

> VAC[®] BF₃ Natural Abundance

Safe Delivery Package for Boron Trifluoride Gas Source



Overview

The VAC[®] BF₃ 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 eliminating the possibility of hazardous or toxic gas leaks.

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



Applications

Ion implantation "P" type dopant
Naturally abundant BF₃ 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 ₃
Molecular Weight	67.81
Flammability Limits	None
Relative Gas Density	2.341 @ 21°C, 1 Atm (air = 1)
Specific Volume	6.25cf/lb (0.37M ³ /kg)
Toxicity	
TLV/PEL	1 ppm
LC 50	387 ppm
IDLH	25 ppm
Corrosivity	High
Odor	Pungent

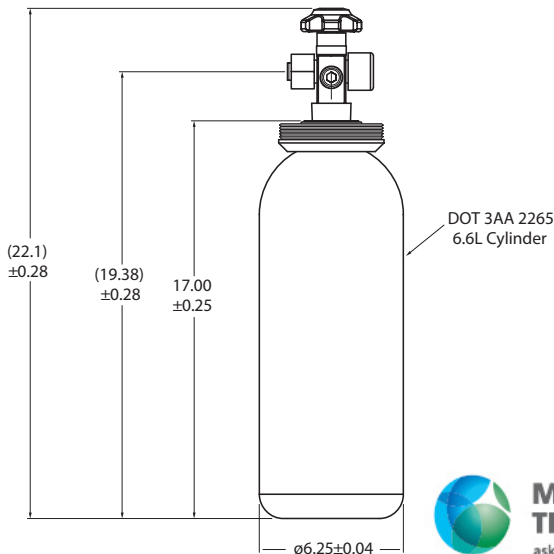
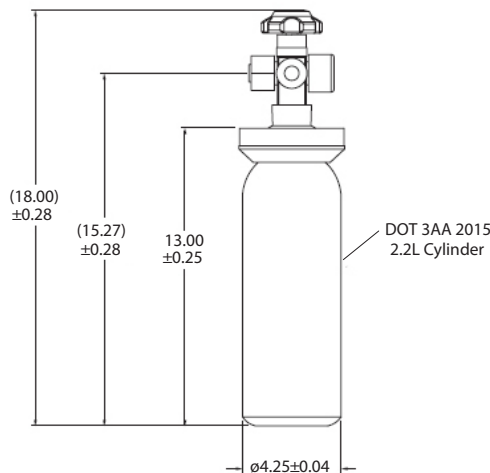


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Cylinder Size	Cylinder Dimensions	Deliverable Capacity	Storage Pressure	Shipping Weight
2.2 L	4.25" D x 18"H	1000 g (390 L)	1250 psig	11.5 kg (25 lbs)
2.2 L	4.25" D x 18"H	500 g (195 L)	825 psig	11 kg (24 lbs)
6.6 L	6.25" D x 22.1"H	2000 g (780 L)	980 psig	14.6 kg (32 lbs)



Performance Specifications

Cylinder Delivery Pressure	500 Torr
Cylinder Valve	Tied Diaphragm 316L Stainless Steel
Outlet Connection	UHS SA-B (pin indexed)
Shelf Life	3 years
Restrictive Flow	Yes 0.010"
Orifice	(0.25mm)

Purity Analysis

Natural Abundance Boron Trifluoride (BF ₃)	≥ 99.965%
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Contaminant Specifications

Carbon Dioxide (CO ₂)	≤ 20 ppm
Nitrogen (N ₂) + Oxygen (O ₂)	≤ 10 ppm
Silicon Tetrafluoride (SiF ₄)	≤ 300 ppm
Sulfate (SO ₄)	≤ 10 ppmw
Sulfur Dioxide (SO ₂)	≤ 10 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

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