

**High Performance Metal Solutions** 

## High Performance Solutions with Tungsten KU-1000 Powder Alloy



**High Performance Metal Solutions** 

## Hard, Tough, and Abrasion-resistant KU-1000 Powder

H.C. Starck's tungsten KU-1000 powder alloy is a hard metal matrix composition suitable for hot pressing in combination with non-metallic abrasive grains. It is a new and improved matrix alloy for rotary type rock-drilling bits.

- > Oil & Gas Exploration
- > Mining
- > Cemented carbides
- > Synthetic diamonds
- > Quarry

KU-1000 tungsten powder composed of tungsten-carbide, cobalt, nickel and other alloying powders 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. H.C. Starck's tungsten KU-1000 alloy eliminates many of the difficulties encountered in previous coating methods:

- > voids caused by incomplete infiltration
- > lack of uniformity of hardness and toughness
- > difficulty in bonding the crown to the steel shank
- > rapid wear of matrix caused by break away of carbide inserts
- > cracking of matrix material
- > break away of crown from shank caused by large differences in expansion coefficients

## **Physical Properties of Tungsten KU-1000 Powder**

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

*Kulite*<sup>®</sup> is the trademark used for the Tungsten KU-1000 Powder Alloy manufactured in the U.S.A.

Front page: Picture of drill bit courtesy of Halliburton.

The conditions of your use and application of our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis at least must include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by H.C. Starck Solutions. All information is given without warranty or guarantee. It is expressly understood and agreed that the customer assumes and hereby expressly releases H.C. Starck Solutions. This application, contract or otherwise, incurred in connection with the use of our products, technical assistance and information. Any statement or recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent. Properties of the product referred to herein shall ageneral rule not be classed as information on the properties of the item for sale. In case of order please refer to issue number of the respective product data sheet. All deliveries are based on the latest issue of the product data sheet and the latest version of our General Conditions of Sale and Delivery.

The values in this publication are typical values and do not constitute a specification.

H.C. Starck Inc. 21801 Tungsten Road Euclid, OH 44117-1117 USA T +1 216 692 3990 F +1 216 692 0029 info@hcstarcksolutions.com www.hcstarcksolutions.com