

Hydrocarbon Processing Gases

Airgas® is a leading supplier of hydrocarbon calibration standards for use in the calibration of laboratory, emission monitoring, and process control instrumentation. Airgas' calibration standards are available as both liquid and gaseous mixtures in minor component ranges from low part-per-million (ppm) to percentage.

Liquid and Gaseous Blends

We can provide liquid or gaseous mixtures in both aluminum and steel cylinders. Gaseous blends, containing condensable components, are normally filled to a pressure which is 75% dewpoint pressure at 70° F unless physical or stability problems dictate a lower percentage. This is designed to prevent condensation problems which may occur as a result of lower temperature conditions. Liquid blends are normally filled by weight and will not exceed the fill density regulations set forth by the DOT (§173.304 (d)). All liquid blends will also be delivered with a 200 psig helium head pressure as standard unless requested by the customer.

Packages

Hydrocarbon calibration blends are available in a variety of steel and aluminum cylinders that are prepared specific to each mixture. We offer specially prepared packages for low concentration or reactive gas mixtures to ensure mixture stability. We also can provide mixtures in a constant-pressure piston cylinder for liquid mixtures that may fractionate.

We provide our gas blend cylinders with a standard diaphragm valve and a CGA outlet recommended by CGA Pamphlet V-7. All liquid cylinders come with a dip tube and a helium head pressure to allow for efficient liquid withdrawal.

Standard Low Pressure Cylinder with Single-Port Valve and Dip Tube

These mixtures are usually blended gravimetrically. The headspace is then pressurized with an inert gas, normally helium. Liquid is then drawn from the bottom of the cylinder through the dip tube. This type of cylinder/valve combination is recommended for mixtures containing components having low volatility.

Standard Low Pressure Cylinder with Dual-Port Valve

A dual-port valve allows the cylinder to be pressurized at your site. The valve contains an inlet valve that allows a helium or nitrogen supply to be connected. The advantage of the dual-port valve is that the head space pressure can be maintained as the liquid is drawn off. This prevents the more volatile components from moving to the head space, and provides a constant delivery pressure. It is recommended for mixtures where the components all have low volatility.

Piston Cylinder

Mixtures are prepared gravimetrically. Pressure is maintained by pressurizing one side of the piston with an inert gas, normally helium. The floating piston effectively separates the inert gas from the liquid mixture. The constant pressure on the piston prevents the lighter components from volatilizing, thus providing the most accurate and consistent liquid standards.



Airgas offers hydrocarbon standards in piston cylinders to assure consistent component concentrations.

HYDROCARBON PROCESSING GASES

Liquid and Gaseous Hydrocarbon Standards

1-Butanol	2-Methyl-1-Pentene	Bromoform	Dimethylacetylene
1-Butene	2-Methyl-2-Butene	Bromomethane	Dimethyl Disulfide
1-Butyl Alcohol	2-Methyl-2-Pentene	Bromotrifluoromethane	Dimethyl Ether
1-Chloro-2-Propanol	2-Methyl-2-Propanethiol	Butylacetate	Dimethylformamide
1-Chloro-2,2-Difluoroethylene	2-Methylpentane	Butylacrylate	Dimethyl Sulfide
1-Chloro-2,2,2-Trifluoroethane	2-Methylbutane	Butylaldehyde	Dimethylacetamide
1-Chloropropane	2-Methylhexane	Butylbenzene	Docosane
1-Chloropropylene	2-Propanol	Butylglycol	Dodecane
1-Chlorobutane	2-Propyl Mercaptan	Butylmercaptan	Ethane
1-Decene	2,2-Dichloroethanol	Carbon Dioxide	Ethanol
1-Dodecene	2,2-Dimethylpentane	Carbon Disulfide	Ethylacetate
1-Hexene	2,2-Dimethylbutane	Carbon Monoxide	Ethylacetylene
1-Methoxy-2-Propanol	2,2-Dimethylpropane	Carbon Tetrachloride	Ethylacrylate
1-Methoxy-2-Propyl Acetate	2,2,3-Trimethylbutane	Carbonyl Fluoride	Ethylalcohol
1-Methylbenzene	2,2,3-Trimethylpentane	Carbonyl Sulfide	Ethylbenzene
1-Methylpropylbenzene	2,2,4-Trimethylpentane	Chlorbenzene	Ethylbromide
1-Nonene	2,3-Dimethylbutane	Chlorodibromomethane	Ethylchloride
1-Octene	2,3-Dimethylpentane	Chlorodifluoroethane	Ethylcyclopentane
1-Pentene	2,3-Dimethylbutane	Chlorodifluoromethane	Ethyl Disulfide
1-Propanol	2,3,3-Trimethylpentane	Chloroethane	Ethylisobutyl Ketone
1-Propoxy-2-Propanol	2,3,4-Trimethylpentane	Chloroethylene	Ethylmercaptan
1,1-Dichloroethane	2,4-Dimethylpentane	Chloroform	Ethylmethyl Sulfide
1,1-Dichloroethylene	2,4-Pentanedione	Chloromethane	Ethylterbutyl Ether
1,1-Difluoroethane	3-Chloropropylene	Chloromethyl Methyl Ether	Ethylbenzene
1,1-Difluoroethylene	3-Methyl-1-Butene	Chloropentafluoroethane	Ethylene
1,1,1-Trichloroethane	3-Methyl-cis-2-Pentene	Chloropentafluoromethane	Ethylene Dichloride
1,1,1,2-Tetrachloroethane	3-Methyl-trans-2-Pentene	cis-1,2-Dichloroethylene	Ethylene Oxide
1,1,1,2,3,3,3-Heptafluoropropane	3-Methylpentane	cis-1,3-Dichloropropene	Ethylene Sulfide
1,1,1,3,3-Pentafluoropropane	3-Methylhexane	cis-1,3-Pentadiene	Formaldehyde
1,1,1,2-Trichloroethane	3-Methylpentane	cis-2-Butene	Furan
1,1,2-Trichloroethylene	3-Methylthiophene	cis-2-Hexene	Helium
1,1,2,2-Tetrachloroethane	3,3-Dimethylpentane	cis-2-Octene	Heptane
1,2-Butadiene	4-Bromofluorobenzene	cis-2-Pentene	Hexachloro-1,3-Butadiene
1,2-Dibromoethane	4-Methyl-cis-2-Pentene	cis-3-Hexene	Hexafluoro-1,3-Butadiene
1,2-Dichloropropane	4-Methyl-trans-2-Pentene	Crotonaldehyde	Hexafluoroethane
1,2-Dichlorobenzene	4-Vinyl-1-Cyclohexene	Cumene	Hexamethyldisiloxane
1,2-Dichloroethane	5-Ethylidene-2-Norbornene	Cyanogen	Hexane
1,2-Ethanedithiol	5-Vinyl-2-Norbornene	Cyanogen Chloride	Hexylaldehyde
1,2-Propadiene	Acetaldehyde	Cyclobutene	Hydrogen
1,2,2,2-Tetrachloroethane	Acetic Acid	Cyclohexane	Hydrogen Bromide
1,2,3-Trichloropropane	Acetone	Cyclohexanone	Hydrogen Chloride
1,2,4-Trichlorobenzene	Acetonitrile	Cyclopentane	Hydrogen Cyanide
1,2,4-Trimethylbenzene	Acetylene	Cyclopentene	Hydrogen Sulfide
1,3-Butadiene	Acrolein	Decafluorobutane	Isobutane
1,3-Cyclopentadiene	Acrylic Acid	Deuterium	Isobutene
1,3-Dichlorobenzene	Acrylonitrile	Dibromochloromethane	Isobutylene
1,3,5-Trimethylbenzene	Allene	Dibutyl Sulfide	Isobutyraldehyde
1,4-Butanediol	Allyl Alcohol	Dichlorodifluoromethane	Isooctane
1,4-Dichlorobenzene	Allyl Chloride	Dichlorofluoromethane	Isopentane
1,4-Diethylbenzene	alpha-Methylstyrene	Dichloromethane	Isoprene
1,4-Dioxane	Ammonia	Dichlorotetrafluoroethane	Isopropanol
1,4-Pentadiene	Amylmethyl Ether	Dichlorotrifluoroethane	Isopropyl Alcohol
1H-indene	Argon	Dicyclopentadiene	Isopropyl Ether
1-Nonene	Arsine	Diethyl Disulfide	Isopropyl Mercaptan
2-Butanol	Benzaldehyde	Diethyl Ether	Isopropyl Nitrate
2-Chloro-1,3-Butadiene	Benzene	Diethyl Sulfide	Isopropylacetate
2-Chloroethylvinylether	Benzylchloride	Diethyleneglycolethyl Ether	Krypton
2-Chloropropane	Biphenyl	Diethyl Ketone	m-Xylene
2-Ethyl-1-Butene	Bromobenzene	Difluoromethane	Methacrolein
2-Fluoropropane	Bromodichloromethane	Diisobutylene	Methane
2-Hexene	Bromochloromethane	Diisopropyl Ether	Methanthiol
2-Methyl-1-Butene	Bromoethane	Diisopropylamine	Methanol

Liquid and Gaseous Hydrocarbon Standards

HYDROCARBON PROCESSING GASES

Methylacetate	n-Butane	p-Xylene	Tetrahydrofuran
Methylacetylene	n-Butanol	Pentadecane	Tetrahydrothiophene
Methylacrylate	n-Butylbenzene	Pentafluoroethane	Thiophane
Methyl Alcohol	n-Decane	Perchloroethylene	Thiophene
Methylbromide	n-Heptane	Perfluoropropane	Toluene
Methylbutylketone	n-Nonane	Propadiene	trans-1,2-Dichloroethylene
Methylchloride	n-Octane	Propane	trans-1,3-Dichloropropene
Methylcyclohexane	n-Pentane	Propionaldehyde	trans-2-Butene
Methylcyclopentane	n-Propanol	Propylacetate	trans-2-Hexene
Methylethylketone	n-Propylbenzene	Propylmercaptan	trans-2-Octene
Methylformate	n-Propylmercaptan	Propylbenzene	trans-2-Pentene
Methyliodide	N,N-Dimethylaniline	Propylene	trans-3-Hexene
Methylisobutyl Ketone	neo-Hexane	Propylene Oxide	Trichloroethylene
Methylmercaptan	Neon	Silicon Tetrafluoride	Trichlorofluoromethane
Methylmethacrylate	neo-Pentane	Styrene	Trichloromethane
Methylpentyl Ketone	Nitric Oxide	Sulfur Dioxide	Tridecane
Methylphenyl Ketone	Nitrogen	Sulfur Hexafluoride	Triethylamine
Methylpropyl Ketone	Nitrogen Dioxide	Sulfur Tetrafluoride	Trifluoromethane
Methylpyrrolidine	Nitrogen Trifluoride	tert-Butylalcohol	Tungsten Hexafluoride
Methylsalicylate	Nitrous Oxide	tert-Butylbenzene	Undecane
Methyltertbutyl Ether	Nonane	tert-Butylchloride	Vinyl Acetate
Methyltrichlorosilane	o-Xylene	tert-Butylmercaptan	Vinyl Acetylene
Methylvinyl Ether	Octafluorocyclobutane	Tetrabromomethane	Vinyl Chloride
Methylvinyl Ketone	Octafluoropropane	Tetrachloroethane	Vinyl Cyclohexane
Methylcyclopentane	Octane	Tetrachloroethylene	Vinyl Cyclohexene
Methylenebromide	Oxygen	Tetradecane	Vinyl Trimethoxysilane
Methylenechloride	Oxygen Difluoride	Tetrafluoroethane	Water
Methylformate	p-Isopropyltoluene	Tetrafluoromethane	Xenon

Natural Gas Standards

HYDROCARBON PROCESSING GASES

Typical Natural Gas Mixtures					
Component Concentration (MOL %)	GPA Gas Reference	High Helium Reference	High Ethane Reference	Low BTU Reference	Daniel Reference
Helium	0.5	0.2 – 2.0			
Hydrogen				14.0	
Argon				1.0	
Nitrogen	5.0	1.6	2.5	Balance	2.5
Carbon Monoxide				12.0	
Carbon Dioxide	1.0	0.3	3.0	5.0	1.0
Methane	Balance	Balance	Balance	0.5	Balance
Ethane	9.0	3.0	3.5		5.0
Acetylene				1.0	
Propane	6.0	1.8	1.0		1.0
Isobutane	3.0	1.0	0.4		0.3
n-Butane	3.0	1.0	0.4		0.3
Isopentane	1.0	0.3	0.15		0.1
n-Pentane	1.0	0.3	0.15		0.1
Neopentane			0.1		0.1
n-Hexane			0.05		0.03
n-Heptane			0.02		
Nominal BTU	1298	1080	1028	114	1051

The following is a list of the more common components used in natural gas standards. While certain mixtures are standard throughout the industry, Airgas prides itself in providing the highest quality, multi-component custom standards to meet the needs and specifications of the individual customer.