

# NORTH AMERICAN ALLOY CO.

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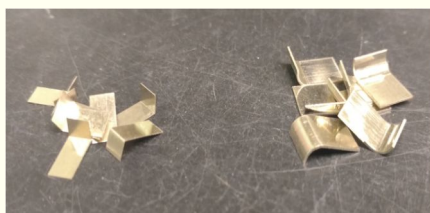
North American Alloy provides a variety of brazing alloys and preforms used in the brazing of tungsten carbide tipped tools and wear parts. We can provide industry standard preform shapes, customer specific preforms, or bulk alloys. Preforms are convenient for reliable and consistent braze alloy application. This is particularly useful in high volume applications. Bulk alloys are more convenient in low volume brazing applications, where hand application is preferred, or when automated feeding is used. Most braze alloys for the brazing of tungsten carbide can be provided in a variety of preform styles or bulk material options. We would be happy to discuss your application and help with alloy or preform selection!

Brazing Products — Carbide Applications



#### Discs, Flat Shims, Washers, & Custom Shapes:

- Discs commonly used for burrs, lathe & grinder centers, drill tips, mining tools
- Flat shims commonly used in cutting tools, mining tools, wear parts, and reamers
- Shims can be provided in industry standard or custom shapes, tooling in stock
- Washers used for various custom applications



#### Saw Shims:

- Commonly used for saw tips, and other milling cutter tool tips
- May be used in some single-point lathe tool applications
- Beneficial when clad alloy is needed on multiple surfaces
- Can be made from Try Ply materials or regular foils



#### Bulk Brazing Alloys:

- Wire: Various diameters and packaging options
- Strip: Various widths and thicknesses
- Paste & Powder: Various binders and packaging options (w/ or w/o flux)
- Rod & Cut Lengths: Various diameters and lengths



#### Johnson Manufacturing Fluxes:

- SS White Flux: Good general purpose low temperature flux
- NF Gray Flux: For induction heating or where local overheating may occur
- NF10 Gray Flux: Similar to NF Flux, but for prolonged heating cycles
- KwikFlux 99: Great for high temp nickel bearing brass and bronze filler alloys
- Flux Remover: Removes flux residue, rust, mill & heat scale

### Common alloys for brazing tungsten carbide-tipped tools (others are available as well)

Alloy	Composition	Solidus / Liquidus	Description
BAG-3	50Ag / 15.5Cu / 15.5Zn / 16Cd / 3Ni	1170°F / 1270°F	Best wetting and flow on carbide materials, but contains Cd
BAG-4	40Ag / 30Cu / 28Zn / 2Ni	1220°F / 1435°F	Slightly more economical alternative to BAG-3 or BAG-24, but at expense of higher brazing temp and sluggish flow
BAG-22	49Ag / 16Cu / 23Zn / 4.5Ni / 7.5Mn	1260°F / 1290°F	Highest impact resistance due to Mn addition, but more sluggish flow and not as easy to wet carbide
BAG-24	50Ag / 20Cu / 28Zn / 2Ni	1220°F / 1305°F	Good wetting and flow on carbide materials, Cd free. Best flowing non-Cd alternative to BAG-3
BAG-26	25Ag / 38Cu / 33Zn / 2Ni / 2Mn	1305°F / 1475°F	Economical filler metal for tungsten carbide, stainless steel, and steel
Alloy 404	40Ag / 30Cu / 25Zn / 5Ni	1220°F / 1580°F	Similar to BAG-4, slightly higher braze temperature, additional Ni adds strength, good gap filling
HT-548	55Cu / 35Zn / 6Ni / 4Mn	1615°F / 1685°F	Tough, moderate strength, low melting improved nickel silver alloy for carbides, common in mining tool applications
RBCuZn-D (CDA773)	48Cu / 41.7Zn / .2P / 10Ni / .1Si	1690°F / 1715°F	High temp, high strength carbide to steel applications, Ag free for lower cost, common in mining tool applications
BAG-4 Tri Ply	Tri Ply materials are copper-cored foils clad with braze alloy on both sides	1220°F / 1435°F	Clad foil with BAG-4 brazing alloy on each side of a copper core; typically in 1:2:1 ratio.
BAG-22 Tri Ply		1260°F / 1290°F	Clad foil with BAG-22 brazing alloy on each side of a copper core; typically in 1:2:1 ratio.
BAG-24 Tri Ply		1220°F / 1305°F	Clad foil with BAG-24 brazing alloy on each side of a copper core; typically in 1:2:1 ratio.
HT-549 (HT-548 Try Ply)		1615°F / 1685°F	Clad foil with HT-548 brazing alloy on each side of a copper core; typically in 1:2:1 ratio.