

SDS®3 Safe Delivery Source

Turning toxic materials into your lowest process concern

Overview

The new SDS®3 package represents another breakthrough in our history of continuously improving SDS® technology. SDS®3 incorporates a new form of adsorbent called HD-MC™, or High Density Monolithic Carbon. HD-MC adsorbent has been specially engineered to deliver higher loadings of implant gases by reducing the internal cylinder void space to nearly 0%. The result is a deliverable capacity of approximately two to three times more gas than SDS®2 cylinders of the same size.

Unsurpassed safety and elegant simplicity – with over 100,000 SDS® shipped worldwide, SDS® is the gold standard for eliminating ion implant operational risks and bottlenecks. With its higher capacity and more affordable cost, SDS®3 is our best offering yet. We invite you to experience the benefits first hand.

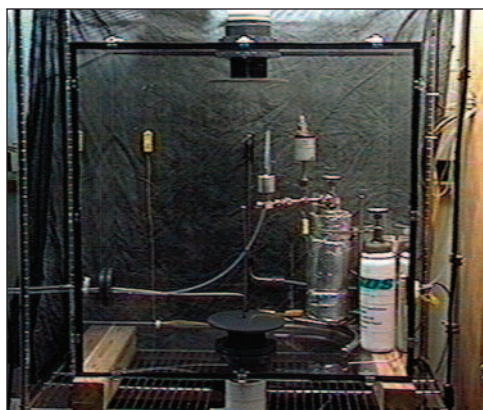
Features

- Cylinder pressure (storage and delivery) below one atmosphere. Same passive adsorption technology as SDS®2.
- New HD-MC adsorbent delivers 2-3X more dopant in the same sized packaged compared to SDS®2.
- Measurable leak integrity to be better than 1×10^{-8} atm-cc/sec for individual cylinders – a 1000 times improvement compared to conventional methods.

Benefits

- Eliminates the possibility of significant or catastrophic gas release.
- No moving parts provides a highly reliable package
- Extended cylinder lifetime reduces implant maintenance cost and reduces cost per gram of purchased material.
- Minimizes the possibility of leaks or releases from the mechanical seals of the gas package.

Release Comparison of SDS® vs. High Pressure



SDS® package contains 130 grams



High Pressure package contains 6 grams



For further information contact:

5600 Mowry School Road, Ste. 310
Newark, CA 94560
Phone: (510) 771-0090
Fax: (510) 771-0101

Customer Service Locations:

Eastern and Central U.S.
Kyle, TX 78640
Phone: (512) 262-2129
Fax: (512) 262-4011

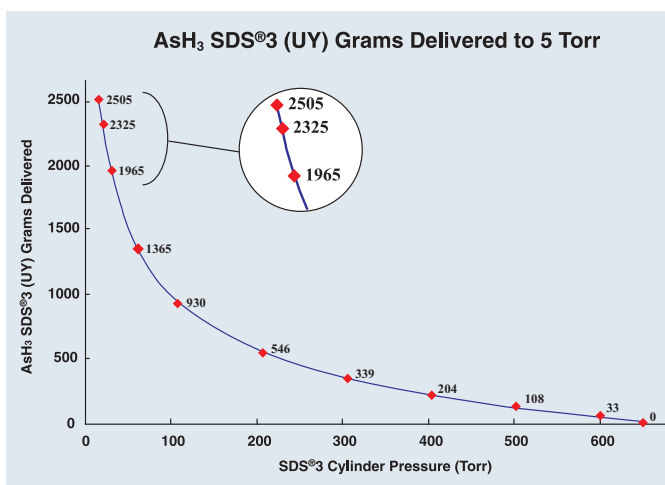
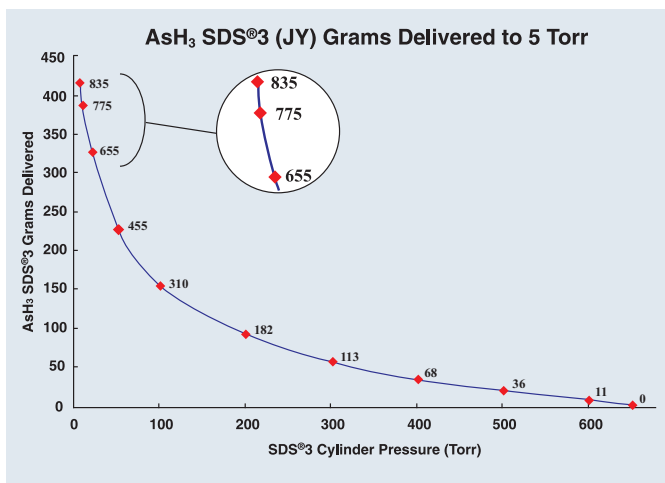
Western U.S. and International
Newark, CA 94560
Phone: (510) 793-2559
Fax: (510) 790-6241



**MATHESON
TRI-GAS**

ask. . . The Gas Professionals™

AsH₃ (Arsine) SDS®3 Safe Delivery Source



Final Cylinder Pressure (Torr)	JY Delivery Capacity (g)	UY Delivery Capacity (g)
100	310	930
50	455	1365
20	655	1965
10	775	2325
5	835	2505

Gas Purity (ppmv)

Arsine (AsH ₃)	≥99.9995%
Carbon Dioxide (CO ₂)	≤ 0.5
Carbon Monoxide (CO)	≤ 0.1
Methane (CH ₄)	≤ 0.5
Nitrogen (N ₂)	≤ 2.0
Oxygen (O ₂)	≤ 1.0
Water (H ₂ O)	≤ 2.0

Shelf life: 5 years

Purity specifications based on source gas

Safety Information

Formula:	AsH ₃
Physical Description:	Colorless gas with a mild, garlic-like odor.
CAS Number:	7784-42-1
OSHA PEL:	TWA 0.05 ppm
NIOSH REL:	0.002 mg/m ³ [15 minute ceiling]
ACGIH-TLV:	0.05 ppm
NIOSH IDLH:	Ca [3 PPM]

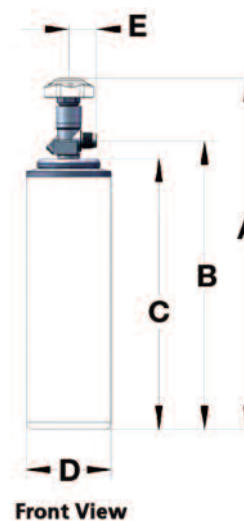
Cylinder and Valve Specifications

• Cylinder Pressure (Full)	650 +/- 50 Torr at 21° C
• Regulatory Approvals	
• US DOT	DOT-SP 13220
• European Union	ADR and TPED Compliant ("π" marked)
• Maximum working pressure	75 psig
• Minimum burst pressure	1500 psig
• Cylinder Material	Carbon steel (ASTM A-1011 and EN 10120)
• Valve	Stainless steel diaphragm type
• Valve Connection	1/2" VCR male

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

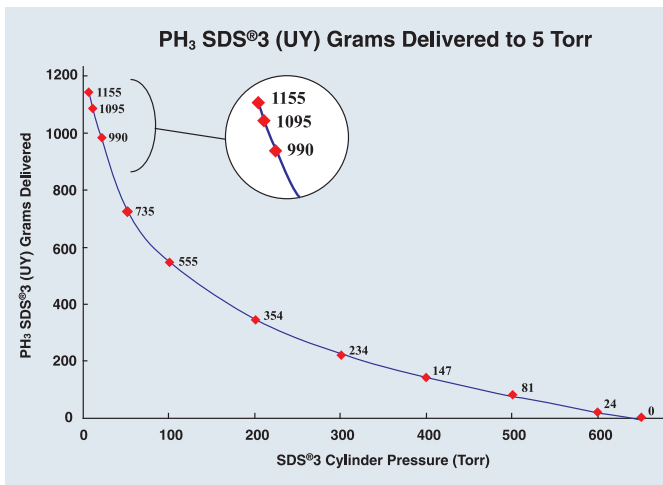
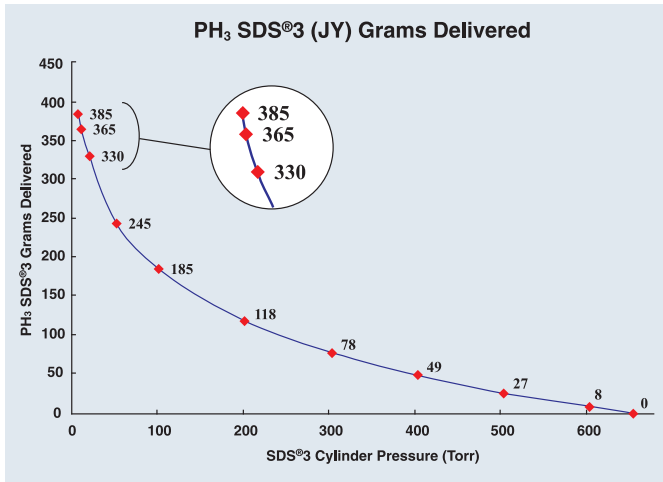
Cylinder Dimensions and Volume

Size		A	B	C	D	E	Volume
JY	(in)	17.77	14.73	13.57	4.25	1.22	153 in ³
	(mm)	451.4	374.1	344.7	108.0	31.0	2.5 liter
UY	(in)	22.63	19.58	18.1	6.25	1.22	464 in ³
	(mm)	574.8	497.3	459.7	158.8	31.0	7.6 liter



Note: Dimensions listed are typical, if exact tolerances required please contact customer service. SDS3 cylinders are plug-n-play with SDS2.

PH₃ (Phosphine) SDS®3 Safe Delivery Source



Final Cylinder Pressure (Torr)	JY Delivery Capacity (g)	UY Delivery Capacity (g)
100	185	555
50	245	735
20	330	990
10	365	1095
5	385	1155

Gas Purity (ppmv)

Phosphine (PH ₃)	≥ 99.9997%
Carbon Dioxide (CO ₂)	≤ 0.1
Carbon Monoxide (CO)	≤ 0.1
Methane (CH ₄)	≤ 0.5
Nitrogen (N ₂)	≤ 2.0
Oxygen (O ₂)	≤ 1.0
Water (H ₂ O)	≤ 2.0

Shelf life: 5 years
Purity specifications based on source gas

Safety Information

Formula:	PH ₃
Physical Description:	Colorless gas with a fish or garlic-like odor.
CAS Number:	7803-51-2
OSHA PEL	TWA 0.3 ppm (0.42 mg/m ³)
NIOSH REL	TWA 0.3 ppm
ACGIH-TLV	0.3 ppm
NIOSH IDLH	50 ppm

Cylinder and Valve Specifications

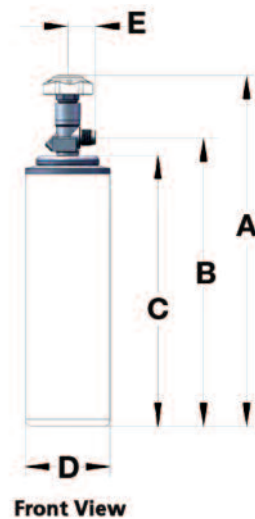
• Cylinder Pressure (Full)	650 +/- 50 Torr at 21° C
• Regulatory Approvals	
• US DOT	DOT-SP 13220
• European Union	ADR and TPED Compliant ("π" marked)
• Maximum working pressure	75 psig
• Minimum burst pressure	1500 psig
• Cylinder Material	Carbon steel (ASTM A-1011 and EN 10120)
• Valve	Stainless steel diaphragm type
• Valve Connection	1/2" VCR male

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Cylinder Dimensions and Volume

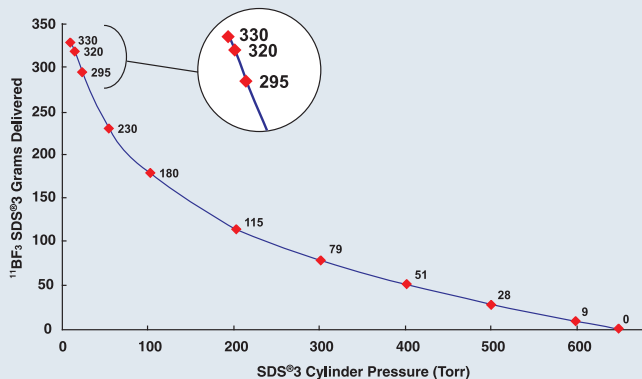
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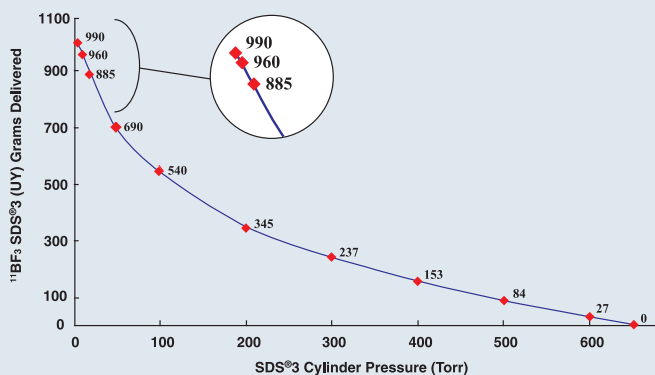


¹¹BF₃ (Enriched Boron Trifluoride) SDS®3 Safe Delivery Source

¹¹BF₃ SDS®3 (JY) Grams Delivered



¹¹BF₃ SDS®3 (UY) Grams Delivered to 5 Torr



Final Cylinder Pressure (Torr)	JY Delivery Capacity (g)	UY Delivery Capacity (g)
100	180	540
50	230	690
20	295	885
10	320	960
5	330	990

Gas Purity (ppmv)

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

Shelf life: 5 years
Purity specifications based on source gas

Safety Information

Formula:	BF ₃
Physical Description:	Colorless gas 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 REL	Ceiling 1 ppm
ACGIH-TLV	1 ppm
NIOSH IDLH	25 ppm

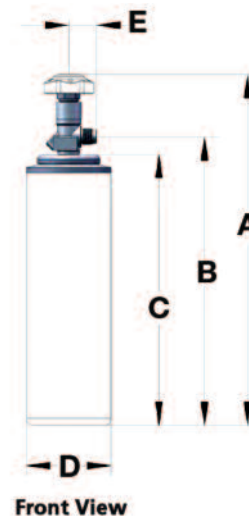
Cylinder and Valve Specifications

• Cylinder Pressure (Full)	650 +/- 50 Torr at 21° C
• Regulatory Approvals	
• US DOT	DOT-SP 13220
• European Union	ADR and TPED Compliant ("π" marked)
• Maximum working pressure	75 psig
• Minimum burst pressure	1500 psig
• Cylinder Material	Carbon steel (ASTM A-1011 and EN 10120)
• Valve	Stainless steel diaphragm type
• Valve Connection	1/4" VCR male

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Cylinder Dimensions and Volume

Size		A	B	C	D	E	Volume
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