Silicon Tetrafluoride SDS®2 Safe Delivery Source

Features and Benefits

- Dopant pressure maintained below one atmosphere minimizing the chance of accidental release
- Sub atmospheric dopant pressure improves plant safety and extends equipment lifetime
- Unique cylinder outlet connections prevent inadvertent substitution of a pressurized gas cylinder
- Three cylinder sizes available for run time flexibility
- Shelf life of two years

Overview

Ion implantation places dopant atoms at the precise location and at the proper depth within the silicon to achieve the optimal electrical performance of the device. In the case of Silicon, the dopant atoms are traditionally supplied from high pressure Silicon Tetrafluoride. Due to the highly corrosive nature of this process gas, even the smallest breach in the integrity of the gas delivery system can reduce implanter availability.

The revolutionary SDS®2 Silicon Tetrafluoride Safe Delivery Source addresses the concerns of a high pressure system by delivering 99.99% pure Silicon Tetrafluoride gas at a pressure below one atmosphere. The potential for an accidental release of Silicon Tetrafluoride is minimized improving plant safety and extending equipment lifetime.

Description

The SDS® Safe Delivery Source technology introduced by Matheson Tri-Gas and ATMI, Inc. in 1994, uses an adsorbent material to store pure Silicon Tetrafluoride at sub atmospheric pressure levels. The gas is extracted by the pressure differential between the cylinder and the ion implant chamber, thus eliminating the risk of an uncontrolled release. Most existing implant equipment can be easily adapted to use SDS® Brand products. In addition, ion implant manufacturers are now offering SDS® compatible equipment configurations as options on all new implanters.

The SDS®2 Silicon Tetrafluoride Safe Delivery Source is available in three standard cylinder sizes which deliver a quantity of gas comparable to conventional high pressure cylinders.

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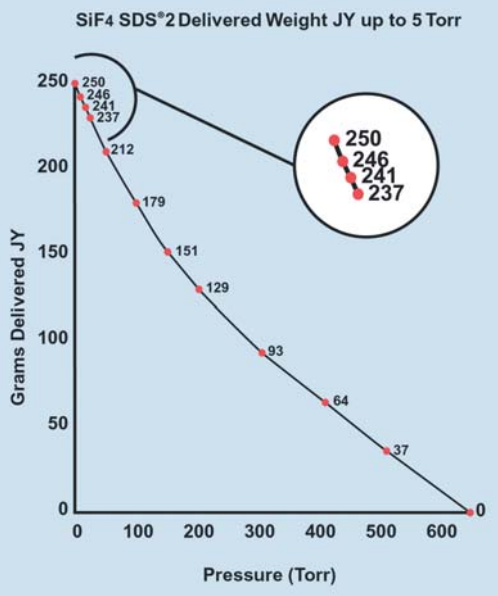
Silicon Tetrafluoride SDS®2 Safe Delivery Source (SiF_4)



Gas Purity (ppmv)

Silicon Tetrafluoride	≥ 99.99 %
Nitrogen	< 80
0xygen	< 20

Shelf life: 2years

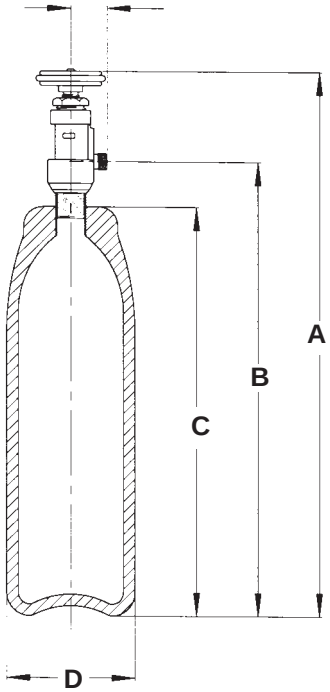
Purity specification based on source gas

Cylinder Size	Grams Deliverable to 20 Torr	Liters Deliverable to 20 Torr
UY (6.6L)	690	160.7
JY (2.2L)	230	53.6
WY (0.44L)	42	9.8

Note: Delivery capacity (grams) at 20 torr.
Actual capacity is a function of final cylinder pressure.

Cylinder Specifications

- D.O.T. (3AA2015) approved
- Carbon steel cylinder
- 1/4" VCR® type cylinder connection
- Stainless steel diaphragm valve
- Cylinders filled to 650 torr at 70° F (21°C) and not to exceed 700 torr at 70° F (21°C).
- Adsorbant material in SDS®2 is Carbon



Cylinder Dimensions

Size		A	B	C	D
UY	(in)	22.60	19.66	18.20	6.20
	(mm)	574.04	499.36	462.28	157.48
JY	(in)	17.55	14.62	13.16	4.15
	(mm)	445.78	371.35	334.26	105.41
WY	(in)	15.75	13.50	11.75	2.00
	(mm)	400.10	342.90	298.50	50.50

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Printed in the USA SDS06 04/05R