AlBeWeld™

NET SHAPING TECHNOLOGY THROUGH ELECTRON BEAM WELDING

Features:
- Dramatic (up to 80%) reduction in material consumption
- Electron Beam Welding provides superior brazed joints
- Filler materials not required for Electron Beam Welding AM162H
- Electron-Beam Welded joints maintain AM162H 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

Typical AlBeWeld™ Design Process

Weld Blank Design
- Establish a robust design based on:
  - Amount of distortion and shrinkage
  - Amount of value-added pre-machining

Test
- Establish baseline weld parameters
- Mechanical property testing
- Baseline inspection criteria

Development Prototype
- Establish weld schedule for production
- Determination of geometry influence at weld zone
- Product qualification testing
- Validate inspection criteria

Production Welding

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The Progression of a Weld Joint

Base Metal

Edge of Weld Zone

Center of Weld Zone

Base metal is typical microstructure of AlBeMet 162

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

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.