

# Material Compatibility



## Air Liquide Material Compatibility

Alphagaz has assembled this material compatibility information to assist the user in the evaluation of materials of construction for a safe gas system.

Although the information has been compiled from what Alphagaz believes are authoritative sources, it must be used with extreme caution. No chart can cover all conditions of concentration, temperature, humidity, impurities and aeration.

It is recommended that this chart be used only to select possible materials for use and then more extensive investigation and testing be done under the specific conditions to be encountered.

Alphagaz believes the information presented to be accurate and factual, but it is not to be taken as a warranty or representation for which Alphagaz assumes legal responsibility.

## Directions

- 1 Locate the required gas on the chart using the name column on the left.
- 2 Check the materials you want to use. The materials have been divided into metals and synthetics.
- 3 Refer back to the Material Compatibility Legend.
- 4 The Legend will advise as to whether the desired combination of material and gas are appropriate.

## Material Compatibility Legend

<b>A</b> Good	<b>6</b> 250 °C
<b>B</b> Fair	<b>7</b> 350 °C
<b>C</b> Poor	<b>8</b> 50 °C
<b>D</b> Insufficient Data	<b>9</b> 180 °C
<b>1</b> In presence of moisture	<b>10</b> 100 °C
<b>2</b> > 65% copper	<b>11</b> In absence of O <sub>2</sub>
<b>3</b> In presence of oxygen	<b>12</b> 150 °C
<b>4</b> Up to 104 bars	<b>13</b> Possible forming of spontaneously flammable compounds
<b>5</b> < 400 °C	

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Name of Gas	Metals					Synthetics									
	Aluminum	Brass	Monel	Copper	Carbon Steel	Stainless Steel	Buna-n	Butyl	Kel-F	Neoprene	Nylon	Polyethylene	PVC	Teflon	Viton
Acetylene C <sub>2</sub> H <sub>2</sub>	A	A/C2C	C	A	A	A	D	D	B	B	D	D	D	B	A
Air	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Allene C <sub>3</sub> H <sub>4</sub>	A	A	C	A	A	A	D	D	A	A	D	A	D	A	D
Ammonia NH <sub>3</sub>	B	C	C	A/C1	A/C3A	B	D	A	B	D	C	A	A	A	C
Argon Ar	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Arsine AsH <sub>3</sub>	C	B	B	A	A	A	B	D	A	B	D	D	A	A	D
Boron Trichloride BCl <sub>3</sub>	A	B	D	C	A	A	D	D	B	D	D	D	B	B	D
Boron Trifluoride BF <sub>3</sub>	B/C1D	A/C1C	A/C1C	A/C1B/C1D	D	B	D	D	D	D	D	D	B	D	D
Boron Trifluoride B <sub>11</sub> F <sub>3</sub>	B/C1D	A/C1C	A/C1C	A/C1B/C1D	D	B	D	D	D	D	D	D	B	D	D
Bromine Trifluoride BrF <sub>3</sub>	A5	D	A9	C1	A9	A9	C	C	A	A	D	D	C	A	D
1,3-Butadiene C <sub>4</sub> H <sub>6</sub>	A	A	A	A	A	A	C	C	A	B	D	D	B	A	D
n-Butane C <sub>4</sub> H <sub>10</sub>	A	A	A	A	A	A	A	C	A	B	D	C	A	A	A
1-Butene C <sub>4</sub> H <sub>8</sub>	A	A	A	A	A	A	A	C	A	B	D	C	A	A	D
cis-2-Butene C <sub>4</sub> H <sub>8</sub>	A	A	A	A	A	A	A	C	A	B	D	C	A	A	D
trans-2-Butene C <sub>4</sub> H <sub>8</sub>	A	A	A	A	A	A	A	C	A	B	D	C	A	A	D
Carbon Dioxide CO <sub>2</sub>	A	A	A	A	A	A	C	D	A	B	D	B	A	A	A
Carbon Monoxide CO	A	A	A	A	A4	A	C	C	A	C	D	D	B	A	D
Carbonyl Sulfide COS	A/C1	A/C1	A/C1	A/C1	A/C1	A/C1	D	D	A	D	A	D	A	A	A
Chlorine Cl <sub>2</sub>	C	C	C	C	B	A	B	D	A	C	C	C	B	A	A
Chlorine Trifluoride ClF <sub>3</sub>	A5	C	A9	A5	A9	A9	C	C	A	A	D	D	C	A	D
Cyanogen CNCN	D	D	D	C	A	A	D	D	A	D	D	D	D	A	D
Cyanogen Chloride CNCl	D	D	D	C	D	B	D	D	A	D	D	D	D	A	D
Cyclopropane C <sub>3</sub> H <sub>6</sub>	A	A	A	A	A	A	A	C	A	B	D	C	A	A	D
Deuterium D <sub>2</sub>	A	A	A	A	A	A	A	A	A	A	D	A	A	A	D
Diborane B <sub>2</sub> H <sub>6</sub>	A	A	A	A	A	A	D	D	A	D	B	D	D	A	B
Dichlorosilane SiH <sub>2</sub> Cl <sub>2</sub>	C	C	C	C	C	A	C	C	A9	C	C	A8	D	A6	B
Dimethylamine (CH <sub>3</sub> ) <sub>2</sub> NH	C	C	C	C	A	A	C	C	A	D	D	A	A	A	C
Dimethyl Ether (CH <sub>3</sub> ) <sub>2</sub> O	A	A	A	A	A	A	B	C	C	C	D	D	D	A	C
2,2-Dimethylpropane C <sub>5</sub> H <sub>12</sub>	A	A	A	A	A	A	A	C	D	B	D	C	A	D	D
Disilane Si <sub>2</sub> H <sub>6</sub>	D	A	A	A	A	A	D	D	A	D	B	D	D	A	B
Ethane C <sub>2</sub> H <sub>6</sub>	A	A	A	A	A	A	A	C	A	A	D	B	A	A	D
Ethylacetylene C <sub>4</sub> H <sub>6</sub>	A	B2	C	A	A	A	A	C	A	B	D	C	A	A	D
Ethyl Chloride C <sub>2</sub> H <sub>5</sub> Cl	A/C1	A/C1	A/C1	A/C1	A/C1	A/C1	A	C	A	B	D	D	C	A	B
Ethylene C <sub>2</sub> H <sub>4</sub>	A	A	A	A	A	A	A	C	A	A	D	C	A	A	D
Germane GeH <sub>4</sub>	A	A	A	A	A	A	D	D	A	D	B	D	D	A	B
Halocarbon 11 CCl <sub>3</sub> F	A	A	A	A	A	A	A	D	B	C	D	D	D	A	B
Halocarbon 12 CCl <sub>2</sub> F <sub>2</sub>	A	A	A	A	A	A	B	C	B	A	D	B	D	C	B
Halocarbon 13 CClF <sub>3</sub>	A	A	A	A	A	A	A	A	B	A	B	D	D	A	D
Halocarbon 13 B1 CBrF <sub>3</sub>	A	A	A	A	A	A	A	A	B	A	B	D	D	A	D
Halocarbon 14 CF <sub>4</sub>	A	A	A	A	A	A	D	D	B	D	B	D	D	A	D
Halocarbon 21 CHCl <sub>2</sub> F	A	A	A	A	A	A	C	C	B	C	A	D	D	A	D
Halocarbon 22 CHClF <sub>2</sub>	A	A	A	A	A	A	C	A	B	A	C	D	D	C	C
Halocarbon 23 CHF <sub>3</sub>	A	A	A	A	A	A	D	D	B	D	D	D	D	A	D
Halocarbon 113 CCl <sub>2</sub> F-CClF <sub>2</sub>	A	A	A	A	A	A	D	D	B	D	D	D	D	A	A
Halocarbon 114 C <sub>2</sub> Cl <sub>2</sub> F <sub>4</sub>	A	A	A	A	A	A	A	B	B	A	D	D	D	A	B
Halocarbon 115 C <sub>2</sub> ClF <sub>5</sub>	A	A	A	A	A	A	A	A	B	A	D	D	D	A	D
Halocarbon 116 C <sub>2</sub> F <sub>6</sub>	A	A	A	A	A	A	D	D	B	D	D	D	D	A	D

