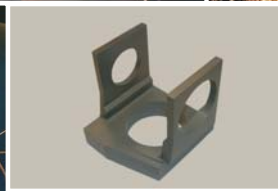


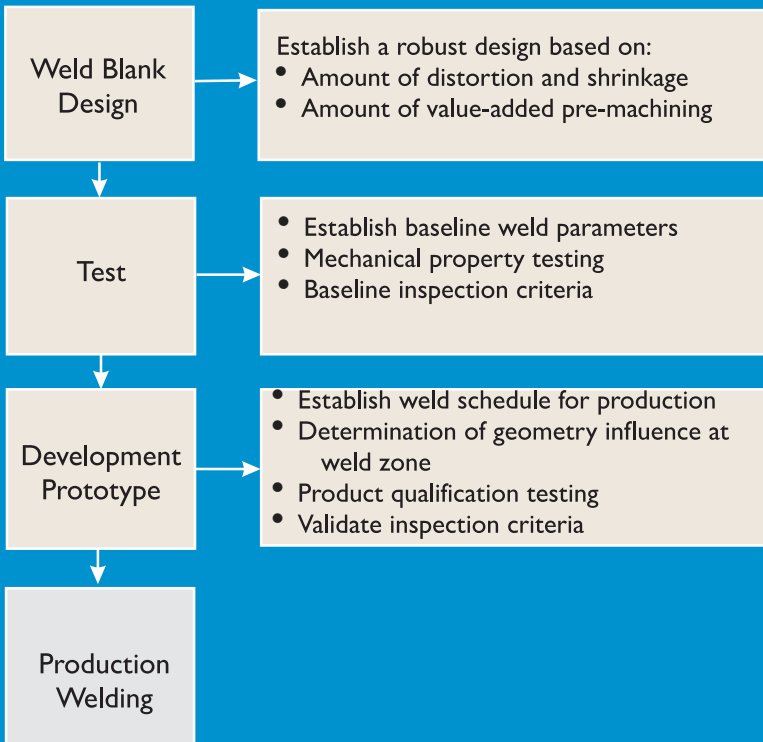


## NET SHAPING TECHNOLOGY THROUGH ELECTRON BEAM WELDING

# AlBeWeld™



### Typical AlBeWeld™ Design Process



### Features:

- Dramatic (up to 80%) reduction in material consumption
- Electron Beam Welding provides superior brazed joints
- Filler materials not required for Electron Beam Welding AMI62H
- Electron-Beam Welded joints maintain AMI62H specification strengths
- Contamination-free processing (Vacuum Process)
- Superior product versatility, repeatability and control
- Allows for pre-machining of internal features prior to welding
- Low tooling costs
- Minimal amount of weld joint shrinkage and distortion
- High structural integrity
- Hermetic weld joints
- Radiographic inspection of weld joints
- Weld certifications of AMS2681
- Delicate full penetration welds down to 0.005"
- Full penetration welds to 0.50"
- Partial penetration and blind welds
- Minimal electron beam welding lead times

MAAB-022

MATERION BERYLLIUM & COMPOSITES  
14710 W Portage River South Road  
Elmore, OH 43416-9502  
P: +1 419.862.4533 or 419.862.4171 or Intl: 419.862.4127  
E: [berylliumandcomposites@materion.com](mailto:berylliumandcomposites@materion.com)

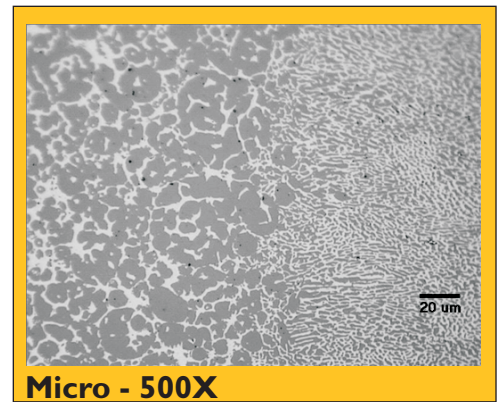
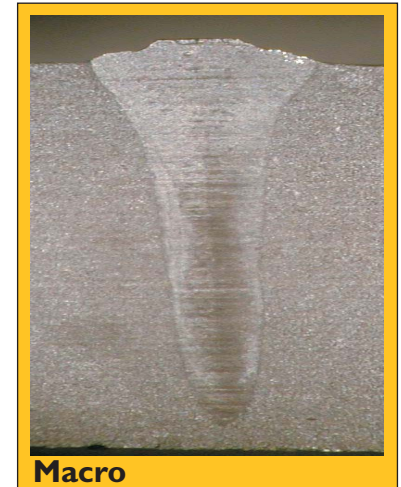
MATERION Brush Inc.  
[www.materion.com/beryllium](http://www.materion.com/beryllium)

© Materion Brush Inc.

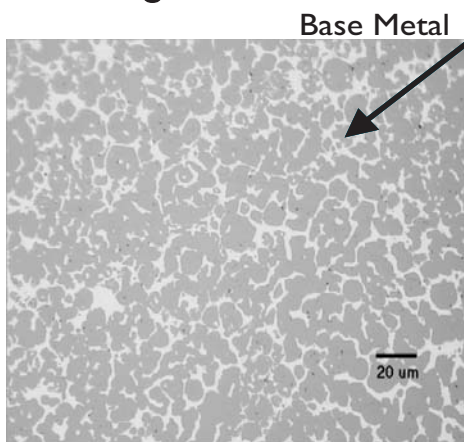
AIBeWeld™ I62 Tensile Data			
	Ultimate Strength (ksi)	Yield Strength (ksi)	Elongation* (%)
<b>0.500" thick weld</b>			
ICD-1	43.8	31.7	4.0
ICD-2	32.6	28.4	2.0
ICD-3	39.2	32.2	2.0
ICD-4	35.0	33.8	2.0
IEF-1	40.7	32.3	4.0
IEF-2	38.0	32.6	3.0
IEF-3	41.9	32.8	4.0
IEF-4	40.4	31.8	2.0
2AB-1	42.6	34.0	4.0
2AB-2	41.4	32.8	4.0
2AB-3	43.0	32.0	5.0
2AB-4	39.3	32.5	5.0
2AB-5	42.3	33.3	5.0
2AB-6	41.9	31.8	4.0
2AB-7	39.1	32.3	3.0
2AB-8	39.3	33.3	3.0
<b>0.350" thick weld</b>			
4AB-1	42.8	32.4	4.0
4AB-2	38.7	33.2	3.0
4AB-3	40.0	31.7	4.0
4AB-4	38.3	32.0	3.0
4CD-1	44.5	34.3	5.0
4CD-2	45.4	32.6	6.0
4CD-3	45.5	32.7	6.0
4CD-4	45.4	32.7	6.0

Note: Elongations of 2% were typified with significant porosity in the fracture surface. These specimens were welded before procedures were developed/ implemented to reduce porosity in the weld.

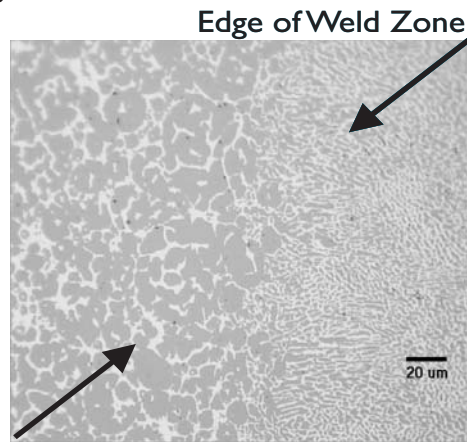
**MAXIMIZE DIMENSIONAL STABILITY**  
**IMPROVE PERFORMANCE**  
**LOSE THE WEIGHT**



### The Progression of a Weld Joint

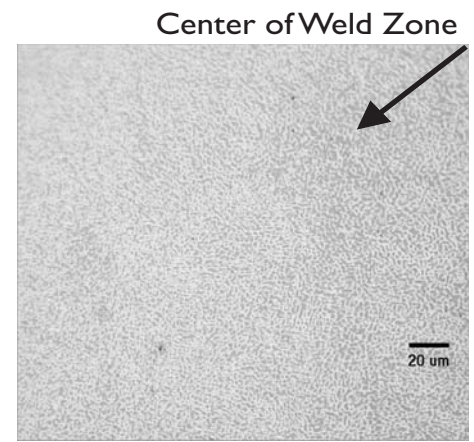


Base metal is typical microstructure of AlBeMet I62



Base Metal

At the edge of the weld zone, Microstructure is coarser than the center and finer than the base metal.



Center of weld zone is the finest micro

MAAB-022-0

Note:

Handling Aluminum-Beryllium Alloys 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 Sheets (MSDS) before working with this material.

For additional information on safe handling practices or technical data on Aluminum Beryllium Alloys, contact Materion.