

# ELECTRONIC GAS

## CHLORINE Cl<sub>2</sub>

Chlorine is a greenish-yellow, toxic, non-flammable, oxidizing gas with a pungent, suffocating odor. It is irritating to the mucous membranes. It is used in plasma etching of aluminium and other metal layers. It is shipped as a liquefied gas under its own vapor pressure.

### Container Information

CYLINDER SIZE	CONTENTS		Pressure @ 21.1°C Valve Outlet	85.3 psig CGA-660 / DISS-728
	LB	KG		
044	100	45.4	DOT Shipping Description:  DOT Shipping Labels DOT Guide No. CAS Registry No.	Chlorine, 2.3, UN 1017 Poison-Inhalation Hazard Hazard Zone B  Poison Gas 20 7782-50-5
016	40	18.1		
010	11	5.0		

### Specifications

COMPONENT CHLORINE	ULSI 99.999% min	VLSI 99.995% min	ELECTRONIC 99.99% min
Carbon Dioxide	< 3 ppm	< 10 ppm	< 50 ppm
Carbon Monoxide	< 1 ppm		
Nitrogen	< 3 ppm	< 10 ppm	< 30 ppm
Oxygen	< 1 ppm	< 5 ppm	< 10 ppm
THC (as Methane)	< 0.2 ppm	< 0.2 ppm	< 5 ppm
Water	< 1 ppm	< 3 ppm	< 5 ppm

SHELF LIFE: 2 years

### Physical Properties

Molecular Weight	70.906
Flammability Limits in air	Non-flammable
Specific Gravity, Gas @ 70°F(21.1°C), 1 atm(Air=1)	2.473
Density, Gas @ 70°F(21.1°C), 1 atm	0.185lbs/ft <sup>3</sup> (2.98g/l)
Specific Volume, Gas @ 70°F(21.1°C), 1 atm	5.4ft <sup>3</sup> /lb (0.336l/g)
Boiling Point @ 1 atm	-29.4°F (-34.1°C)
Melting Point @ 1 atm	-149.8°F (-101.0°C)
Critical Temperature	291.2°F (144.0°C)
Critical Pressure	1118.4 psia (77.1 bar)
Toxicity	
PEL / TLV	0.5 ppm
STEL	1 ppm
LC <sub>50</sub>	293 ppm
IDLH	30 ppm

### ULSI Metals Specifications

ELEMENT	SYMBOL	GAS PHASE	LIQUID PHASE
Cadmium	Cd	< 10	< 10
Calcium	Ca	< 10	< 10
Chromium	Cr	< 100	< 200
Copper	Cu	< 100	< 100
Iron	Fe	< 200	< 500
Potassium	K	< 100	< 100
Sodium	Na	< 50	< 50
Nickel	Ni	< 300	< 300
Zinc	Zn	< 20	< 20

\*all values in ppbw, lot analysis only