

ELECTRONIC GASES

PHOSPHINE PH₃ MIXTURES

Phosphine can be diluted with argon, helium, hydrogen or nitrogen in order to provide concentrations of less than 100%. Using Phosphine in this form can add an additional degree of control to the process, particularly when relatively small amounts of phosphorous are to be deposited.

Description

CYLINDER CONNECTION: std: 350 opt: DISS-632

DOPING CONCENTRATIONS can be mixed with UHP or VLSI grade balance gases

Phosphine concentration	Cyl size	Pressure (psig)	Argon ft ³ m ³	Helium ft ³ m ³	Hydrogen ft ³ m ³	Nitrogen ft ³ m ³
5 ppm - 23%	049	2100	270 7.64	235 6.65	235 6.65	250 7.08
	044	1800	200 5.66	175 4.95	175 4.95	187 5.30
	016	1800	75 2.12	66 1.87	66 2.12	70 1.98
	008	1800	34 0.97	31 0.87	31 0.87	33 0.92

The pressures at higher concentrations than shown above are lower than those shown due to the fact that phosphine has a low vapor pressure. Only a maximum amount can be put into a cylinder to avoid liquefaction of the phosphine. To achieve higher concentrations, less hydrogen is added.

SHELF LIFE: 1 year

Phosphine in Silane

Concentration	Cyl Size	Pressure psig	Contents ft ³ m ³
1 - 20%	049	875	148 4.19
	044		133 3.771
	016		50 1.42
	008		28 0.79

DOT Shipping Information

HYDROGEN BALANCE

Conc	Shipping Name	Shipping Papers	Shipping Labels
>10%	___% Phosphine/Hydrogen Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/Hydrogen Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone A	Poison Gas Flammable Gas
10% -2%	___% Phosphine/Hydrogen Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/Hydrogen Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone B	Poison Gas Flammable Gas
2% - 0.67%	___% Phosphine/Hydrogen Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/Hydrogen Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone C	Poison Gas Flammable Gas
0.67% - 0.4%	___% Phosphine/Hydrogn Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/Hydrogen Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone D	Poison Gas Flammable Gas
<4000 ppm	___ppm Phosphine/Hydrogen Mixture	Compressed Gases, flammable, nos (___ppm Phosphine/Hydrogen Mixture) 2.1 UN 1954	Flammalbe Gas

ARGON, HELIUM, NITROGEN BALANCE

Conc	Shipping Name	Shipping Papers	Shipping Labels
>10%	___% Phosphine/___ Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/___ Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone A	Poison Gas Flammable Gas
10% -2%	___% Phosphine/___ Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/___ Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone B	Poison Gas Flammable Gas
2% - 0.7% (Ar) 2% - 0.9% (He) 2% - 1.2% (N ₂)	___% Phosphine/___ Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/___ Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone C	Poison Gas Flammable Gas
0.7% - 0.67% (Ar) 0.9% - 0.67% (He) 1.2% - 0.67% (N ₂)	___% Phosphine/___ Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/___ Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone C	Poison Gas
0.67% - 0.4%	___% Phosphine/___ Mixture Inhalation Hazard	Compressed Gases, toxic, flammable, nos (___% Phosphine/___ Mixture) 2.3 UN 1953 Poison Inhalation Hazard, Hazard Zone D	Poison Gas
<4000 ppm	ppm Phosphine/___ Mixture	Compressed Gases, nos (___ppm Phosphine/___ Mixture) 2.1 UN 1954	Nonflammable Gas