



A LINCOLN ELECTRIC COMPANY

**CHANGE
IS GOOD**

BLOCKADE[®]

**BRAZING ALLOY
ENGINEERED TO
JOIN COPPER,
BRASS OR BRONZE**





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BLOCKADE[®]

Blockade[®] convenient, fast and cost saving.

Blockade[®] is a proprietary copper-phosphorus-tin-silicon brazing alloy that was designed to provide a low cost alternative to traditional silver bearing alloys for copper and brass applications. This a unique Harris braze alloy was designed to have a narrow melting range at low temperatures between 637°C- 674°C. Operators can expect Blockade[®] to flow rapidly with exceptional capillary penetration to ensure a leak free connection but also the ability to “cap”, or build up, around the finished joint.

Blockade[®] quickly builds and holds a large cap while it fills the capillary at the same time.

Parts of Blockade[®] turn liquid faster than other parts. The more liquid portion fills the capillary right away while the “cap” remains in place, like an ice cream cone when the melted part runs down the cone, yet the ice cream remains thick on top. Once the cap forms around the top of the connection, the braze is complete. The strong smooth cap is a gas-tight, liquid-tight, permanent seal.

Blockade[®] melts like ice cream on a cone.

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Leak-proof, sound joints

The innovative composition of BLOKKADE® provides the user with characteristics which make brazing much more easy: when filling the gap, a clearly visible silver-grey fillet is produced at the same time. Thus, it is immediately apparent that the joint is leak-free.

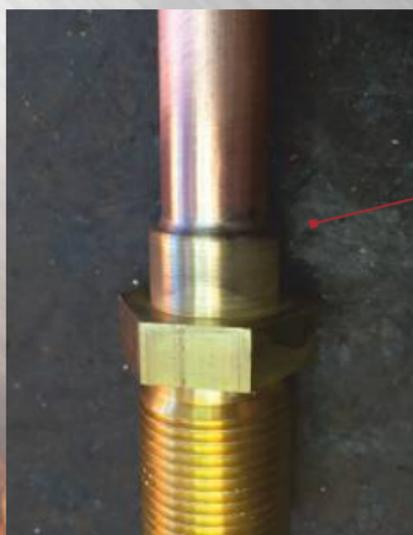
Easy handling

Blockade is an excellent choice for brass brazing. Its low melting point reduces the likelihood of overheating the brass. It is often selected to replace high silver brazing filler metals for these applications. Blockade does not contain silver so significant cost reductions are available.

BLOKKADE® is available in wide range forms and packaging- rods: bare and flux coated, spools, coils, pre-form rings, in metric and imperial sizes according to European and American standards.



COPPER - COPPER



COPPER - BRASS



Cost savings

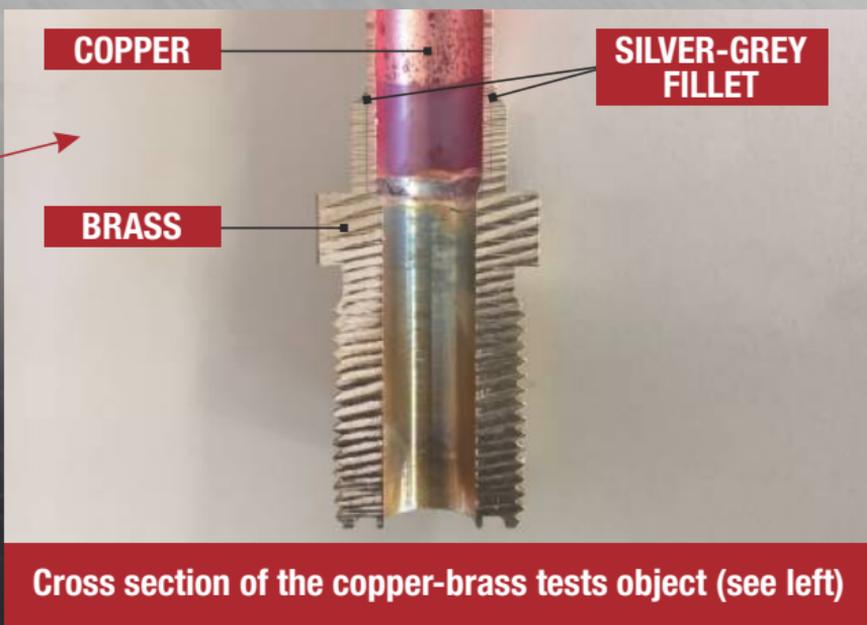
For typical HVAC and Refrigeration applications Blockade[®] shows comparable results from tension/shear strength testing, vibration/fatigue durability testing and corrosion resistance testing as traditional silver bearing alloys, but at a reduced cost because of the elimination of silver.

BLOCKADE[®] can replace silver-bearing copper brazing alloy, such as L-Ag2P and L-Ag5P and silver solders in many different applications.

Proven results

In the USA, where the BLOCKADE[®] is produced by the Harris Products Group, the copper - phosphorus brazing alloy has already well proven its worth in the refrigeration, air conditioning and electrical industry. Now, they are increasingly being used in Europe as well.

Standardized according to DIN EN ISO 17672 : 2010



Cross section of the copper-brass tests object (see left)

Applications

Blockade can be used on many copper and brass HVAC connections including standard copper tubing, return bends, solenoid valves, ball valves, distributors, capillary tubes, manifolds, and schrader valves, but is best used with smaller tubing connections less than 40 mm with a good fit up of between 0,05 mm – 0,12 mm.

Blockade is not recommended for brazing steel or other ferrous alloys. The phosphorus content will form a low ductility intermetallic with the base metal. Phosphorus containing brazing alloys should not be used if the braze is exposed to sulfur or sulfur compounds in service.

Chemical composition (%):

Phosphorus: 6,5

Tin: 6,5

Silicon: 0,02

Copper: Remainder

Physical properties:

Solidus: 637°C

Liquidus: 674°C

Melting range: 637°C - 674°C

Specific weight: 8,0 g / cm³

Fluidity rating: 7*

* scale: 1-10, the higher number the faster alloy flows within the melting range.

Recommended flux:

No flux is required for copper to copper brazing.

For brazing brass or copper to brass use Eco Smart[®] or Stay-Silv[®] white flux.

Specification compliance:

AWS A5.8 BCuP-9,

ASME Section IIC SFA 5.8 BCuP-9,

ISO 17672 CuP 385.





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**Blockade® and any other HARRIS® products
can be purchased from your specialized dealer.
Please contact us: marketingharris@lincolnelectric.eu
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