

TUNGSTEN KU-1000 POWDER ALLOY

Number PD-7052
Issue 0-10-27-2015

KU-1000 Tungsten Powder Alloy

Description of Product

Tungsten-based alloyed materials are outstanding due to their high density and exceptional mechanical properties characterized by ductility and hardness and whose high density is equaled only by gold, platinum, and a few other rare and expensive metals.

H.C. Starck's Alloy KU-1000 is a hard metal matrix composition suitable for hot pressing in combination with non-metallic abrasive grains, such as synthetic diamonds and/or cemented carbides, having extensive adaptations in the mining and oil-well industries, and is a new and improved matrix alloy for rotary type rock-drilling bits.

Range of Applications

Oil & Gas Exploration
Mining
Quarrying

Chemical Composition

The material, consisting of tungsten-carbide, cobalt, nickel and other alloying ingredients, provides a composition that is hard, tough, abrasion-resistant and easy to form. Its coefficient of thermal expansion is closely matched to that of steel, and it is easily bonded to itself or to any suitable shank material commonly used to attach the impregnated unit to a power-driven shaft.

Chemical properties can be supplied on request when Purchase Order is placed.

Product Benefits

The use of KU-1000 eliminates many of the difficulties encountered in previous methods such as:

1. voids caused by incomplete infiltration
2. lack of uniformity of hardness and toughness
3. difficulty in bonding the crown to the steel shank
4. rapid wear of matrix caused by break away of carbide inserts
5. cracking of matrix material
6. break away of crown from shank caused by large differences in expansion coefficients

Standards

Exceeds requirements of the following specifications: MIL-T-21014, ASTM B777 and AMS 7725
Mechanical Properties

Kulite® is the trademark used for the Tungsten KU-1000 Powder Alloy manufactured in the U.S.A.

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Physical Properties

Characteristic	Properties	
Density	Theoretical	12.0
Density	Actual	11.7-11.8 g/cc
Hardness RA	77-82	
Thermal Coefficient of Expansion	9-10x10 ⁻⁶ /°C	
Recommended Molding Pressure	Cold	750-1500 psi
Recommended Molding Pressure	Hot	2500-3000 psi
Recommended Molding Temperature	1150-1200°C max	

Mechanical Properties Can be supplied on request when Purchase Order is placed.

Hazards identification in Advertising (REGULATION (EC) No 1272/2008 Article 48)
 None

Delivery Form Tungsten KU-1000 alloy products can be delivered as powder for further processing by the customer. This lead-free product meets legal requirements and recommendations to protect the environment.

Identification The material will be identified with appropriate specification number, lot number, and nominal size. Shipping containers will be marked with the name of the customer and the purchase order number.

Rejection H.C. Starck must receive written notification of rejected material with the reason for rejection. The right is reserved to inspect rejected material at customer plant for claim validation. The material may be returned only after proper authorization.

H.C. Starck Inc.
 45 Industrial Place
 Newton, MA 02461-1951 / USA
 Phone +1 (617) 630-5800, Fax +1 (617) 630-5879

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