



Gas Mixtures – Products for Specialty Gas Applications

Standard Natural Gas Mixtures Formulations

B-MAT-1010™ BTU Calibration Methane

Gas Data

Specific Gravity: 0.565
Molecular Weight: 16.04

Shipping Information

UN Number: UN 1971
DOT Proper Name: Methane, Compressed
DOT Classification: 2.1 (Flammable Gas)
DOT Label: FLAMMABLE GAS
TC Proper Name: Methane, Compressed
TC Classification: 2.1
TC Label: FLAMMABLE GAS

Cylinder Specifications

Cylinder Size	Valve Outlet CGA No.	Pressure psig @ 70°F	Pressure kPa @ 21.1°C	Approximate Ship Weight	
				lb	kg
1A	350	2,265	15,616	144	65

Gas Grade Specifications	Product Code	Cylinder Size	Content		Equipment Recommendations	Model No.
			US	Metric		
BTU Calibration Methane	G1373801	1A	286 ft ³	8.10 m ³	Single Stage Non Corrosive Reg. Flash Arrestor Tee Purge	Series 3530 6103A-F 4753

Ideal BTU Value = 1010 @ 14.696 psia, 60F (GPA 2172)

B-MAT-1028™ Calorimetric Natural Gas Reference Standard

Gas Data

Specific Gravity: 0.641
Molecular Weight: 18.45

Shipping Information

UN Number: UN 1954
DOT Proper Name: Compressed Gas, Flammable, nos
(List of Components)
DOT Classification: 2.1 (Flammable Gas)
DOT Label: FLAMMABLE GAS
TC Proper Name: Compressed Gas, Flammable, nos
(List of Components)
TC Classification: 2.1
TC Label: FLAMMABLE GAS

Cylinder Specifications

Cylinder Size	Valve Outlet CGA No.	Pressure* psig @ 70°F	Pressure kPa @ 21.1°C	Approximate Ship Weight	
				lb	kg
1F	510	240	1,655	75	34

Mixture Specifications	Primary	Product Codes		Cylinder Size	Content*		Equipment Recommendations	Model No.
		Gravimetric	Certified		US	Metric		
Methane	88.73%	G0852506	G0856306	1F	68 ft ³	1.95 m ³	Single Stage Reg. Flash Arrestor Tee Purge	Series 3530 6103A-F 4753
Ethane	3.50%							
Propane	1.00%							
iso-Butane	0.40%							
n-Butane	0.40%							
iso-Pentane	0.15%							
n-Pentane	0.15%							
neoPentane	0.10%							
n-Hexane	0.05%							
n-Heptane	0.02%							
Carbon Dioxide	3.00%							
Nitrogen	2.50%							

BTU Value = 1028

NOTE: Can also be manufactured as a UniTherm™ or MaxiTherm™ blend. Please contact Matheson for more information.

*Contents and pressure will vary with hydrocarbon dewpoint temperature. Additional cylinder sizes are available.



B-MAT-1083™ Helium Enriched Reference Standard

This high helium concentration mixture is specifically blended for applications requiring the measurement of higher helium levels.

Gas Data

Specific Gravity:	0.628
Molecular Weight:	17.83

Shipping Information

UN Number:	UN 1954
DOT Proper Name:	Compressed Gas, Flammable, nos (List of Components)
DOT Classification:	2.1 (Flammable Gas)
DOT Label:	FLAMMABLE GAS
TC Proper Name:	Compressed Gas, Flammable, nos (List of Components)
TC Classification:	2.1
TC Label:	FLAMMABLE GAS

Cylinder Specifications				Approximate Ship Weight	
Cylinder Size	Valve Outlet CGA No.	Pressure* psig @ 70°F	Pressure kPa @ 21.1°C	lb	kg
1F	510	240	1,655	75	34

Mixture Specifications		Primary	Product Codes			Cylinder Size	Content*		Equipment Recommendations	Model No.
			Gravimetric	Certified		US	Metric			
Methane	88.90%	G0853806	G0853706	G0853506	1F	68 ft ³	1.93 m ³	Single Stage Reg. Flash Arrestor Tee Purge	Series 3530 6103A-F 4753	
Ethane	3.00%									
Propane	1.70%									
iso-Butane	1.00%									
n-Butane	1.00%									
iso-Pentane	0.30%									
n-Pentane	0.30%									
Carbon Dioxide	0.20%									
Helium	2.00%									
Nitrogen	1.60%									

BTU Value = 1083

NOTE: Can also be manufactured as a UniTherm™ or MaxiTherm™ blend. Please contact Matheson for more information.

*Contents and pressure will vary with hydrocarbon dewpoint temperature. Additional cylinder sizes are available.

Pipeline Natural Gas

The contents are directly filled at a natural pipeline. Concentrations are from analysis only. Batch quantities available.

Cylinder Specifications				Approximate Ship Weight	
Cylinder Size	Valve Outlet CGA No.	Pressure* psig @ 70°F	Pressure kPa @ 21.1°C	lb	kg
1R	350	2,000	13,790	59	27
1A	350	2,000	13,790	144	66

Typical Mixture		Product Code Certified Grade	Cylinder Size	Content*		Equipment Recommendations	Model No.
				US	Metric		
Methane	94%	G1373501	1R	172 ft ³	4.87 m ³	Dual Stage Reg. Single Stage Reg. LB Reg. Manual Control LB Control Flash Arrestor Tee Purge	Series 1250 18L-350 3320 52A-350 4313 6103A-F 4753
Ethane	4%	G1373201-1	1A	255 ft ³	7.22 m ³		
Propane	0.4%						
iso-Butane	0.1%						
n-Butane	0.1%						
iso-Pentane	0.03%						
n-Pentane	0.02%						
Carbon Dioxide	0.6%						
Nitrogen	0.6%						
Methyl Mercaptan	4 ppm						

NOTE: If a stable methyl mercaptan concentration is desired, the 1R size is required.

*Contents and pressure will vary with hydrocarbon dewpoint temperature.



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Standard Natural Gas Mixtures Formulations

B-MAT-1298™ GPA Reference Standard

This mix is recommended by the Gas Processors Association (GPA) for natural gas and similar gas mixtures for gas chromatography. Information pertaining to this mix can be found in GPA publication 2261-72. ASTM Method D-1945-62T also references this mixture for calibration and analysis.

Gas Data

Specific Gravity: 0.810
Molecular Weight: 22.55

Shipping Information

UN Number: UN 1954
DOT Proper Name: Compressed Gas, Flammable, nos
(List of Components)
DOT Classification: 2.1 (Flammable Gas)
DOT Label: FLAMMABLE GAS
TC Proper Name: Compressed Gas, Flammable, nos
(List of Components)
TC Classification: 2.1
TC Label: FLAMMABLE GAS

Cylinder Specifications

Cylinder Size	Valve Outlet CGA No.	Pressure* psig @ 70°F	Pressure kPa @ 21.1°C	Approximate Ship Weight	
				lb	kg
1F	510	100	690	75	34

Mixture Specifications	Primary	Product Codes			Cylinder Size	Content*		Equipment Recommendations	Model No.
		Gravimetric	Certified			US	Metric		
Methane	70.50%	G0852306	G0856106	G0850106	1F	30 ft ³	0.85 m ³	Single Stage Reg. Flash Arrestor Tee Purge	Series 3530 6103A-F 4753
Ethane	9.00%								
Propane	6.00%								
iso-Butane	3.00%								
n-Butane	3.00%								
iso-Pentane	1.00%								
n-Pentane	1.00%								
Carbon Dioxide	1.00%								
Helium	0.50%								
Nitrogen	5.00%								

BTU Value = 1298

Please request Matheson Technical Bulletin 360 and 362 for more information.

*Contents and pressure will vary with hydrocarbon dewpoint temperature. Customers should provide Matheson with a dewpoint temperature, and Matheson will optimize fill pressure and contents.

B-MAT-1280™ High Ethane Reference Standard

Gas Data

Specific Gravity: 0.831
Molecular Weight: 23.16

Shipping Information

UN Number: UN 1954
DOT Proper Name: Compressed Gas, Flammable, nos
(List of Components)
DOT Classification: 2.1 (Flammable Gas)
DOT Label: FLAMMABLE GAS
TC Proper Name: Compressed Gas, Flammable, nos
(List of Components)
TC Classification: 2.1
TC Label: FLAMMABLE GAS

Cylinder Specifications

Cylinder Size	Valve Outlet CGA No.	Pressure* psig @ 70°F	Pressure kPa @ 21.1°C	Approximate Ship Weight	
				lb	kg
1F	510	100	690	75	34

Mixture Specifications	Primary	Product Codes			Cylinder Size	Content*		Equipment Recommendations	Model No.
		Gravimetric	Certified			US	Metric		
Methane	64.00%	G0852906	G0856706	G0850706	1F	30 ft ³	0.85 m ³	Single Stage Reg. Flash Arrestor Tee Purge	Series 3530 6103A-F 4753
Ethane	12.50%								
Propane	7.00%								
iso-Butane	3.00%								
n-Butane	3.00%								
iso-Pentane	0.50%								
n-Pentane	0.50%								
Carbon Dioxide	0.50%								
Nitrogen	9.00%								

BTU Value = 1280 BTU/cubic foot

Please request Matheson Technical Bulletin 360 and 362 for more information.

*Contents and pressure will vary with hydrocarbon dewpoint temperature. Customers should provide Matheson with a dewpoint temperature, and Matheson will optimize fill pressure and contents.



B-MAT-193™ Reference Standard

Gas Data

Specific Gravity: 1.188
 Molecular Weight: 34.41

Shipping Information

UN Number: UN 1954
 DOT Proper Name: Compressed Gas, Flammable, nos
 (Carbon Dioxide, Carbon Monoxide)
 DOT Classification: 2.1 (Flammable Gas)
 DOT Label: FLAMMABLE GAS
 TC Proper Name: Compressed Gas, Flammable, nos
 (Carbon Dioxide, Carbon Monoxide)
 TC Classification: 2.1
 TC Label: FLAMMABLE GAS

Cylinder Specifications

Cylinder Size	Valve Outlet CGA No.	Pressure psig @ 70°F	Pressure kPa @ 21.1°C	Approximate Ship Weight	
				lb	kg
1A	350	1,500	10,343	148	67
2	350	1,500	10,343	80	36
3	350	1,500	10,343	43	20

Mixture Specifications	Product Code	Cylinder Size	Content*		Equipment Recommendations	Model No.
			US	Metric		
Carbon Dioxide 40%	G0828101	1A	185 ft ³	5.24 m ³	Dual Stage Reg.	Series 81-350
Carbon Monoxide 60%	G0828140	2	70 ft ³	1.98 m ³	Single Stage Reg.	Series 18-350
	G0828150	3	31 ft ³	0.88 m ³	Tee Purge Flash Arrestor	4753 6103A-F

BTU Value = 193

Please request Matheson Technical Bulletin 360 and 362 for more information.

*Cylinder fill pressure and contents will vary with customer specified CO₂ condensation temperature.

⚠ WARNING: This product can expose you to chemicals including Carbon Monoxide, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Hydrogen in Nitrogen Reference Standard

Shipping Information

For the mixtures listed below the shipping classifications are dependent on the concentration.

Cylinder Specifications

Cylinder Size	Valve Outlet CGA No.	Pressure psig @ 70°F	Pressure kPa @ 21.1°C	Approximate Ship Weight	
				lb	kg
1A	350	2,000	13,790	150	68
2	350	2,000	13,790	80	36
3	350	2,000	13,790	40	18

Mixture Specifications	Cylinder Size	Contents		Equipment Recommendations	Model No.
		US	Metric		
Hydrogen in Nitrogen	1A	213 ft ³	6.03 m ³	Dual Stage Reg.	Series 81-350
Hydrogen 0.5% to 10%	2	83 ft ³	2.35 m ³	Single Stage Reg.	Series 18-350
Nitrogen Balance	3	35 ft ³	0.99 m ³		

BTU value will vary depending on hydrogen concentration.

Please request Matheson Technical Bulletin 360 and 362 for more information.