thickness</u>	<u>Tolerance</u>
Incl. 0.020" to 0.025", (0.508mm to 0.635mm) inclusive	\pm 0.003"(0.076mm)
Over 0.025" to 0.034", (0.635mm to 0.864mm) inclusive	\pm 0.004"(0.102mm)
Over 0.034" to 0.056", (0.864mm to 1.422mm) inclusive	\pm 0.005"(0.127mm)
Over 0.056"(1.422mm)	\pm 0.006"0.152mm

Thickness measurements on any sheet 1.0" (25.4mm) or more in width shall not be conducted within 0.250" (6.350mm) from any edge. There shall be no restriction of thickness measurement location for sheet under one inch wide.

BRUSH BERYLLIUM & COMPOSITES

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MATERION BRUSH INC.

www.materion.com/beryllium

5.2. Standard Flatness:

For Thickness	Tolerance
0.100" (25.4mm) Inclusive and over	0.001" per 1"(0.0254mm per 25.4mm) of length
Over 25.4mm (0.100") to 1.27mm (0.050"), Inclusive	0.002" per 1"(0.0508mm per 25.4mm) of length
Under 0.050"(1.27mm)	0.0635mm per 25.4mm (0.0025" per 1") of length

The standard flatness will total no more than the maximum allowable value from the above table. The flatness will be measured by sweeping the sheet with a dial indicator resting on a flat plate unrestrained. For example, a sheet measuring 24" x 36" x 0.100"(610mm x 914mm x 2.54mm) can have a maximum dial indication of 0.036" (0.914mm) anywhere on the sheet. Measurements will not be made 0.250"(6.35mm) from any edge on components smaller than 12" x 12" (30.5cm x 30.5mm) x thickness.

5.3. Corner to corner diagonal dimensions shall differ by no more than 0.125" (3.175mm) per 12" (25.4cm) of length.

6.SURFACE FINISH

6.1. Materials furnished under this specification shall conform to the surface finish established by the purchase order and applicable drawings. If no surface finish is specified, the material shall be furnished with an as-ground surface finish.

7.REPORTS

7.1. Certification of Compliance with this specification will be provided. Other information can be provided, including actual test results and calculations, when specified in the purchase order.

8.MARKING

8.1. Each lot material shipped to the customer will be appropriately identified, tagged, packaged and labeled to include the following:

Materion Brush Inc.

Lot Number

Specification Number

Purchase Order Number

Warning Beryllium

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9.SAFETY / ENVIRONMENTAL

- 9.1. Handling Beryllium Containing Material in solid form poses no special health risk. Like many industrial materials, beryllium-containing materials may pose a health risk if recommended safe handling practices are not followed. Inhalation of airborne beryllium may cause a serious lung disorder in susceptible individuals. The Occupational Safety and Health Administration (OSHA) has set mandatory limits on occupational respiratory exposures. Read and follow the guidance in the Material Safety Data Sheet (MSDS) before working with this material. For additional information on safe handling practices or technical data on Beryllium Containing Material, contact Materion Brush Beryllium & Composites, EH&S Product Steward @ 216-383-4040

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