

Gas Compatibility

The compatibility data shown on pages 2 and 3 of this Section G have been compiled to assist in evaluating appropriate materials for use in handling various gases. It is extremely important that all gas control equipment be compatible with the gas being used. The use of a device that is not compatible may damage the unit and cause a leak that could result in property damage or personal injury. To reduce potentially harmful situations, always check for the compatibility of equipment and materials before using any gases in your gas control equipment.

Since combinations of gases are virtually unlimited, mixtures (except for Oxyfume® and Medifume® sterilizing gas mixtures) are not listed in the Compatibility Chart. Before using a gas mixture or any gas not listed in the chart, we strongly urge you to contact Praxair for information.

Directions

To use the compatibility chart on the following pages, proceed as follows:

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| <p>1</p> <p>Locate the gas you are using in the first column of the chart.</p> <p>2</p> <p>Check the materials of construction you intend to use. Materials of Construction have been grouped by metals, plastics and elastomers.</p> | <p>3</p> <p>Refer to the applicable “Key to Materials Compatibility Symbol”.</p> <p>4</p> <p>Verify that the “Key to Materials Compatibility Symbol” allows this combination and that the application is satisfactory.</p> |
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Key to Materials Compatibility

- S** – Satisfactory for use with the intended gas.

- C** – Conditional. May be incompatible under some circumstances or conditions. Contact your Praxair representative for additional information.


- U** – Unsatisfactory for use with the intended gas.


- I** – Insufficient data available to determine compatibility with the intended gas.

- O** – All nonmetallic, even those considered compatible, may be ignitable in oxygen enriched environments or in other oxidizing gases. Successful use depends upon oxygen purity, pressure, temperature, cleanliness and elimination of ignition mechanisms. Please contact your Praxair Representative for additional information.

Important

This information contained in this Section G is prepared for the use of experienced operators who know the general principles and the safety precautions to be observed in handling specialty gases and associated equipment. If you are not certain you fully understand these safety precautions, we urge you to obtain and read the applicable Safety Data Sheet (SDS) and Equipment Instruction Booklet, and speak to your supplier about appropriate precautions.

 The information contained in the Compatibility Chart has been compiled by Praxair from what it believes are authoritative sources and it is offered solely as a convenience to customers. While Praxair believes that this information is accurate and factual as of the date of this publication, this information is intended to be used only as a guide in providing general information with respect to the products mentioned; and, therefore, it is not to be taken as a warranty or representation for which Praxair assumes legal responsibility.

 Since the user's product formulation, specific use application, and conditions of use are all outside Praxair's control, Praxair makes no warranty or representation regarding the results which may be obtained by the user. It is the user's responsibility to determine the suitability of the gas control and gas.

Materials Compatibility

		Materials of Construction																	
Common Name	Chemical Formula	Metals							Plastics						Elastomers				
		Brass	Carbon Steel	Stainless Steel	Aluminum	Zinc	Copper	Monel	Kel-F®	Teflon®	Tefzel®	Kynar®	PVC	Polycarbonate	Kalrez®	Viton®	Buna-N	Neoprene	Polyurethane
Acetylene	C ₂ H ₂	C	S	S	S	U	U	S	S	S	S	I	I	S	U	U	U	U	
Air	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Ammonia	NH ₃	U	S	S	S	U	U	S	S	S	U	I	I	C	U	C	S	I	
Argon	Ar	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Arsine	AsH ₃	S	C	S	C	I	S	S	S	S	S	S	I	S	S	S	S	U	
Boron Trichloride	BCl ₃	U	S	S	U	I	S	S	S	S	S	S	I	C	S	U	U	I	
Boron Trifluoride	BF ₃	S	S	S	C	I	S	S	S	S	S	S	I	C	S	U	U	I	
1,3-Butadiene	C ₄ H ₆	S	S	S	C	S	S	S	S	S	S	S	U	I	S	U	U	U	
Butane	C ₄ H ₁₀	S	S	S	C	S	S	S	S	S	S	S	U	S	S	S	S	S	
1-Butene	C ₄ H ₈	S	S	S	C	S	S	S	S	S	S	S	U	S	S	S	U	S	
Carbon Dioxide	CO ₂	S	S	S	S	S	S	S	S	S	S	S	U	S	S	U	U	S	
Carbon Monoxide	CO	S	C	S	C	S	S	S	S	S	S	S	S	S	S	S	U	S	
Chlorine	Cl ₂	U	S	S	U	U	U	S	S	S	S	U	U	S	S	U	U	U	
Deuterium	D ₂	S	C	S	C	S	S	S	S	C	S	S	I	S	S	S	S	S	
Diborane	B ₂ H ₆	S	C	S	C	I	S	S	S	S	S	S	I	S	I	I	I	I	
Dichlorosilane	H ₂ SiCl ₂	S	S	S	U	I	S	S	S	S	S	I	I	I	S	S	S	I	
Disilane	Si ₂ H ₆	S	C	S	C	I	S	S	S	S	S	S	U	I	S	I	S	I	
Ethane	C ₂ H ₆	S	S	S	C	S	S	S	S	S	S	S	I	S	S	S	U	S	
Ethylene	C ₂ H ₄	S	S	S	C	S	S	S	S	S	S	I	I	S	S	S	S	I	
Halocarbon 14	CF ₄	S	S	S	C	I	S	S	I	S	I	S	I	I	S	S	S	I	
Halocarbon 22	CHClF ₂	S	S	S	C	I	S	S	S	C	S	S	U	U	C	U	U	U	
Halocarbon 23	CHF ₃	S	S	S	C	I	S	S	S	S	I	S	I	I	I	S	I	I	
Halocarbon 116	C ₂ F ₆	S	S	S	C	S	S	S	S	S	S	S	U	U	C	S	S	S	
Halocarbon 134A	CH ₂ FCF ₃	S	S	S	C	I	S	S	I	I	I	I	I	I	I	I	U	U	I
Halocarbon 218	C ₃ F ₈	S	S	S	C	I	S	S	S	S	S	I	I	I	I	S	S	S	I
Helium	He	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Hydrogen	H ₂	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Hydrogen Bromide	HBr	U	S	S	U	U	U	S	I	S	I	S	I	I	I	U	U	U	I
Hydrogen Chloride	HCl	U	S	S	U	U	U	S	S	S	S	S	U	S	U	U	U	U	
Hydrogen Sulfide	H ₂ S	U	C	S	C	I	I	S	S	S	S	U	S	S	U	U	U	S	

Note:
This chart has been prepared for use with dry (anhydrous) gases at normal operating temperature of 70 °F (21 °C). Information may vary if different operating conditions exist. Systems and equipment used in oxidizer gas service (e.g., Oxygen or Nitrous Oxide) must be cleaned for oxygen service.

		Materials of Construction																	
Common Name	Chemical Formula	Metals							Plastics						Elastomers				
		Brass	Carbon Steel	Stainless Steel	Aluminum	Zinc	Copper	Monel	Kel-F®	Teflon®	Tefzel®	Kynar®	PVC	Polycarbonate	Kalrez®	Viton®	Buna-N	Neoprene	Polyurethane
Isobutane	C ₄ H ₁₀	S	S	S	C	S	S	S	S	S	S	S	S	U	S	S	S	S	S
Isobutylene	C ₄ H ₈	S	S	S	C	I	S	S	S	S	S	S	S	U	S	S	S	U	I
Krypton	Kr	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Medifume™ Mixture	–	C	S	S	I	I	U	I	S	S	I	I	U	U	C	S	S	S	S
Methane	CH ₄	S	S	S	C	S	S	S	S	S	S	S	S	I	S	S	S	S	S
Methyl Chloride	CH ₃ Cl	S	S	S	U	U	S	S	S	S	S	I	I	S	S	U	U	U	U
Neon	Ne	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Nitric Oxide	NO	U	S	S	C	I	S	S	S	S	S	S	S	S	S	S	U	U	I
Nitrogen	N ₂	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Nitrogen Dioxide	NO ₂	U	S	S	C	I	U	S	S	S	U	U	I	C	U	U	U	U	U
Nitrogen Trifluoride	NF ₃	C	C	C	U	C	C	C	C	C	I	C	I	I	I	I	I	I	I
Nitrous Oxide	N ₂ O	S	S	C	C	S	S	S	O	O	C	O	O	I	C	O	U	U	U
Oxygen	O ₂	S	C	O	C	S	S	S	O	O	O	O	O	C	O	U	O	O	O
Oxyfume® Mixtures	–	C	S	S	C	I	U	I	S	S	I	I	U	U	C	U	U	U	U
Pentane	C ₅ H ₁₂	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
Phosphine	PH ₃	S	C	S	C	U	I	S	S	S	S	I	I	U	S	S	S	S	S
Propane	C ₃ H ₈	S	S	S	C	S	S	S	S	S	S	S	S	U	I	S	S	U	I
Propylene	C ₃ H ₆	S	S	S	C	S	S	S	S	S	S	S	S	U	S	S	U	U	U
Silane	SiH ₄	S	C	S	C	I	S	S	S	S	S	S	I	I	S	S	S	S	I
Silicon Tetrachloride	SiCl ₄	C	S	S	C	I	U	S	S	S	I	S	U	I	C	S	U	U	I
Sulfur Dioxide	SO ₂	C	S	S	C	U	U	S	S	S	S	S	S	I	S	U	U	U	S
Sulfur Hexafluoride	SF ₆	S	S	S	S	I	S	S	S	S	S	S	S	I	C	S	S	S	S
Trichlorosilane	HSiCl ₃	S	S	S	U	I	I	S	S	S	I	I	U	I	C	S	U	U	I
Tungsten Hexafluoride	WF ₆	I	C	C	U	U	I	S	I	C	C	C	C	I	I	I	U	U	I
Xenon	Xe	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

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