

Neutron Detection Materials



Boron Products, LLC is the largest boron isotope separation facility in the world and the leading global supplier of enriched boron materials.

A high thermal neutron absorption cross-section and excellent gamma discrimination makes Boron-10 ideal for application in neutron detecting technologies. Boron Products, LLC offers a range of ^{10}B enriched materials for your neutron detection needs.

- ^{10}B Enriched Metal
- ^{10}B Enriched Boron Carbide ($^{10}\text{B}_4\text{C}$)
- ^{10}B Enriched Boron Trifluoride ($^{10}\text{BF}_3$)
- Boride Ceramics/Metal Borides



Boron Products, LLC is the largest commercially viable enriched boron processor in the world. Established in the early 1970s under EaglePicher and in 2007 acquired by Ceradyne, Inc., Boron Products, LLC supplies ^{10}B and ^{11}B materials for use in the nuclear, semiconductor and advanced material industries.

Located in Quapaw, Oklahoma, Boron Products, LLC emphasizes safety, innovation and quality in manufacturing. We will engineer our products to fit your unique and specific applications.

Enriched Boron Metal ^{10}B

Crystalline ^{10}B is produced at Boron Products, LLC using a proprietary process. Our technology allows us to deliver the highest chemical purity boron and customized $^{10}\text{B}/^{11}\text{B}$ isotope ratios to meet your critical needs.

Typical Product Profile:

| | | |
|-----------------------|-----------------------------|---------|
| Enrichment | to 99 atom% ^{10}B | |
| Density | 2.17 g/cm ³ | |
| Si <400ppm | Fe | <10 ppm |
| Mg 4 ppm | Ca | <10 ppm |
| Cu 1 ppm | Na | <10 ppm |
| Ni 2 ppm | Ta | <10 ppm |
| Al <5 ppm | Ti | <10 ppm |
| Cr 2 ppm | | |
| Thermal Cross Section | 3837 barns | |

Enriched Boron Carbide $^{10}\text{B}_4\text{C}$

Boron Products, LLC has a refined process for ^{10}B enriched boron carbide ($^{10}\text{B}_4\text{C}$) allowing us the flexibility to meet your individual needs for chemistry, particle size, and enrichment.

Typical Product Profile:

| | | |
|-------------|-----------------------------|--|
| Enrichment | to 99 atom% ^{10}B | |
| Boron | 74-77 wt % | |
| Boron Oxide | <0.30 wt % | |
| Fe | <0.10 wt % | |
| Si | <0.10 wt % | |
| Cl+F | <100 ppm | |
| Ca | <50 ppm | |
| Mn | <100 ppm | |
| Na | <100 ppm | |

Enriched Boron Trifluoride $^{10}\text{BF}_3$

Boron Products, LLC is the premier source for enriched ^{10}B boron trifluoride ($^{10}\text{BF}_3$). Our proven expertise in the area of boron enrichment make us the natural choice for your $^{10}\text{BF}_3$ needs.

Typical Product Profile:

| | |
|------------|---------------------------|
| Enrichment | >99 atom% ^{10}B |
| Purity | >99.9 % |
| M.W. | 67.0 g/mol |
| b.p. | -100 oC |
| m.p. | -127 oC |

Packaged in carbon-steel cylinders up to 49 L (20 kg $^{10}\text{BF}_3$). Cylinders and packaging conform with current DOT 10CFR49 regulations.



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Ceradyne Advanced Technical Ceramics

Ceradyne, Inc. (NASDAQ:CRDN) is a publicly traded corporation specializing in development and vertically integrated production of advanced ceramic materials at facilities based in North America, Europe and Asia. Ceradyne's advanced ceramics are sought for the most demanding applications in automotive, industrial wear, medical, electronic, neutron absorption and defense industries.

