

Directions

To use this chart, proceed as follows:

1. Locate the gas you are using in the first column.
2. Compare the materials of construction for the equipment you intend to use with the "materials of construction" shown in the Compatibility Chart. Then use the "Key to Materials Compatibility" to determine compatibility.

Key to Materials Compatibility

S: Satisfactory for use with the intended gas.

U: Unsatisfactory for use with the intended gas.

I: Insufficient data available to determine compatibility with the intended gas.

C1 thru C8: Conditionally acceptable for use with the intended gas as follows:

- C1: Satisfactory with brass having a low (65–70% maximum) copper content. Brass with higher copper content is unacceptable.
- C2: Satisfactory with acetylene; however, cylinder acetylene is packaged dissolved in a solvent (generally acetone) which may be incompatible with these elastomers.
- C3: Compatibility varies depending on specific Kalrez® compound used. Consult E.I. DuPont for information on specific applications.

C4: Satisfactory with brass, except where acetylene or acetylides are present.

C5: Generally unsatisfactory, except where specific use conditions have proven acceptable.

C6: Satisfactory below 1000 psig.

C7: Satisfactory below 1000 psig where gas velocities do not exceed 30 ft./sec.

C8: Material compatibility depends on condition of use.

| Common Name | Chemical Formula | Materials of Construction | | | | | | | | | | | | | | | | |
|-------------------|----------------------------------|---------------------------|---------------------|---------------------|----------|------|--------|-------|----------|--------|--------|-------|-----|---------------|------------|-------|--------|----------|
| | | Metals | | | | | | | Plastics | | | | | | Elastomers | | | |
| | | Brass | 303 Stainless Steel | 316 Stainless Steel | Aluminum | Zinc | Copper | Monel | PCTFE | Teflon | Tefzel | Kynar | PVC | Polycarbonate | Kalrez | Viton | Buna-N | Neoprene |
| Acetylene | C ₂ H ₂ | C1 | S | S | I | U | U | S | S | S | S | I | I | S | C2 | C2 | C2 | C2 |
| Air | — | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S |
| Allene | C ₃ H ₄ | S | S | S | S | I | U | S | S | S | S | I | I | S | S | S | S | I |
| Ammonia | NH ₃ | U | S | S | S | U | U | S | S | S | U | S | U | C3 | U | S | S | U |
| Argon | Ar | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S |
| Arsine | AsH ₃ | S | S | S | C5 | I | S | S | S | S | S | S | I | S | S | S | S | U |
| Boron Trichloride | BCl ₃ | U | S | S | I | I | S | S | S | S | I | S | I | C3 | I | I | I | I |
| Boron Trifluoride | BF ₃ | S | S | S | S | I | S | S | S | S | I | S | I | C3 | I | I | I | I |
| 1,3-Butadiene | C ₄ H ₆ | S | S | S | S | S | S | S | S | S | S | S | U | S | S | U | S | U |
| Butane | C ₄ H ₁₀ | S | S | S | S | S | S | S | S | S | S | S | U | S | S | S | S | S |
| 1-Butene | C ₄ H ₈ | S | S | S | S | S | S | S | S | S | S | S | U | S | S | S | S | S |
| Cis-2-Butene | C ₄ H ₈ | S | S | S | S | S | S | S | S | S | S | S | U | S | S | S | S | S |
| Trans-2-Butene | C ₄ H ₈ | S | S | S | S | S | S | S | S | S | S | S | U | S | S | S | S | S |
| Carbon Dioxide | CO ₂ | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S | S |
| Carbon Monoxide | CO | S | S | S | S | S | S | S | S | S | S | S | S | S | I | S | S | S |
| Carbonyl Sulfide | COS | S | S | S | S | I | S | S | S | S | S | S | I | I | S | I | I | I |
| Chlorine | Cl ₂ | U | S | S | U | U | U | S | S | S | S | U | U | S | S | U | U | U |
| Deuterium | D ₂ | S | S | S | S | S | S | S | S | S | S | S | I | S | S | S | S | S |
| Diborane | B ₂ H ₆ | S | S | S | S | I | S | S | S | S | I | I | I | S | I | I | I | I |
| Dichlorosilane | H ₂ SiCl ₂ | I | S | S | I | I | I | S | S | S | S | I | I | S | I | I | I | I |
| Dimethyl Ether | C ₂ H ₆ O | S | S | S | S | S | S | S | S | S | S | S | U | S | S | S | S | I |
| Ethane | C ₂ H ₆ | S | S | S | S | S | S | S | S | S | S | S | I | S | S | S | S | S |
| Ethyl Acetylene | C ₄ H ₆ | I | S | S | S | I | U | S | S | S | I | S | I | S | S | I | S | I |
| Ethyl Chloride | C ₂ H ₅ Cl | S | S | S | U | I | S | S | S | S | S | U | U | S | S | S | S | U |
| Ethylene | C ₂ H ₄ | S | S | S | S | S | S | S | S | S | S | I | I | S | S | S | S | I |
| Ethylene Oxide** | C ₂ H ₄ O | C4 | S | S | C5 | I | U | I | S | S | I | I | U | C3 | U | U | U | U |

Key to Materials Compatibility

S: Satisfactory for use with the intended gas.

U: Unsatisfactory for use with the intended gas.

I: Insufficient data available to determine compatibility with the intended gas.

| Common Name | | Materials of Construction | | | | | | | | | | | | | | | | | | |
|--|--|---------------------------|---------------------|---------------------|----------|------|--------|-------|----------|--------|--------|-------|-----|---------------|------------|-------|--------|----------|--------------|--|
| | | Metals | | | | | | | Plastics | | | | | | Elastomers | | | | | |
| | | Brass | 303 Stainless Steel | 316 Stainless Steel | Aluminum | Zinc | Copper | Monel | PCTFE | Teflon | Tefzel | Kynar | PVC | Polycarbonate | Kalrez | Viton | Buna-N | Neoprene | Polyurethane | |
| Ethylene Oxide/Carbon Dioxide Mixtures** | C4 | S | S | I | I | U | I | S | S | I | I | U | U | C3 | U | U | U | U | | |
| Ethylene Oxide/Halocarbon Mixtures** | C4 | S | S | I | I | U | I | S | S | I | I | U | U | C3 | U | U | U | U | | |
| Ethylene Oxide/HCFC-124 | C4 | S | S | I | I | U | I | S | S | I | I | U | U | C3 | U | U | U | U | | |
| Halocarbon 11 | CCl ₃ F | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | S | S | U | U | | |
| Halocarbon 12 | CCl ₂ F ₂ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 13 | CClF ₃ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 13B1 | CBF ₃ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 14 | CF ₄ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 21 | CHCl ₂ F | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | U | U | S | S | | |
| Halocarbon 22 | CHClF ₂ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | U | U | S | U | | |
| Halocarbon 23 | CHF ₃ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | I | I | I | S | | |
| Halocarbon 113 | CCl ₂ FCClF ₂ | S | S | S | C5 | U | S | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 114 | C ₂ Cl ₂ F ₄ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 115 | C ₂ ClF ₅ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 116 | C ₂ F ₆ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | I | I | I | S | | |
| Halocarbon 142B | C ₂ H ₃ ClF ₂ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | U | S | S | S | | |
| Halocarbon 152A | C ₂ H ₄ F ₂ | S | S | S | C5 | I | S | S | S | S | S | U | U | C3 | U | S | S | S | | |
| Halocarbon C-318 | C ₄ F ₈ | S | S | S | C5 | I | I | S | S | S | S | U | U | C3 | S | S | S | S | | |
| Halocarbon 502 | CHClF ₂ /CClF ₂ -CF ₃ | I | S | S | C5 | I | I | S | S | S | I | S | U | U | C3 | S | S | S | S | |
| Halocarbon 1132A | C ₂ H ₂ F ₂ | S | S | S | C5 | I | S | S | I | S | S | U | U | C3 | I | I | I | S | | |
| Helium | He | S | 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 | S | |
| Hydrogen Chloride | HCl | U | S | S | I | U | U | S | S | S | S | S | U | S | S | U | U | U | | |
| Hydrogen Sulfide | H ₂ S | U | S | S | S | I | I | S | S | S | S | S | S | S | U | S | S | S | | |
| Isobutane | C ₄ H ₁₀ | S | S | S | S | S | S | S | S | S | S | S | U | S | S | S | S | S | | |
| Isobutylene | C ₄ H ₈ | S | S | S | S | I | S | S | S | S | S | S | I | S | S | S | S | I | | |

** Satisfactory for use with EPR (Ethylene Propylene Rubber) and EPDM.

