

VBN Components Launches Vibenite® 500 - 3D-Printed Pure Tungsten

Uppsala, Sweden – VBN Components announces the launch of Vibenite® 500, a new additively manufactured pure tungsten material. The material has been developed over the past year with financial support from the Swedish Energy Agency and represents a significant step forward in the additive manufacturing of refractory metals.

Vibenite® 500 is intended for demanding applications such as radiation shielding and high-temperature protection, where tungsten's unique combination of density and heat resistance is highly valued. Tungsten is also of interest for defense related applications.

Manufacturing tungsten components using conventional methods is notoriously difficult. Due to the material's brittleness at room temperature, production often requires elevated temperatures and complex processing routes. These challenges limit both manufacturability and design flexibility.

With Vibenite® 500, designers and engineers gain access to new possibilities. Additive manufacturing enables complex geometries that are difficult or impossible to produce using traditional techniques. Components such as shielding structures, crucibles, and other functionally optimized parts can now be produced directly from digital designs.



Crucible (125 × 85 × 70 mm) produced in 3D-printed Vibenite® 500, pure tungsten.

The material is manufactured using Electron Beam Powder Bed Fusion (PBF-EB/M) technology. Development has built on VBN Components' extensive experience in additive manufacturing of advanced materials, including the company's wear-resistant grades Vibenite® 290 (the world's hardest steel) and the cemented carbide grade Vibenite® 480.

The process delivers near-full density parts exceeding 99.7% density, while achieving a hardness of approximately 400 HV2.

In gamma radiation tests, the Vibenite® 500 exhibited 15% higher shielding factor than the reference tungsten alloy (B777 Grade 3). The improvement is achieved by the higher W content and different microstructure in the Vibenite® 500 than in the traditional sintered grade.

"For many years, our customers have asked whether we could also manufacture pure tungsten using additive manufacturing. So, after 15 months of development work, we are pleased to answer that question with a clear yes", says Dr. Ulrik Beste, CTO of VBN Components.

"Tungsten is an extreme material in many respects, and we are proud to demonstrate the ability to produce both thin- and thick-walled components, as well as relatively large parts. We have started delivery of parts to customers, and this is an important milestone for VBN Components. A heavy and heat-resistant milestone", Ulrik continues.

For further information please contact:

Beatrice Woolford
Customer Service, VBN Components AB
Cell phone: +46(0)72 23 60 165
Email: beatrice.woolford@vbncomponents.com
Switchboard: +46 (0)76 007 79 42
Website: www.vbncomponents.com

About VBN Components AB

VBN Components AB is a Swedish materials development company, focused on high performance metals for Additive Manufacturing. The material brand name Vibenite® stands for extreme wear resistance, heat resistance and complex shapes. The company sells additively manufactured components in near-net-shape, as well as serial production and license solutions.

The company has won numerous innovation awards, for example the SKAPA Award in memory of Alfred Nobel 2013. VBN is an alumnus from Uppsala Innovation Centre, ranked as the world's 5th best business incubator according to UBI Global. In 2017 VBN launched the world's hardest steel Vibenite® 290 and in 2018 the world's first 3D printed cemented carbide Vibenite® 480. In 2023, the company 3D-printed a memorial plaquet to honor the Swedish King Carl XVI Gustaf, which now could be seen in Uppsala next to Dag Hammarskjölds' bust and the Uppsala Castle. In 2025, the tough hot working tool steel Vibenite® 130 was presented.

Vibenite® is a registered trademark of VBN Components AB.