

Guide to Other Gases

The meters in this catalog may be used to measure a wide variety of gases in addition to natural gas. When using a diaphragm meter, you must account for the fact that the maximum capacity of the meter will

vary with the specific gravity of the gas being measured.

To accurately size a diaphragm meter, the rated capacity must be multiplied by a capacity conversion factor (Fg), where:

$$F_g = \sqrt{\frac{\text{S. G. of gas on which rated capacity is based}}{\text{S. G. of gas to be measured}}}$$

Since capacity data for American meters is based on natural gas, the following table includes capacity conversion factors which can be used to convert from natural gas to the specific gas shown.

For example, the conversion factor for nitrogen is:

$$F_g = \sqrt{\frac{\text{S. G. of natural gas}}{\text{S. G. of nitrogen}}}$$

$$F_g = \sqrt{\frac{0.60}{0.97}}$$

$$F_g = 0.79$$

Table of Measurable Gases

Gas	Specific Gravity (S.G.)	Specific Gravity Conversion Factor (Fg)	Aluminumcase Diaphragm Meters	Turbine Meters	Electronic Orifice Meter (AE5000EFM)
Air	1.00	0.77	A	A	A
Aliphatic Hydrocarbons	—	(1)	A	A	A
Argon	1.38	0.66	A	A	A
Butane	2.01	0.55	B	B	A
Carbon Dioxide (dry)	1.52	0.63	A	A	A
Carbon Monoxide (dry)	0.97	0.79	B	B	A
Cyclopropane	1.45	0.64	B	B	A
Ethane	1.04	0.76	A	A	A
Ethylene	0.98	0.78	B	A	A
Helium	0.14	1.15 ⁽²⁾	A	A	A
Hexafluoropropylene(3)	5.18	0.34	B	B	A
Hydrogen	0.07	1.15 ⁽²⁾	A	A	A
Isobutylene	2.00	0.55	B	B	A
Krypton	2.82	0.46	A	A	A
Methane (pure)	0.55	1.04	A	A	A
Natural Gas	0.60	1.00	A	A	A
Neon	0.70	0.92	A	A	A
Nitrogen	0.97	0.79	A	A	A
Propane	1.53	0.63	A	A	A
Propylene	1.48	0.64	B	A	A
Sulfur Hexafluoride	5.11	0.34	B	B	A
Xenon	4.53	0.36	A	A	A

Category A: Under normal use, service life is comparable to natural gas service, depending on presence of contaminants.

Category B: Service life varies according to deleterious effects of the specific gas and any contaminants.

Notes:

Do not use American meters to measure oxygen. For gases not listed and high purity gas applications, consult your local distributor or contact American Meter.

1. Conversion factor varies with the specific gravity of the particular gas.

2. For very light gases such as hydrogen and helium, the conversion factor method of calculating maximum capacity may result in excessive mechanical speeds of the meter.

Therefore, the maximum conversion factor is calculated based on a specific gravity of 0.45.

3. Also known as perfluoropene.