H.C. Starck
TUNGSTEN POWDERS
A Group Company of MITSUBISHI MATERIALS

starck2print® Metals – innovative Tungsten Powders for Additive Manufacturing



Tungsten Metal Powders in Additive Manufacturing

H.C. Starck Tungsten Powders offers outstanding product and service quality as well as the innovative force and ability to collaborate in depth with its customers.

Advanced powders for innovative industries

Based on more than 100 years of experience in manufacturing and development of tungsten powders, H.C. Starck Tungsten Powders has an unchallenged knowledge when it comes to the refractory metal tungsten. This profound experience helps you to realize new market opportunities. While additive manufacturing (AM) has already unlocked new possibilities and changed the understanding of manufacturing, our **starck2print®** tungsten powders achieving outstanding material properties and optimum performance for AM.

starck2print® tungsten powders are designed to meet the demanding requirements of additive manufacturing processes.

They combine:

- High purity
- Good flowability
- Optimized particle size distribution
- Reliable powder handling
- Cost advantages

New:

starck2print® advanced tungsten powders further expands the **starck2print®** portfolio with mechanically spheroidized material developed for even more robust powder processing at more attractive cost levels. The material features:

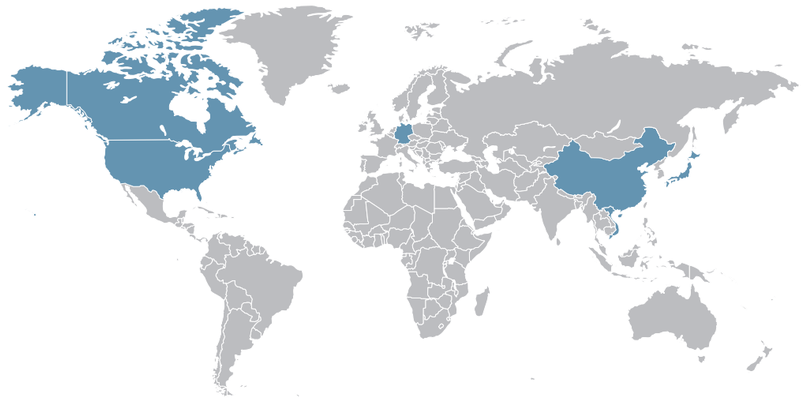
- Narrower particle size distribution
- Lower impurities and oxygen content
- Improved flowability and bulk density
- Greater process stability and reproducibility

Fit for purpose

While it is often important for metals in 3D printing to be spherical, tungsten is different than most other metals, meaning it is naturally spherical when manufacturing processes are properly controlled. The reason for this is the special way tungsten is produced and the particular chemistry of this fascinating element. Tungsten undergoes chemical vapor transport during the hydrogen reduction of its oxides forming almost round crystals.

This enables us to offer powders with superior flowability and bulk densities fitting the needs of laser-based additive manufacturing processes without using expensive spheroidization techniques. We have partnered up with the well-known Fraunhofer ILT from Aachen, Germany, and proved that **starck2print®** tungsten powders delivers the same performance as spheroidized materials. Contact us to begin the development journey.

Global Presence



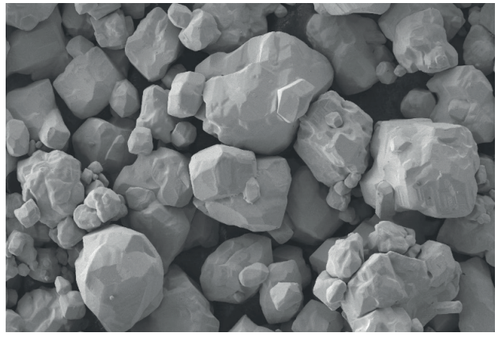
With production sites and technical support centers in Europe, North America, and Asia, H.C. Starck Tungsten Powders is your reliable partner for tungsten-based additive manufacturing powders worldwide.

Customer-Driven Application Engineering and Product Development

Customer-oriented application engineering services and research are the key drivers of our business. H.C. Starck Tungsten Powders' engineers can be involved in every stage of a project, from initial grade selection, process and quality optimization, to the development of new powders or products.

We always strive to collaborate closely with customers to develop and offer truly tailor-made powders and services. Our devoted Technology & Innovation team constantly works on the development and improvement of our tungsten materials, products and processes.

From Angular to Spherical: the Advanced Powder Difference



starck2print® powders – Established AM grade with high purity and good flowability

Scanning electron microscopy (SEM) shows the difference at particle level. Mechanical spheroidization gives **starck2print®** advanced powders a rounded, more uniform particle shape. This is the basis for more robust powder processing in additive manufacturing – at attractive cost levels.

starck2print® advanced powder W35T – Qualified for Laser Powder Bed Fusion



starck2print ® advanced powder W75T – Qualified for Electron Beam Melting



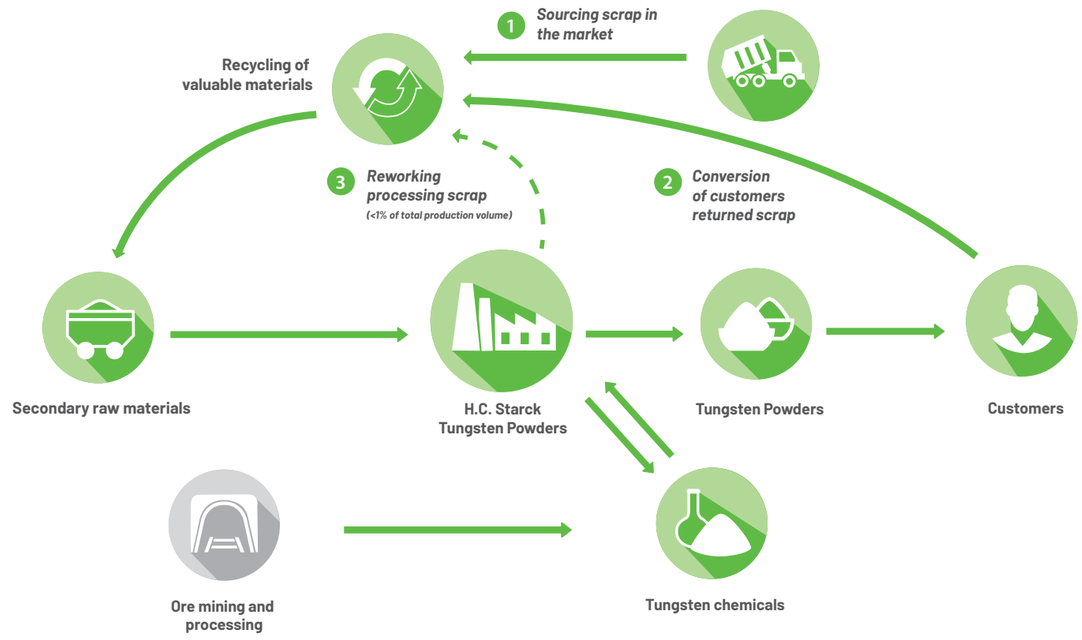
starck2print® advanced powders extend the portfolio for customers who want maximum process stability in additive manufacturing.
Interested in testing **starck2print®** advanced powders? Talk to our application engineers: contact@hcstarck.com

Recycling - a Plus for Partners and the Environment

H.C. Starck Tungsten is a world leader in the recycling of materials containing tungsten. Thanks to decades of experience, we are able to extract pure tungsten from almost all forms of tungsten scrap. This includes for instance worn out inserts, drills, wear parts, alloys, catalysts and production & processing residues. The quality of the reclaimed raw material is absolutely identical to that of the primary material, and in some cases even better. What's more, recycling enables us to reduce CO_2 emissions and guarantee our customers security of supply.

Because competition for raw materials is fierce, the technically demanding recycling at H.C. Starck Tungsten has become increasingly important as an indispensable strategic element of a stable raw material supply. It makes us independent of raw material availability, which benefits our customers as well. In this way, ecological and economic advantages are combined.

Meet our Closed Loop Principle



www.hcstarck.com

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