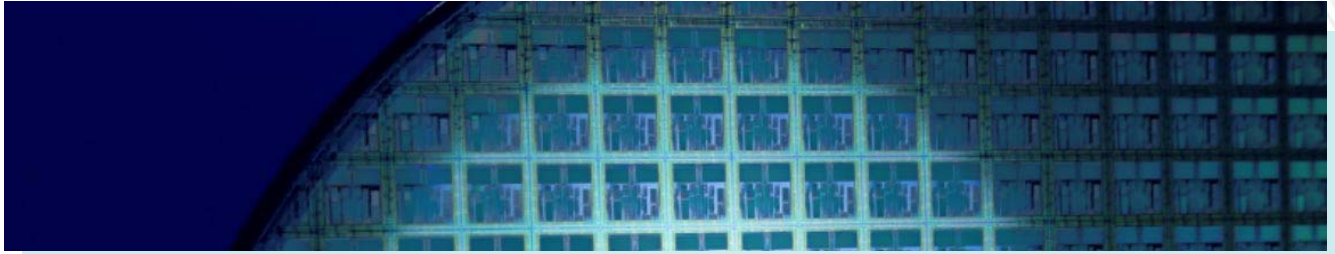


Isotopically-Enriched BF₃ (Boron Trifluoride) ION-X[®] Dopant Gas Storage and Delivery System



Next-Generation Adsorbent Technology of Sub-Atmospheric Dopant Gases



Versum Materials and NuMat Technologies announce a global alliance to bring ION-X[®] sub-atmospheric gas storage and delivery system solutions to our worldwide customers.

BENEFITS

- New line of products for the safe storage and delivery of toxic dopant gases, using state-of-the-art MOF (Metal Organic Framework) technology as adsorbent
- Delivers ultrahigh purity dopant gases at sub-atmospheric pressures
- Best true sub-atmospheric solution
- Delivers capacity premium to SDS3 with AsH₃ and BF₃
- 100% Plug and Play with existing implant machines
- Reduced change-outs and cost-of-ownership
- Favorable desorption and flow characteristics supporting ease of gas extraction
- Superior cylinder construction with the least failure modes



SPECIFICATIONS

(Shelf life: 5 years)

Boron Trifluoride (BF ₃)	≥ 99.9%
¹¹ BF ₃	≥ 99.7%
Argon (Ar)	≤ 25 ppmv
Carbon Dioxide (CO ₂)	≤ 25 ppmv
Hydrogen Fluoride (HF)	≤ 25 ppmv
Nitrogen (N ₂)	≤ 25 ppmv
Oxygen (O ₂)	≤ 25 ppmv
Sulfur Dioxide (SO ₂)	≤ 25 ppmv

SAFETY INFORMATION

Formula	BF ₃
Physical Description	Colorless with a pungent, suffocating odor. Forms dense white fumes in moist air.
CAS Number	20654-88-0
OSHA PEL	Ceiling 1 ppm (3 mg/m ³)
NIOSH PEL	Ceiling 1 ppm
ACGIH-TLV	1 ppm
NIOSH-IDLH	25 ppm

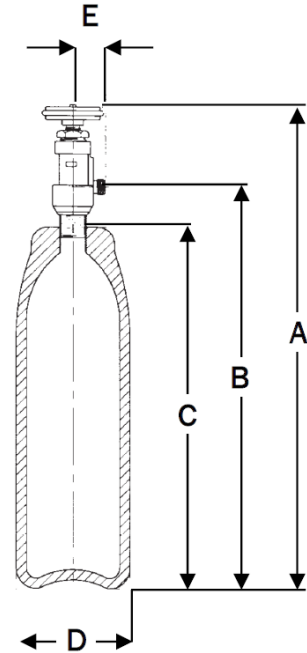
CYLINDER AND VALVE SPECIFICATIONS

Cylinder pressure (full)	650 +/- 50 Torr at 21°C
Regulatory Approvals	
US Dot	DOT 3AA2015
European Union	ADR and PED Compliant ("π" marked)
Maximum working pressure	2015 psig
Minimal burst pressure	5375 psig
Cylinder material	Carbon steel
Valve	Stainless steel diaphragm type
Valve connection	1/4" VCR male
Adsorbent material	NuMat Metal-Organic Framework

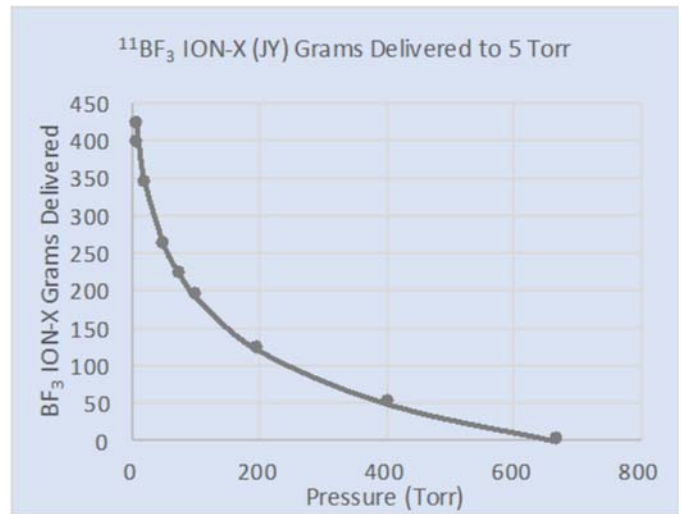
*VCR® is a registered trademark of Swagelok Marketing Co. Solon, Oh

CYLINDER DIMENSIONS AND VOLUME

Size	Units	A	B	C	D	E	Volume
JY	(in)	17.4	14.8	13.5	4.4	1.3	146 in ³
	(mm)	442	377	343	112	33	2.4 liter
UY	(in)	23.6	21.1	19.8	6.3	1.3	450 in ³
	(mm)	601	536	502	159	33	7.37 liter



FINAL CYLINDER PRESSURE (TORR)	JY DELIVERABLE CAPACITY	UY DELIVERABLE CAPACITY
100	190g	570g
50	260g	775g
20	340g	1025g
10	395g	1185g
5	420g	1255g



For more information, please contact us at:

VERSUM MATERIALS, LLC
VERSUMMATERIALS.COM

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