

Copper Binder Alloys for Matrix PDC Drill Bits



Featuring Copper-based Binder Alloys enhanced with Nickel for Geothermal, Mining, Oil & Gas, Mineral or Water Well drilling and for horizontal applications. Our Copper Binder is an integral part of bits that are cast into a bit body with tungsten carbide matrix powder.

Matrix PDC bits are produced from composite materials made up of tungsten carbide powders and copper binder alloys that are metallurgically bonded with an infiltration process.

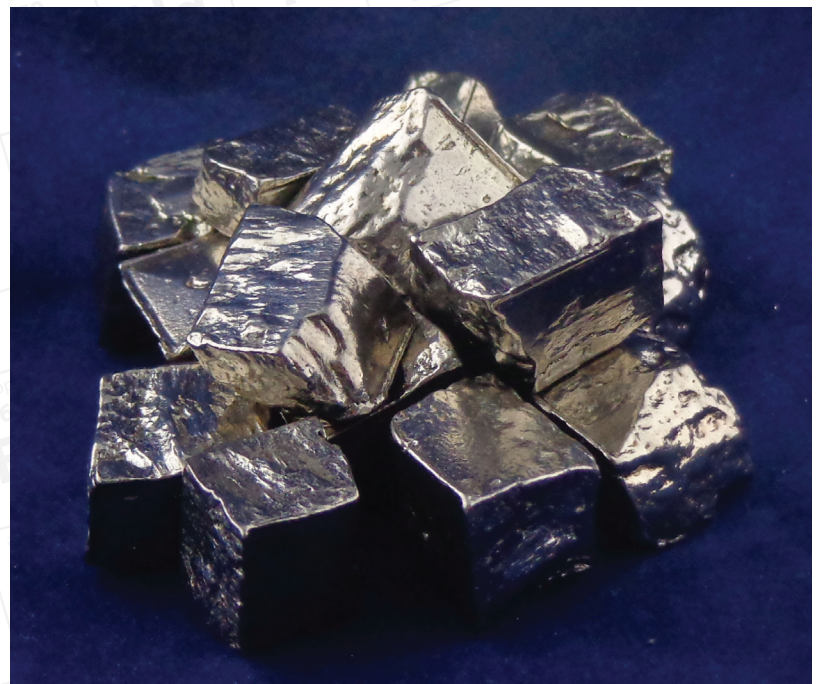
A Matrix Bit is designed to maximize hardness, resistance to abrasion and erosion. It is capable of withstanding relatively high compressive loads, but, compared with steel, has low resistance to impact loads. It performs well in higher speed applications.

Belmont Metals Inc. is the oldest and largest manufacturer of specifically engineered Matrix Binder alloys for worldwide production of down hole Drill Bits for Oil & Gas Drilling and the Mineral industries for horizontal drilling.

For over four decades, Belmont has been instrumental in bringing a, broad range of high performance Copper Binder alloys to the oil and gas industry, where applications blend tungsten carbide powders and impregnated diamonds for use in Matrix Bore Drilling bits, PDC (Polycrystalline Diamond Compacts) drill bits, core bits and a variety of other wear resistant applications.

Our most popular Belmont Binder alloy (4537D) is suitable as a standard infiltrant for Matrix (PDC) drill bits and, as described as MF53 or 53MB in numerous

US Patents, has a nominal composition, made up of Copper, Manganese, Nickel, & Zinc. This alloy is the earliest of designs that Belmont has produced for the Drilling Industry. It is still extensively used as a matrix binder for hard composites and continues to perform satisfactorily.



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www.belmontmetals.com

 **Belmont**
METALS INC.
The Non Ferrous Specialists since 1896

We also supply binders containing Tin, when Zinc is not workable in the factory.

The second most popular Binder is our 4785E alloy. For companies that cannot work with Zinc, we recommend this alloy, which has very similar properties when a spiral test is used for infiltration comparison. The Drilling and Mining Industries are constantly working to further the performance of their Bits with new raw materials available. It becomes an economic asset when a company can improve and refine their hard composite drill bits used in an oil well or natural gas or mineral deposit.

We can work with your Scientists, Metallurgists, Engineers and R&D team when developing samples of new formulas if we are provided the (non-proprietary) chemistries.

By supplying your team with R&D quantities (< 15 lb.) to test new formulas for improved performance, they can quickly and economically determine if the new properties increase impact strength, hardness, transverse rupture strength, erosion resistance and /or abrasion resistance. We have offered this service to many of the top bit manufacturers around the world, helping them to design new products for demanding applications.



Featured Product Specifications

Our Best Selling Binder Alloys
Please contact our technical staff for your particular needs.

Product Name	Product Code	Form	Nominal Composition
Virgin Grade Binder Alloy	4537D	1/2" Polished Cubes	Proprietary Formula with Copper, Nickel, Zinc
Virgin Grade Binder Alloy	4785E	1/2" Polished Cubes	Proprietary Formula with Copper, Nickel, Tin