

## SAFE DELIVERY PACKAGE FOR BORON TRIFLUORIDE GAS SOURCE



The VAC BF<sub>3</sub> sources provide significantly improved safety over traditional high pressure sources by dispensing gas at only sub-atmospheric pressure. VAC sources utilize Swagelok's innovative HF series set pressure regulator (SPR) which is internally mounted to control cylinder output pressure to sub-atmospheric levels, virtually eliminates the possibility of experiencing a hazardous or toxic gas leak.

A significant benefit achieved with the VAC package is extended cylinder lifetime which reduces the risks associated with cylinder changeouts. Designed to operate on existing high pressure gas sticks, no special low pressure flow controllers are required. Sealing integrity at the cylinder connection is maintained with a UHIS (Ultra high integrity service) metal gasket fitting.

### APPLICATIONS

- Ion implantation "P" type dopant
- Isotopically enriched BF<sub>3</sub> source

### ADVANTAGES

- Sub-atmospheric delivery
- Minimized release potential
- Easily adapted for use on high pressure gas sticks
- Large deliverable
- Long cylinder lifetime

### PHYSICAL PROPERTIES

Chemical Formula	BF <sub>3</sub>
Molecular Weight	67.81
Flammability Limits	none
Specific Gravity	2.37 @ 21°C (air = 1)
Specific Volume	6.25cf/lb (0.37M <sup>3</sup> /kg)

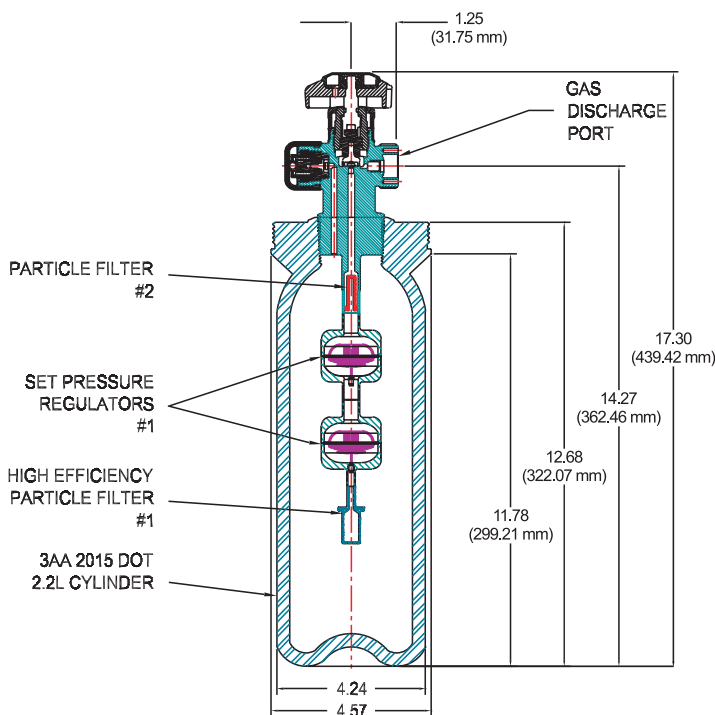
### Toxicity

TLV/PEL	1 ppm
LC 50	387 ppm
IDLH	100 ppm
Corrosivity	High
Odor	Pungent



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TRI-GAS**

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### PERFORMANCE SPECIFICATIONS

Cylinder Delivery Pressure	500 Torr
Cylinder Storage Pressure	1250 psig
Cylinder Valve	Tied Diaphragm 316L Stainless Steel
Outlet Connection	UHS SA-B (pin indexed)
Shelf Life	3 years

### PURITY ANALYSIS

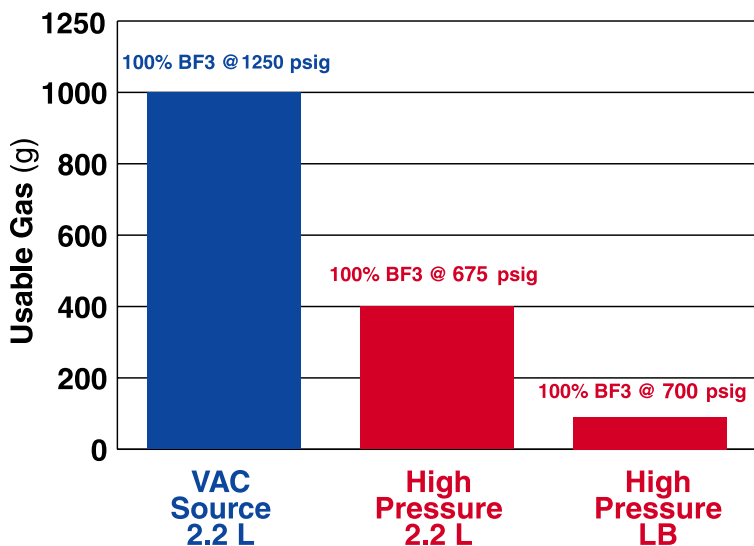
<b>Isotopically Enriched</b>	≥ 99.7 Boron <sup>11</sup>
Boron Trifluoride (BF <sub>3</sub> )	≥ 99.9% min.

<b>CONTAMINANT</b>	<b>Specifications</b>
Argon (Ar)	≤ 25 ppm
Carbon Dioxide (CO <sub>2</sub> )	≤ 25 ppm
Hydrogen Fluoride (HF)	≤ 25 ppm
Nitrogen (N <sub>2</sub> )	≤ 25 ppm
Oxygen (O <sub>2</sub> )	≤ 25 ppm
Sulfur Dioxide (SO <sub>2</sub> )	≤ 25 ppm

### HANDLING

D.O.T. Description	Boron Trifluoride
Hazard Class	2.3, UN1008 Poison– Inhalation Hazard, Zone B
D.O.T. Shipping Labels	Poison Gas
D.O.T. Guide Number	15
CAS Number	7637-07-2

Cylinder Size	Cylinder Dimensions	Deliverable Capacity	Shipping Weight
2.2 L	4" D x 17.3" H	1000g (357 L)	11.5 kg (25 lbs)



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