

Tantalum, Niobium, Molybdenum, and Tungsten





95.94

92.9064

180.9479

Empowering High Tech Materials

183.85

H.C. Starck

Introduction to H.C. Starck





Empowering High Tech Materials

At a Glance: The Company

Founded in : 1920 by Hermann C. Starck

- Corporate Headquaters: Goslar, Germany
- Sales 2005: 920 Mio. EURO
- More than 3,400 employees worldwide
- 14 sites, representations in more than 30 countries
- Divided into 5 units: 4 units make powders of various types, the fifth is Fabricated Products
 - Headquarters of Fabricated Products is in Newton, Ma.







Core Competencies of H.C.Starck



Facilities (Pertinent to High-RRR Niobium)

Goslar

Liquid-liquid separation of Ta and Nb (niobium oxide with <10 ppm tantalum)

Newton, MA

EB Melting, Forging, Rolling, Vacuum Annealing

Carlstadt, NJ

Machining

Coldwater, MI

Extrusion, GFM Forging

Hermsdorf, Germany

EB Melting

A $\left(\begin{array}{c} B \\ B \\ R \end{array} \right)$ Bayer Material Science Company



Electron Beam Melting



Melting Furnaces in Newton





+ NEW EB FURNACE, NOW BEING SPECIFIED, EXPECTEDTO BE RUNNING 2009





2000 Ton Press Forge









Cold Rolling Mills in Newton

















Chemical Cleaning







Vacuum Annealing Furnace







Vacuum Annealing Furnace







Water-Jet Cutting







Round Processing in Coldwater













Research and Development at H.C. Starck

- Goslar: Concentrates on chemical processing and powder products
- Newton: Concentrates on Fabricated Products





R&D: Thermal Processing Equipment



High Temperature (1800°C) Vacuum Furnace





Arc Melting Furnace





R&D: Processing Lab





Hot Isostatic Press 207 MPa, 2000°C

Two-high Rolling Mill Ø 25 cm x 25 cm



A (BAYER) Bayer MaterialScience Company

R&D: SEM Facilities





EBSD SEM







R&D: Developmental Machining Center

Located in Carlstadt plant











Finite Element Modeling: Strain Levels







Finite Element Modeling: Fabrication







Tantalum Sputtering Targets for SC Industry

Improved Sputtering Performance





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