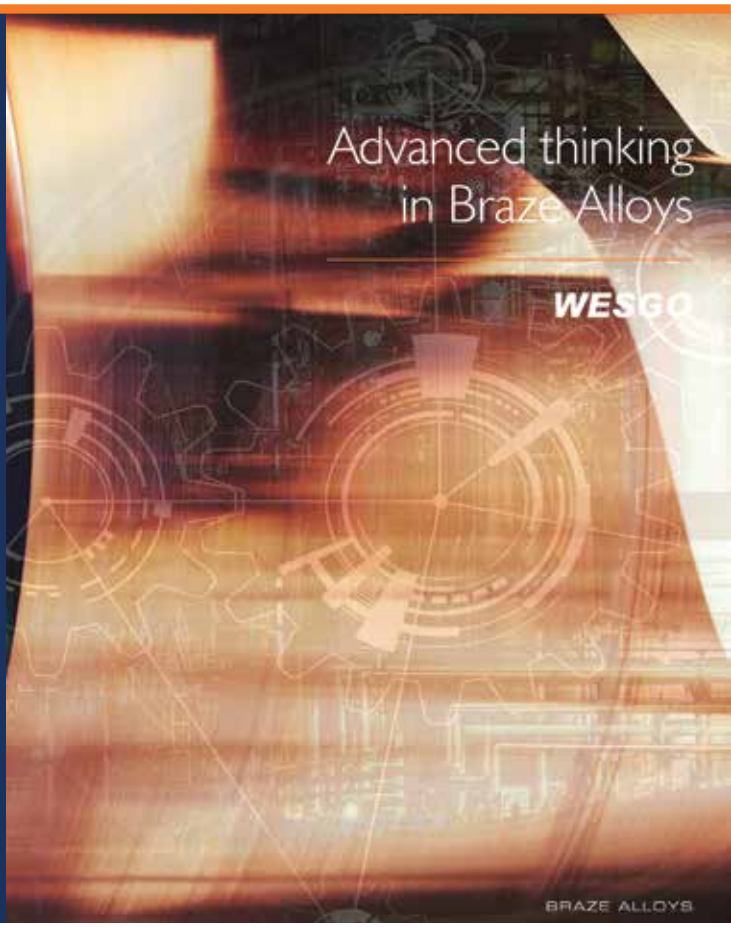
Morgan Advanced Materials – WESGO® Metals and the Science of Silver Brazing Alloys

Morgan Advanced Materials – WESGO® Metals and the Science of Silver Brazing Alloys

In the specialized world of silver brazing alloys, performance is not measured in tonnes shipped or market share captured. It is measured in microns of metallurgical purity, vapor-pressure stability under vacuum, and the long-term integrity of joints that are never meant to fail.

It is within this unforgiving engineering environment that Morgan Advanced Materials, through its WESGO® Metals business, has established itself as one of the world's most trusted names in high-purity silver brazing alloys.

WESGO® Metals does not compete as a volume supplier. Its reputation has been built over decades on vacuum-grade metallurgy, engineered silver joining systems, and unwavering reliability-qualities that are indispensable in industries where joint failure is unacceptable and requalification costs can reach millions of dollars. Where many suppliers compete on throughput, WESGO competes on certainty.



Invisible Bonds, Unforgiving Standards

Silver brazing at WESGO® Metals is treated as a science, not a commodity. Every alloy is designed, produced, and supplied as a critical component of a joining system-one that must perform consistently under extreme thermal, mechanical, electrical, and vacuum conditions.

Vacuum-grade metallurgy is not optional in these environments; it is foundational. By vacuum melting every silver brazing alloy, WESGO dramatically reduces dissolved gases, volatile contaminants, and trace impurities. This metallurgical discipline is essential for applications requiring:

- Hermetic sealing
- Vacuum-compatible assemblies
- Ultra-low outgassing behavior
- Long-life performance in high-voltage and microwave devices

Only a limited number of global producers can consistently meet these requirements. WESGO® Metals operates firmly within this elite tier.

Global Manufacturing Power, Focused Precision

WESGO® Metals' silver brazing alloy manufacturing is centered in Hayward, California (USA)-a facility purpose-built for vacuum melting, controlled alloying, and high-purity forming operations. Unlike conventional brazing alloy plants optimized for speed and scale, this facility is engineered around:

- Process control
- Metallurgical cleanliness
- Absolute batch-to-batch consistency

Supporting this U.S. manufacturing hub is Morgan Advanced Materials' European infrastructure, particularly in the United Kingdom, which enables global program coordination, application engineering

support, and supply-chain resilience for long-cycle aerospace, defense, and vacuum electronics programs.

This focused yet globally connected footprint delivers tangible advantages to customers operating in zero-failure environments:

- Exceptional repeatability across qualified alloy batches
- Predictable and reliable lead times
- Long-term supply continuity for regulated and mission-critical programs

For customers, this is not simply manufacturing capacity-it is manufacturing confidence.

Silver Brazing as an Engineered System

At WESGO® Metals, silver brazing alloys are never treated as consumables. They are engineered joining systems, designed to integrate seamlessly with customer processes, materials, and performance requirements.

The product portfolio is deliberately broad, allowing customers to design-in the brazing alloy early in the development cycle and optimize both performance and cost. Silver brazing alloys are supplied in multiple application-ready forms, including:

- **Foil and shee**t for precise alloy volume control
- Wire and rod for manual or automated feeding
- **Powders and pastes** for complex geometries and fine joints
- **Engineered preforms** (rings, washers, and custom shapes) to reduce scrap and cycle time
- **Pre-Sintered Preforms (PSP™)** delivering near-net density and minimal shrinkage

This flexibility enables improved yields, reduced rework, and greater compatibility with automated production-critical advantages as manufacturers pursue leaner, more resilient supply chains.

Advanced Joining Know-How

A defining differentiator of WESGO® Metals is its depth of joining science expertise. Beyond supplying materials, the organization brings decades of application-level knowledge to complex joining challenges, including:

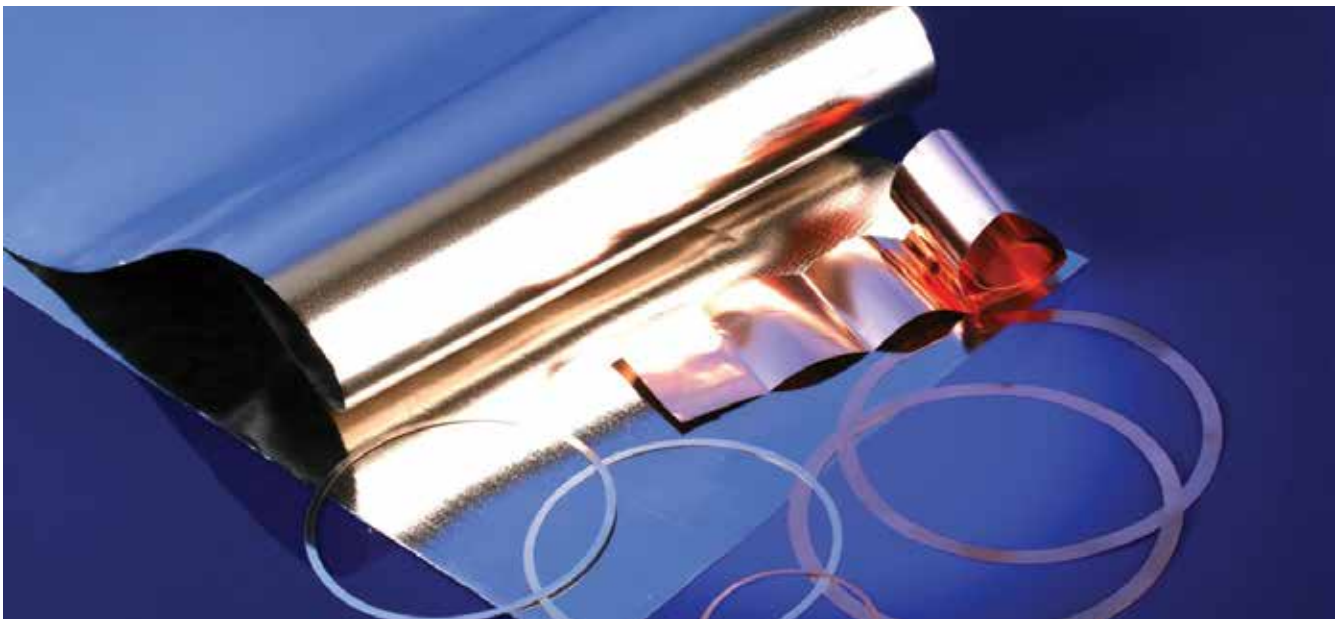
- **Active silver brazing systems** enabling ceramic-to-metal joining without metallization
- **Low-vapor-pressure formulations** optimized for vacuum and controlled atmospheres
- **Process development expertise** focused on wetting behavior, thermal stability, and long-term joint durability

These capabilities are supported by experienced application engineers and metallurgists who work directly with customers from prototype through full-scale production. This collaborative approach positions WESGO not as a material vendor, but as a long-term technical partner.

Quality Systems for Zero-Failure Applications

Silver brazing alloys from WESGO® Metals are produced under aerospace-grade quality systems designed for environments where traceability and change control are non-negotiable. Certifications include:

- AS9100D
- ISO 9001:2015



These systems ensure full material traceability, rigorous documentation discipline, and controlled process change management-critical safeguards for aerospace, defense electronics, medical devices, and other regulated sectors where requalification costs are exceptionally high.

Applications Across High-Consequence Industries
WESGO® Metals' silver brazing alloys serve industries where performance margins are narrow and reliability defines reputation: Aerospace & Defense / Vacuum Electronics & Power Tubes/ Semiconductor & High-Vacuum Equipment / Medical & Specialty Electronics

Silver Economics and Material Stewardship
Silver is both a performance enabler and a cost driver. WESGO® Metals addresses this duality through a total-cost-of-ownership approach rather than a narrow focus on price per kilogram. Key elements include:

- Optimized alloy chemistries balancing silver content with joint performance
- Yield-focused product forms that minimize metal loss
- Application support to help customers migrate to lower-silver alternatives where feasible

The result is cost optimization across the full lifecycle of the joint, an increasingly important distinction in volatile precious-metal markets.

Sustainability, Compliance, and Responsible Manufacturing
Operating within Morgan Advanced Materials' global ESG framework, WESGO® Metals aligns its silver brazing alloy operations with stringent sustainability and compliance standards, including:

- ISO-aligned environmental management practices
- A comprehensive portfolio of cadmium-free silver brazing alloys
- Full compliance with RoHS, REACH, DFARS, and ITAR requirements

By emphasizing silver-thrift formulations, high yields, and long service life, WESGO contributes meaningfully to resource efficiency and circular-economy objectives in high-value manufacturing.

Competitive Differentiation
What ultimately distinguishes WESGO® Metals is not scale, but capability depth:

- Vacuum-melted, vacuum-grade silver brazing alloys
- Advanced ceramic-to-metal joining expertise
- Engineered preforms and PSP™ technologies
- Aerospace-grade quality systems
- Long-term program stability for mission-critical applications

These strengths make WESGO a preferred supplier where failure is unacceptable and trust is built over decades.

FAST FACTS | WESGO® Metals – Silver Brazing Alloys

Focus
High-purity, vacuum-grade silver brazing alloys for critical applications

Manufacturing & Operations

- Hayward, California, USA – Dedicated vacuum-melting and forming facility
- United Kingdom – Global coordination, engineering access, supply-chain support

Certifications

- AS9100D
- ISO 9001:2015

Product Forms

- Foil & Sheet
- Wire & Rod
- Powders & Pastes
- Engineered Preforms
- Pre-Sintered Preforms (PSP™)

Key End-Use Markets

- Aerospace & Defense
- Vacuum Electronics & Power Tubes
- Semiconductor & High-Vacuum Equipment
- Medical & Specialty Electronics

**Disclaimer:* This article includes information sourced from publicly available online materials believed to be reliable, though not independently verified. It is intended solely for general awareness and does not constitute financial, legal, or investment advice. Eventell and the authors assume no responsibility for any decisions or outcomes arising from its use.*