

ELECTRONIC GAS

NITROUS OXIDE N₂O

Nitrous Oxide is a non-toxic, non-flammable, colorless gas with a slightly sweet taste and odor. It is stable and non-reactive under normal conditions, but becomes a strong oxidizing agent at elevated temperatures and pressure. It is used in combination with silane for chemical vapor deposition of silicon nitride layers. It is also used in rapid thermal processing to grow high quality gate oxides. It is shipped as a liquefied gas under its own vapor pressure.

Container Information

CYLINDER SIZE	CONTENTS		Pressure @ 21.1°C Valve Outlet	745 psig CGA-326 / DISS-712
	LB	KG		
044	60	27.2	DOT Shipping Description:	Nitrous Oxide, Compressed 2.2, UN 1070
016	20	9.1	DOT Shipping Labels	Non-flammable Gas Oxidizer
010	11	5.0	DOT Guide No. CAS Registry No.	14 10024-97-2

Specifications

COMPONENT NITROUS OXIDE	VLSI 99.9995% min	ELECTRONIC 99.999% min
Ammonia	< 500 ppb	
Carbon Dioxide	< 500 ppb	< 1 ppm
Carbon Monoxide	< 500 ppb	< 0.5 ppm
Nitric Oxide	< 500 ppb	< 1 ppm
Nitrogen	< 1000 ppb	< 2 ppm
Nitrogen Dioxide	< 500 ppb	< 0.5 ppm
Oxygen + Argon	< 500 ppb	< 2 ppm
THC (as Methane)	< 100 ppb	< 0.1 ppm
Water	< 500 ppb	< 2 ppm

SHELF LIFE: 2 years

Physical Properties

Molecular Weight	44.01
Flammability Limits in air	Non-flammable
Specific Gravity, Gas @ 70°F(21.1°C), 1 atm(Air=1)	1.53
Density, Gas @ 70°F(21.1°C), 1 atm	0.115lbs/ft ³ (1.841g/l)
Specific Volume, Gas @ 70°F(21.1°C), 1 atm	8.73ft ³ /lb (0.543l/g)
Boiling Point @ 1 atm	-127.4°F (-88.5°C)
Melting Point @ 1 atm	-131.5°F (-90.8°C)
Critical Temperature	97.6°F (36.4°C)
Critical Pressure	1052.2 psia (72.5 bar)
Toxicity PEL/TLV	50 ppm

VLSI Metals Specifications

ELEMENT	SYMBOL	GAS PHASE	LIQUID PHASE
Antimony	Sb	< 1	< 1
Cadmium	Cd	< 10	< 10
Calcium	Ca	< 10	< 10
Chromium	Cr	< 10	< 10
Cobalt	Co	< 10	< 10
Copper	Cu	< 10	< 10
Gallium	Ga	< 1	< 10
Germanium	Ge	< 10	< 10
Iron	Fe	< 50	< 50
Lead	Pb	< 10	< 10
Lithium	Li	< 1	< 1
Magnesium	Mg	< 10	< 10
Manganese	Mn	< 5	< 5
Molybdenum	Mo	< 1	< 1
Nickel	Ni	< 10	< 10
Potassium	K	< 1	< 1
Silicon	Si	< 10	< 10
Sodium	Na	< 10	< 10
Tin	Sn	< 1	< 1
Zinc	Zn	< 10	< 10

*all values in ppb, lot analysis only