LIQUID SOURCES

1,1,1-Trichloroethane (TCA)

Application:

Trichloroethane is a chlorinated hydrocarbon that has gained wide acceptance in the semiconductor industry as a liquid source substitute for cylinder Hydrogen Chloride (HCI) gas. HCI gas and TCA are used as chlorine sources for thermal oxidation of silicon and for furnace tube cleaning. TCA has become the recognized industry alternative for cylinder HCI gas. The benefits of TCA include improved purity levels, low pressure applications, significantly less safety hazards, ease of handling a liquid source, and TCA is non-corrosive to process equipment.

Specification:

Purity (Trace Metals) 99.999999+%*

Rev. Date 7/90

Assay	99.99% miniimum
Al	1 ppb maximum
Ag	1 ppb maximum
As	1 ppb maximum
Au	1 ppb maximum
Ba	1 ppb maximum
Bi	1 ppb maximum
Ca	1 ppb maximum
Cd	1 ppb maximum
Co	1 ppb maximum
Cr	1 ppb maximum
Cu	1 ppb maximum
Fe	1 ppb maximum
Cr	1 ppb maximum
Ga	1 ppb maximum
Acidity (HC1)	10 ppb maximum
Inhibitor	0.10% maximum

Hg	1 ppb maximum
K	1 ppb maximum
Li	1 ppb maximum
Mg	1 ppb maximum
Mn	1 ppb maximum
Na	1 ppb maximum
Ni	1 ppb maximum
P	1 ppb maximum
Pb	1 ppb maximum
Sb	1 ppb maximum
Si	1 ppb maximum
Sn	1 ppb maximum
Sr	1 ppb maximum
Ti	1 ppb maximum
Zn	1 ppb maximum
Water	10 ppm maximum
Color	5 APHA
Residue After Evaporation	2 ppm

* Total metals 10 ppb maximum

Delivery Hardware:

Hong Kong Specialty Gases offers our ULSI Grade TCA in industry standard quartz bubblers. High purity quartz bubblers are available in 500, 1000, and 1500cc sizes. These bubblers are offered with dual-sealing teflon valves for the inlet and outlet (1/4" or 3/8"). Our quartz bubblers come standard with a clear safety coating to protect against spillage upon breakage and are equipped with dip tubes with multiple angled laser cut holes for improved carrier gas saturation.

Physical Properties:

Formula	$C_2H_3Cl_3$
Chemical Family	Chlorinate Hydrocarbon
Molecular Wt	133.42
Boiling Point	74.1˚C
Melting Point	-33˚C
Density @ 20˚C	1.34 gm/ml
Vapor Pressure	See chart below
Vapor Density (Air=1)	4.55
Flash Point	N/A
TLV	350 ppm

Vapor Pressure: