

Material Compatibility Chart

Appendix

Gas	Primary Hazards					Metals					Plastics				Elastomers			Special Characteristics
	Asphyxiant	Toxic	Flammable	Corrosive	Oxidizer	Aluminum	Brass	Copper	Monel	Stainless Steel	PCTFE	PTFE	Tefzel®	Kynar®	Viton®	Buna-N®	Neoprene®	
Acetylene						S	S	U	S	S	S	S	S	S	S	S	S	Extremely hazardous at pressures exceeding 15 psig. Brass with less than 65% copper content, suitable. Causes stress cracking of copper or copper alloys.
Air						S	S	S	S	S	S	S	S	S	S	S	S	
Ammonia						S	U	U	S	S	S	S	S	U	U	S	S	
Argon						S	S	S	S	S	S	S	S	S	S	S	S	
*Arsine						-	S	S	S	S	S	S	S	S	S	S	S	Highly toxic
Boron Trichloride						U	D	D	S	S	S	S	S	-	-	-	-	
Boron Trifluoride						-	D	D	S	S	S	S	S	-	-	-	-	
Boron-11 Trifluoride						-	D	D	S	S	S	S	S	-	-	-	-	
*Bromine Trifluoride						D	D	D	S	S	D	D	S	U	U	U	U	Extremely reactive. Surface passivation required on all metals.
1,3-Butadiene						S	S	S	S	S	S	S	S	S	S	S	S	
n-Butane						S	S	S	S	S	S	S	S	S	S	S	S	
1-Butene						S	S	S	S	S	S	S	S	S	S	S	S	
cis-2-Butene						S	S	S	S	S	S	S	S	S	S	S	S	
trans-2-Butene						S	S	S	S	S	S	S	S	S	S	S	S	
Carbon Dioxide						S	S	S	S	S	S	S	S	S	S	D	D	
Carbon Monoxide						S	S	S	S	S	S	S	S	S	S	S	S	
Chlorine						U	U	U	S	S	S	S	S	S	S	U	U	Highly toxic
*Chlorine Trifluoride						U	-	-	S	S	D	D	S	U	U	U	U	Extremely reactive. Surface passivation required on all metals.
Deuterium						S	S	S	S	S	S	S	S	S	S	S	S	
Dichlorosilane						U	-	-	S	S	S	S	S	S	-	-	-	
Di-, Mono-, and Trimethylamines						U	U	U	S	S	S	S	S	S	U	U	-	
Disilane						S	S	S	S	S	S	S	S	S	S	S	S	
Ethane						S	S	S	S	S	S	S	S	S	S	S	S	
Ethyl Chloride						S	S	S	S	S	S	S	S	S	S	S	S	
Ethylene						S	S	S	S	S	S	S	S	S	S	S	S	
*Fluorine						D	D	D	S	S	D	D	D	D	U	U	U	Extremely reactive. Surface passivation required on all metals.
Halocarbon-14						S	S	S	S	S	S	S	S	S	S	S	S	
Halocarbon-23						S	S	S	S	S	S	S	S	S	S	S	S	
Halocarbon-116						S	S	S	S	S	S	S	S	S	S	S	S	
Helium						S	S	S	S	S	S	S	S	S	S	S	S	
Hydrogen						S	S	S	S	S	S	S	S	S	S	S	S	
Hydrogen Bromide						U	U	U	S	S	S	S	S	S	S	U	U	
Hydrogen Chloride						U	U	U	S	S	S	S	S	S	S	U	U	
*Hydrogen Fluoride						U	U	U	S	S	S	S	S	S	U	U	U	
*Hydrogen Sulfide						S	S	-	S	S	S	S	S	S	U	S	S	
Isobutane						S	S	S	S	S	S	S	S	S	S	S	S	
Isobutylene						S	S	S	S	S	S	S	S	S	S	S	S	
Krypton						S	S	S	S	S	S	S	S	S	S	S	S	
Methane						S	S	S	S	S	S	S	S	S	S	S	S	
Methyl Chloride						U	S	S	S	S	S	S	S	S	S	U	U	Flammable; may react with aluminum to form pyrophoric compound.
Methyl Fluoride						S	S	S	S	S	S	S	S	S	-	-	-	
Neon						S	S	S	S	S	S	S	S	S	S	S	S	
Nitrogen						S	S	S	S	S	S	S	S	S	S	S	S	
Nitrogen Dioxide						S	U	U	U	S	S	S	-	-	U	U	U	
Nitrogen Trifluoride						-	S	S	S	S	S	S	S	S	S	-	-	
Nitrous Oxide						S	S	S	S	S	S	S	S	S	S	S	S	Liquid may leach plasticizer out of certain plastics.
Octafluorocyclobutane						S	S	S	S	S	S	S	S	S	S	S	S	
Octafluoropropane						S	S	S	S	S	S	S	S	-	-	S	S	
*Oxygen						U	S	S	S	D	S	S	S	S	D	U	U	
*Phosphine						S	-	-	S	S	S	S	S	-	-	-	-	Highly toxic. High concentrations are pyrophoric.
Propane						S	S	S	S	S	S	S	S	S	S	S	S	
Propylene						S	S	S	S	S	S	S	S	S	S	S	U	
*Silane						S	S	S	S	S	S	S	S	S	S	S	S	Pyrophoric.
Silicon Tetrachloride						U	U	U	S	S	S	S	S	S	U	U	U	
Silicon Tetrafluoride						U	U	U	S	S	S	S	S	S	U	U	U	
Sulfur Dioxide						S	U	S	S	S	S	S	S	S	S	U	U	
Sulfur Hexafluoride						S	S	S	S	S	S	S	S	S	S	S	S	
Sulfur Tetrafluoride						U	U	U	S	S	S	S	S	S	U	U	U	
Tungsten Hexafluoride						U	U	U	S	S	S	S	S	S	U	U	U	
Xenon						S	S	S	S	S	S	S	S	S	S	S	S	

The data in this table are presented as a guide only. Please call our Technical Information Center for assistance with your specific application.
 Key: S = Satisfactory for use with the intended gas (dry anhydrous) at a normal operating temperature of 70°F. U = Unsatisfactory for use with the intended gas.
 (-) = Insufficient data available to determine the compatibility with the intended gas. D = Suitability depends on condition of use.
 *THE USER SHOULD BECOME THOROUGHLY FAMILIAR WITH THE SPECIFIC PROPERTIES OF THIS GAS. MATERIAL COMPATIBILITY DEPENDS ON CONDITION OF USE.