

Optrium® high-temperature superconductor tape for commercial applications



Superconductors offer much greater efficiency in generating and transporting electricity. They enable highly compact new cable applications, bus connections, fault current limiters and magnets. Lightweight systems for generators also become possible with high-temperature superconductors (HTS) based on yttrium-barium-copper oxide, which provides a cost-effective solution to electricity generation and distribution.

Deutsche Nanoschicht GmbH, since 2013 a wholly owned subsidiary of BASF New Business GmbH, operates a pilot production facility to accompany customers during system development and market introduction. BASF is ready to increase capacity step by step to support the market growth for superconducting equipment to meet customer requests for larger quantities.

Deutsche Nanoschicht has developed a proprietary chemical coating process for Optrium® with the best price-performance ratio for large volume production:

- ❖ High throughput
- ❖ Low investment
- ❖ Easy upscaling
- ❖ Low energy consumption
- ❖ Low raw material cost

Optrium® HTS tape applications

	AC applications	DC applications
Applications	Cable	Bus bar, magnets, coils
Superconductivity	Critical current 275 A/cm ^w @ 77K, sf*	Critical current 300 A/cm ^w @ 77K, sf* On request: N-value, I _c (T, B), homogeneity
Substrate	Non-ferromagnetic NiW alloy	Ferromagnetic NiW alloy
Architecture	Lamination: brass, copper, stainless steel	Lamination: brass, copper, steel Optional surround copper electroplating
Dimensions	Width: 4.5 mm Height: depends on lamination	Width: 4, 10, 12 mm Height: depends on lamination
Mechanical properties**	Critical tensile stress of 250 MPa and bending radius of 30 mm	Critical tensile stress of 250 MPa and bending radius of 30 mm
Unit length and joints	Unit length depends on customer request Number of joints per unit length on request	Unit length depends on customer request Number of joints per unit length on request

* I_c under specific magnetic field and temperature on request

** Final mechanical properties depend highly on stabilizer, lamination and architecture

Want to know more? Please contact us:

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Published by BASF New Business GmbH, Benckiserplatz 1, 67059 Ludwigshafen, Germany

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