

Laboratory Applications

Choose from our extensive selection of SCOTTY™ products engineered expressly for use in chromatography and other typical laboratory applications. They include pure gases and simple mixed gases as well as highly complex multi-component mixtures. Custom blends are also available. Actual concentration value and analytical accuracy are reported on each cylinder label and Certificates of Analysis are provided. All certificates are also available online at scottycerts.com. SCOTTY laboratory products offer uncompromising accuracy and performance in your choice of popular cylinder sizes.

Pure Gases ⁽¹⁾ Description	Purity	Cylinder Size / Gas Volume (liters)								Product Number
		4L [†] STEEL	11L ALUM	14L STEEL	17L STEEL	35L STEEL	48L ALUM	105L STEEL	221L STEEL	
Air, HC-Free THC < 0.1 ppm		▲	●	▲	▲	▲	▲	▲	▲	117-(*)
Air, Zero THC < 1 ppm		▲	●	▲	▲	▲	▲	▲	▲	100-(*)
Argon	99.995%	▲	●		▲	▲	▲			104-(*)
Carbon Dioxide, Bone Dry PR: 454 psig	99.8%	▲	●	▲	▲	▲	▲	▲	▲	105-(*)
Ethane PR: 307 psig	99%			●	●					113-(*)
Ethylene	99.5%	N/A	N/A	▲	▲					114-(*)
Helium THC < 0.5 ppm	99.995%			▲	▲	▲	▲	▲	▲	103-(*)
Hydrogen	99.99%			▲	▲	▲		▲	N/A	108-(*)
Methane	99%	N/A	N/A	▲	▲	▲		▲	N/A	109-(*)
Nitrogen, Zero THC < 0.5 ppm	99.998%	▲	●	▲	▲	▲	▲	▲	▲	279-(*)
Nitrogen, High-Purity	99.99%	▲	●	▲	▲	▲	▲	▲	▲	102-(*)
Nitrous Oxide	99%	N/A		●				●		106-(*)
Oxygen THC < 0.5 ppm	99.6%			▲				▲		101-(*)
Propane PR: 62 psig	99.5%			▲						111-(*)
Propylene PR: 76 psig	99%			●	●					115-(*)
Sulfur Hexafluoride PR: 325 psig	99.8%			●	●	●	●	●	●	116-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in a 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders. ((No express shipping).

(1) Other pure products are available in lecture bottles – see the Pures section of this catalog for more information.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Two-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
Acetylene in He 100 ppm	±5%	•	N/A		•			•			247-(*)
Acetylene in N ₂ 10 ppm	±5%		N/A		•						246-(*)
100 ppm	±5%		N/A		•						248-(*)
1000 ppm	±2%		N/A		•						232-(*)
Ammonia in N ₂ 25 ppm	±5%					•					A200360-(*)
50 ppm	±5%					•					A200160-(*)
Argon in H ₂ 5%	±2%		•								A200210-(*)
Benzene in Air 1 ppm	±5%	•			•		•				238-(*)
10 ppm	±5%			•	•		•	•			240-(*)
1,3-Butadiene in N ₂ 10 ppm	±5%	•	•	•	•						250-(*)
n-Butane in He 1000 ppm	±2%	•	•	•							5555-(*)
10% PR: 134 psig	±2%		•	•			•				5558-(*)
n-Butane in N ₂ 1%	±2%	•	•	•						•	5557-(*)
1-Butene in N ₂ 1000 ppm	±2%	•	•	•							25-(*)
cis-2-Butene in N ₂ 1%	±2%	•	•	•	•						19-(*)
trans-2-Butene in N ₂ 1%	±2%	•	•	•							20-(*)
Carbon Dioxide in Air 300 ppm	±2%		▲	▲	▲			▲		▲	262-(*)
1000 ppm	±2%		▲	▲	▲			▲		▲	233-(*)
2000 ppm	±2%	▲	▲	▲	▲			▲		▲	858-(*)
2.5%	±2%	▲	▲	▲	▲			▲		▲	877-(*)
Carbon Dioxide in Ar 5%	±2%			•							C200960-(*)
25%	±2%			•							C200710-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

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Laboratory Applications continued

Two-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)								Product Number	
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM		221L STEEL
Carbon Dioxide in CH ₄ 40%	±2%							•			C201010-(*)
Carbon Dioxide in He 100 ppm	±5%	•	•	•	•			•			206-(*)
1000 ppm	±2%	•	•	•	•			•			497-(*)
1%	±2%	•	•	•	•						499-(*)
Carbon Dioxide in N ₂ 100 ppm	±5%		▲		▲					▲	205-(*)
300 ppm	±2%		•	•				•		•	40-(*)
500 ppm	±2%	•	▲	▲				▲		▲	41-(*)
1000 ppm	±2%	•	•	•	•			•		•	498-(*)
1600 ppm	±2%		•	•							C201275-(*)
1%	±2%	•	•	•	•			•		•	548-(*)
5%	±2%	▲	▲	▲	▲	▲		▲		▲	93-(*)
10%	±2%	▲	▲	▲	▲			▲		▲	56-(*)
Carbon Dioxide in O ₂ 5%	±2%		•								C200731-(*)
Carbon Monoxide in Air 0.5 ppm	±5%			▲				▲			269-(*)
10 ppm	±5%			▲	▲			▲		▲	66-(*)
25 ppm	±5%			▲	▲			▲		▲	601-(*)
50 ppm	±5%	▲		▲	▲			▲		▲	602-(*)
100 ppm	±5%	▲		▲	▲			▲		▲	68-(*)
250 ppm	±2%			•	•			•		•	604-(*)
500 ppm	±2%			•				•			605-(*)
1000 ppm	±2%			•	•			•			607-(*)
Carbon Monoxide in He 100 ppm	±5%		•							•	215-(*)
1000 ppm	±2%	•		•	•					•	287-(*)
1%	±2%		•	•	•			•			289-(*)
Carbon Monoxide in N ₂ 50 ppm	±5%	▲		▲	▲			▲		▲	268-(*)
100 ppm	±5%	▲		▲	▲		▲	▲		▲	214-(*)
1000 ppm	±2%	•		•	•			•		•	288-(*)
1%	±2%	▲	▲	▲						▲	49-(*)
3%	±2%	•	•	•	•			•			51-(*)
4.5%	±2%			•	•			•		•	50-(*)
Chlorine in N ₂ 5 ppm	±10%							•			309-(*)
10 ppm	±10%							•			261-(*)
900 ppm**	±5%										C200101-25

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

** Cylinder size available is 25 liter with CGA 660 valve only.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Two-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)								Product Number	
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM		221L STEEL
Ethane in He											
100 ppm	±5%	•	•	•				•			357-(*)
1%	±2%	•	•	•	•			•		•	365-(*)
Ethane in N ₂											
1000 ppm	±2%		•	•	•					•	21-(*)
1%	±2%	•	•	•	•					•	366-(*)
Ethylene in Air											
10 ppm	±5%		▲	▲	▲			▲		▲	96-(*)
Ethylene in He											
10 ppm	±5%		•	•				•			845-(*)
100 ppm	±5%	•	▲	▲						▲	203-(*)
1%	±2%	•	•	•						•	849-(*)
Ethylene in N ₂											
10 ppm	±5%	•	•	•	•					•	846-(*)
100 ppm	±5%	•	•	•	•					•	847-(*)
1000 ppm	±2%	▲	▲	▲	▲					▲	22-(*)
1%	±2%	▲	▲	▲							855-(*)
Helium in N ₂											
10%	±2%			•	•					•	276-(*)
n-Hexane in Air											
400 ppm	±2%		•	•	•			•			282-(*)
500 ppm	±2%		•	•	•			•			150-(*)
n-Hexane in N ₂											
1000 ppm	±2%		•	•	•						13-(*)
Hydrogen in Air											
20% LEL (0.8%V)	±2%		•	•	•			•		•	369-(*)
25% LEL (1%V)	±2%	▲	▲	▲				▲		▲	88-(*)
50% LEL (2%V)	±2%	▲	▲	▲				▲		▲	85-(*)
62.5% LEL (2.5%V)	±2%	•	•	•						•	701-(*)
Hydrogen in Ar											
3%	±2%		•								H203350-(*)
Hydrogen in He											
40% (FID Fuel)	±2%								•		SEMTECH110
Hydrogen in N ₂											
100 ppm	±5%	▲	▲	▲	▲					▲	210-(*)
1%	±2%	•	▲	▲	▲					▲	296-(*)
1.3%	±2%		•	•	•					•	709-(*)
10%	±2%		•	•	N/A					N/A	297-(*)

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Two-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number	
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL		
Hydrogen Cyanide in N ₂ 10 ppm	±10%					•						H203480-(*)
Hydrogen Sulfide in Air 10 ppm	±5%					•	•					H200091-(*)
25 ppm	±5%					•	•					270-(*)
50 ppm	±5%					•						00007-(*)
Hydrogen Sulfide in N ₂ 25 ppm	±5%					•	•					251-(*)
50 ppm	±5%					•	•					294-(*)
100 ppm	±5%					•	•					295-(*)
1000 ppm	±2%					•	•					H200044-(*)
Isobutane in He 100 ppm	±5%		▲	▲								377-(*)
1%	±2%		•	•								385-(*)
Isobutane in N ₂ 100 ppm	±5%		•	•	•					•		378-(*)
1000 ppm	±2%		•	•	•			•		•		24-(*)
1%	±2%	•	•	•								386-(*)
Isobutylene in Air 50 ppm	±5%	•	•	•				•		•		702-(*)
100 ppm	±5%	▲	▲	▲	▲			▲		▲		703-(*)
225 ppm	±2%		▲	▲	▲			▲		▲		244-(*)
1000 ppm	±2%	•	•	•	•			•		•		704-(*)
Isobutylene in N ₂ 1000 ppm	±2%		•		•							26-(*)
1%	±2%	•	•									18-(*)
Methane in Air 10 ppm	±5%	▲	▲	▲				▲		▲		16-(*)
50 ppm	±5%		▲	▲	▲			▲		▲		705-(*)
500 ppm	±2%		▲	▲	▲			▲		▲		263-(*)
20% LEL (1%V)	±2%		▲	▲	▲			▲		▲		31-(*)
40% LEL (2%V)	±2%	▲	▲	▲	▲			▲		▲		36-(*)
50% LEL (2.5%V)	±2%	▲	▲	▲	▲			▲		▲		86-(*)
Methane in Ar 10%	±2%		•	•	•							92-(*)
Methane in CO ₂ 6000 ppm	±2%							•				M202481-(*)
60%	±2%							•				M202301-(*)

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* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

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Laboratory Applications continued

Two-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)								Product Number	
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM		221L STEEL
Methane in He											
100 ppm	±5%	▲	▲	▲	▲			▲		▲	213-(*)
1000 ppm	±2%	▲	▲	▲	▲			▲		▲	867-(*)
1%	±2%	▲	▲	▲	▲			▲			869-(*)
10%	±2%		●	●							875-(*)
Methane in N₂											
100 ppm	±5%		▲	▲	▲			▲		▲	212-(*)
1000 ppm	±2%	▲	▲					▲		▲	868-(*)
1%	±2%	●	▲	▲	▲			▲		▲	258-(*)
10%	±2%	●	●	●	●			●		●	876-(*)
Nitric Oxide in O₂-Free N₂											
10 ppm	±10%					●	●				00011-(*)
50 ppm	±5%					●					N200351-(*)
1000 ppm	±2%					●	●				037-(*)
Nitrogen in He											
10%	±2%		●	●						●	278-(*)
Nitrogen Dioxide in Air											
50 ppm	±5%					●	●				302-(*)
100 ppm	±5%					●	●				N200460-(*)
Nitrogen Dioxide in N₂											
25 ppm	±5%					●					N200133-(*)
100 ppm	±5%					●	●				N200134-(*)
Nitrous Oxide in He											
10 ppm	±5%		●	●						●	445-(*)
100 ppm	±5%	●	●	●	●			●		●	447-(*)
1%	±2%	●	●	●							546-(*)
10%	±2%	●	●	●						●	470-(*)
Nitrous Oxide in O₂-Free N₂											
0.1 ppm	±10%			●	●			●			42-(*)
1 ppm	±5%	●	●	●	●			●		●	44-(*)
10 ppm	±5%	●	●	●	●			●		●	446-(*)
100 ppm	±5%	●	●	●	●			●			448-(*)
Oxygen in He											
100 ppm	±5%		●	●	●			●			208-(*)
1%	±2%	▲	▲	▲	▲			▲		▲	485-(*)
10%	±2%	●		●	●					●	487-(*)

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

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Laboratory Applications continued

Two-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
Oxygen in N₂											
10 ppm	±5%		•	•	•			•		•	478- ^(*)
100 ppm	±5%		▲	▲	▲			▲		▲	207- ^(*)
1000 ppm	±2%		▲	▲	▲			▲		▲	480- ^(*)
4000 ppm	±2%		▲	▲	▲			▲		▲	707- ^(*)
1%	±2%	▲	▲	▲	▲			▲		▲	486- ^(*)
2%	±2%	▲	▲	▲	▲			▲		▲	94- ^(*)
5%	±2%		▲	▲	▲			▲		▲	886- ^(*)
6%	±2%	•	•	•	•					•	95- ^(*)
8%	±2%	▲	▲	▲	▲			▲		▲	708- ^(*)
10%	±2%	▲	▲	▲	▲			▲		▲	488- ^(*)
20%	±2%	▲	▲	▲	▲			▲		▲	308- ^(*)
n-Pentane in Air											
1000 ppm	±2%	•		•	•			•			2056- ^(*)
54% LEL (0.76%V) PR: 419 psig	±2%		•	•	•			•		•	N203072- ^(*)
n-Pentane in N₂											
1000 ppm	±2%		•	•	•						27- ^(*)
Propane in Air											
1000 ppm	±2%			•							P200026- ^(*)
0.5%	±2%		•	•				•			90- ^(*)
1% PR: 696 psig	±2%		•	▲	▲			▲		▲	53- ^(*)
Propane in He											
1%	±2%			•						•	4447- ^(*)
10% PR: 616 psig	±2%		•	•							4449- ^(*)
Propane in N₂											
100 ppm	±5%		•		•			•		•	4444- ^(*)
1000 ppm	±2%		•	•	•			•			11- ^(*)
1%	±2%	•	•	•							4448- ^(*)
Propylene in Air											
1% PR: 608 psig	±2%	▲	▲	▲				▲			274- ^(*)
Propylene in N₂											
10 ppm	±5%		•	•							14- ^(*)
1000 ppm	±2%	•	•	•							12- ^(*)
Styrene in N₂											
10 ppm	±5%					•					255- ^(*)
Sulfur Dioxide in Air											
10 ppm	±10%					•	•				400- ^(*)
Sulfur Dioxide in N₂											
10 ppm	±10%					•					S200006- ^(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Two-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
1,1,1-Trichloroethane in N ₂ 10 ppm	±5%		•	•	•						259-(*)
1,1,2-Trichloroethane in N ₂ 10 ppm	±5%		•	•	•						256-(*)
Trichloroethylene in Air 220 ppm	±5%				•						T200081-(*)
Trichloroethylene in N ₂ 10 ppm	±5%		•	•	•		•	•		•	257-(*)
Vinyl Chloride in Air 10 ppm	±5%			•	•						227-(*)
100 ppm	±5%		•	•	•						230-(*)
Vinyl Chloride in N ₂ 1 ppm	±5%			•	•					•	70-(*)
10 ppm	±5%			•	•			•		•	71-(*)
100 ppm	±5%		▲	▲				▲			73-(*)
1000 ppm	±2%		•	▲	▲						74-(*)

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Three-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
n-Butane and Carbon Dioxide in N ₂ C ₄ H ₁₀ CO ₂ 8% 15%	[PR] 168		▲	▲							2146-(*)
Carbon Dioxide and Oxygen in N ₂ CO ₂ O ₂ 1% 20%	±2%		▲	▲	▲					▲	33-(*)
	3% 17%		▲	▲	▲					▲	35-(*)
Carbon Monoxide and Hydrogen in N ₂ CO H ₂ 20 ppm 60 ppm	±10%				•						C303041-(*)
Carbon Monoxide and Methane in N ₂ CO CH ₄ 8% 5.7%	±2%	▲	▲	▲							306-(*)
Carbon Monoxide and Nitric Oxide in O ₂ -Free N ₂ CO NO 1000 ppm 200 ppm	±5%					•	•				307-(*)
Hydrogen and Oxygen in N ₂ H ₂ O ₂ 1% 0.5%	±2%		•								H300433-(*)
Methane and Oxygen in N ₂ CH ₄ O ₂ 50% LEL (2.5%V) 17%	[PR] 696	•		▲			▲	▲		▲	303-(*)
n-Pentane and Oxygen in N ₂ C ₅ H ₁₂ O ₂ 50% LEL (0.7%V) 15%	[PR] 455		▲	▲				▲		▲	O300010-(*)
Propane and 1,1,1-Trichloroethane in N ₂ C ₃ H ₈ C ₂ Cl ₃ H ₃ 10 ppm 10 ppm	±5%									•	P300033-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

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Laboratory Applications continued

Four-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
Carbon Dioxide, Carbon Monoxide and n-Hexane in N ₂ CO ₂ CO C ₆ H ₁₄ 13% 1.9% 800 ppm	±2%	•	•	•				•			C410582-(*)
Carbon Dioxide, Carbon Monoxide and Methane in He CO ₂ CO CH ₄ 10 ppm 10 ppm 10 ppm	±5%		▲		▲					▲	408-(*)
Carbon Dioxide, Carbon Monoxide and Methane in N ₂ CO ₂ CO CH ₄ 1% 10% 1% 10% 1% 10%	±2% ±2%		•	•				•			C410652-(*) C410653-(*)
Carbon Dioxide, Carbon Monoxide and Oxygen in N ₂ CO ₂ CO O ₂ 15% 7% 5%	±2%	▲	▲	•						▲	10-(*)
Carbon Dioxide, Carbon Monoxide and Propane in N ₂ CO ₂ CO C ₃ H ₈ 13% 1.9% 1600 ppm	±2%		•	•							C400962-(*)
Carbon Monoxide, Hydrogen and Oxygen in N ₂ CO H ₂ O ₂ 1% 1000 ppm 3%	±5%							•			C400111-(*)
n-Hexane, Methane and n-Pentane in He C ₆ H ₁₄ CH ₄ C ₅ H ₁₂ [PR] 0.5% 0.5% 0.5% 158	±2%		•	•	•					•	403-(*)
Hydrogen, Nitrogen and Oxygen in Ar H ₂ N ₂ O ₂ 1% 2% 2%	±2%		•								H400015-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Five-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
Acetylene, Carbon Monoxide, Chlorodifluoromethane and Ethane in N ₂ C ₂ H ₂ CO CHClF ₂ C ₂ H ₆ 10 ppm 20 ppm 5 ppm 10 ppm	±10%				•					•	A500537-(*)
C ₂ -C ₄ Alkynes in N ₂ Acetylene, 1-Butyne, 2-Butyne, Propyne each at 15 ppm	±10%	•	N/A	•	•						30-(*)
Carbon Dioxide, Carbon Monoxide, Hydrogen and Oxygen in N ₂ each at 0.5%	±2%	▲	▲		▲					▲	217-(*)
Carbon Dioxide, Carbon Monoxide, Methane and Oxygen in N ₂ CO ₂ CO CH ₄ O ₂ 15% 7% 4.5% 4%	±2%	•	▲		▲					▲	C500014 -(*)
Carbon Dioxide, Carbon Monoxide, Nitric Oxide and Propane in O ₂ -Free N ₂ CO ₂ CO NO C ₃ H ₈ 12% 5% 1000 ppm 2000 ppm	±2%					•	•				C500463 -(*)
Carbon Dioxide, Dichlorodifluoromethane, Methane and Nitrous Oxide in N ₂ CO ₂ CCl ₂ F ₂ CH ₄ N ₂ O 20 ppm 5 ppm 100 ppm 10 ppm	±10%									•	C506871-(*)
Cycloparaffins in N ₂ Cyclohexane, Cyclopentane, Methylcyclohexane and Methylcyclopentane each at 15 ppm	±10%			•	•						7-(*)
Methyl-2-Olefins in N ₂ 2-Methyl-2-Butene, 2-Methyl-2-Pentene 3-Methyl-2-Pentene and 4-Methyl-2-Pentene each at 15 ppm	±10%			•	•						6-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in an 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Multi-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
1000 ppm Acetone, 1000 ppm Benzene, 1000 ppm 1-Butene, 1000 ppm Ethylene, 1000 ppm 1-Hexene, 1000 ppm Isopentane, 500 ppm Isopropyl Alcohol, 1000 ppm 1-Pentene, 1000 ppm Propylene, 500 ppm Tertiary Butanol in N ₂ PR: 144 psig	±5%								•		AA00153-(*)
Acetylene, n-Butane, Ethane, Ethylene, Methane, Propane, Propylene, Propyne each at 15 ppm in N ₂	±10%		N/A		▲						54-(*)
Acetylene, 1-Butene, Carbon Dioxide, Carbon Monoxide, Ethane, Ethylene, Hydrogen, Methane, Propane, Propylene each at 0.1% in N ₂	±2%	•	N/A								AA00030-(*)
50 ppm Acetylene, 2% Carbon Dioxide, 100 ppm Carbon Monoxide, 1000 ppm Ethane, 50 ppm Ethylene, 1000 ppm Hydrogen, 5% Methane and 5% Oxygen in N ₂	±5%		N/A		•						A900169-(*)
50 ppm Acetylene, 2% Carbon Dioxide, 500 ppm Carbon Monoxide, 1000 ppm Ethane, 50 ppm Ethylene, 1000 ppm Hydrogen, 5% Methane and 4% Oxygen in N ₂	±5%		N/A		•						A900165-(*)
250 ppm Acetylene, 5% Carbon Dioxide, 5000 ppm Carbon Monoxide, 10 ppm Ethane, 5000 ppm Ethylene, 5000 ppm Hydrogen, 9% Methane and 1% Oxygen in N ₂	±5%		N/A		•						A900164-(*)
Acetylene, Carbon Dioxide, Carbon Monoxide, Ethane, Ethylene, Methane each at 1% in N ₂	±2%	▲	N/A		▲				▲		216-(*)
5 ppm Acetylene, 350 ppm Carbon Dioxide, 10 ppm Carbon Monoxide, 10 ppm Ethane, 5 ppm Ethylene, 5 ppm Hydrogen, 0.25% Methane, 20% Oxygen in N ₂	±10%		N/A		•						A900124-(*)
10 ppm Acetylene, 0.5% Carbon Dioxide, 40 ppm Carbon Monoxide, 100 ppm Ethane, 10 ppm Ethylene, 350 ppm Hydrogen, 2.5% Methane, 10% Oxygen in N ₂	±10%		N/A		•						A900123-(*)
1% Argon, 3 % n-Butane, 2% Carbon Dioxide, 9% Ethane, 1% n-Hexane, 3% Isobutane, 1% Isopentane, 4% Nitrogen, 1% n-Pentane and 5% Propane in CH ₄	±2%		•								AA00010-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in a 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Multi-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
5% Argon, 5% Carbon Dioxide, 5% Carbon Monoxide, 5% Ethane, 5% Ethylene, 9% Hydrogen, 5% Methane, 5% Nitrogen, 0.2% Isooctane, 1.5% Isopentane, 1.5% n-Pentane and 5% Propane in He	±2%		•								AC00020-(*)
1% Argon, 7% Carbon Monoxide, 10% Hydrogen, 4% Methane, 5% Neon, 5% Nitrogen and 3% Oxygen in He	±2%		•								A800140-(*)
Benzene, 1-Butene, Ethylene, 1-Hexene, Isopentane, 1-Pentene, Propylene each at 15 ppm in N ₂	±10%				•		•				B800255-(*)
1,3-Butadiene, n-Butane, 1-Butene, cis-2-Butene, trans-2-Butene, Isobutane, Isobutylene, Ethyl Acetylene each at 15 ppm in N ₂	±10%	•			•						55-(*)
0.101% n-Butane, 0.0951% Ethane, 0.101% Isobutane, 0.188% Methane, 0.20% n-Pentane, 0.0955% Propane in Hydrocarbon Free Air	±5%		•	•	•						61-(*)
0.25% n-Butane, 0.3% Carbon Dioxide, 11% Ethane, 0.25% Isobutane, 0.7% Nitrogen, 0.5% Propane in CH ₄	±2%		•						N/A		N700253-(*)
0.4% n-Butane, 3% Carbon Dioxide, 3.5% Ethane, 0.02% n-Heptane, 0.05% n-Hexane, 0.4% Isobutane, 0.15% Isopentane, 2.5% Nitrogen, 0.01% Octane, 0.15% n-Pentane, 1% Propane in CH ₄	±5%		•						N/A		NB00202-(*)
0.4% n-Butane, 7% Carbon Dioxide, 7% Ethane, 0.5% n-Hexane, 0.4% Isobutane, 0.2% Isopentane, 0.3% Nitrogen, 0.2% n-Pentane, 4% Propane in CH ₄ PR: 158 psig	±2%		•						N/A		N000249-(*)
n-Butane, Ethane, Methane, n-Pentane, Propane each at 1% in N ₂	±2%		•						N/A		B600060-(*)
Carbon Dioxide, Carbon Monoxide, Hydrogen, Methane, Oxygen each at 1% in N ₂	±2%	•	▲		▲					▲	218-(*)
5% each of Carbon Dioxide, Carbon Monoxide, Nitrogen, Oxygen, 4% each of Hydrogen, Methane in He PR: 400 psig	±2%		▲		N/A			•	N/A	•	234-(*)
Branched Paraffins in N₂ 2,2-Dimethylbutane, 2,2-Dimethylpropane, Isobutane, 2-Methylbutane, 2-Methylpentane, and 3-Methylpentane each at 15 ppm	±10%		•	•	•						2-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in a 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

▲ SCOTTY Express available. Call 800-217-2688.

Laboratory Applications continued

Multi-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)								Product Number	
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM		221L STEEL
BTEX Benzene, Ethylbenzene, Toluene, m-Xylene, o-Xylene, p-Xylene in N ₂ each at 1 ppm each at 10 ppm	±5% ±5%						• •		• •		B700032-(*) B700030-(*)
C₁-C₄ Paraffins in Air n-Butane, Ethane, Isobutane, Methane, and Propane each at 15 ppm	±5%		•	•	•						32-(*)
C₁-C₆ n-Paraffins in He Butane, Ethane, Hexane, Methane, Pentane and Propane each at 100 ppm each at 1000 ppm PR: 790 psig	±5% ±2%	• •	• •	• •	• •		• •			• •	219-(*) 236-(*)
C₁-C₆ n-Paraffins in N₂ Butane, Ethane, Hexane, Methane, Pentane and Propane each at 15 ppm each at 100 ppm each at 1000 ppm PR: 790 psig	±10% ±5% ±2%	• • •	• • •	• • •	• • •		• • •			• • •	1-(*) 220-(*) 224-(*)
C₁-C₇ n-Paraffins in N₂ Butane, Ethane, Hexane, Heptane, Methane, Pentane and Propane each at 15 ppm	±10%	•	•	•	•					•	243-(*)
C₂-C₆ Olefins in He 1-Butene, Ethylene, 1-Hexene, 1-Pentene and Propylene each at 100 ppm each at 1000 ppm	±5% ±2%	• •	• •	• •	• •					• •	221-(*) 223-(*)
C₂-C₆ Olefins in N₂ 1-Butene, Ethylene, 1-Hexene, 1-Pentene and Propylene each at 100 ppm each at 1000 ppm	±5% ±2%		• •	• •	• •		• •			• •	222-(*) 235-(*)
High Shimadzu Mixture 4200 ppm Acetylene, 2% Carbon Dioxide, 4200 ppm Carbon Monoxide, 4200 ppm Ethane, 4200 ppm Ethylene, 4200 ppm Hydrogen, 4200 ppm Methane, 12.5% Oxygen in N ₂	±2%				•			•			A900172-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in a 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

Laboratory Applications continued

Multi-Component Gases Description	Analytical Accuracy	Cylinder Size / Gas Volume (liters)									Product Number
		4L [†] STEEL	14L STEEL	17L STEEL	48L ALUM	58L ALUM	74L ALUM	105L STEEL	110L ALUM	221L STEEL	
Low Shimadzu Mixture 100 ppm Acetylene, 400 ppm Carbon Dioxide, 100 ppm Carbon Monoxide, 100 ppm Ethane, 100 ppm Ethylene, 100 ppm Hydrogen, 100 ppm Methane, 16.9% Nitrogen, 2500 ppm Oxygen in Ar	±5%				•			•			A000010-(*)
Methyl-1-Olefins in N₂ 2-Methylpropene, 2-Methyl-1-Pentene, 2-Methyl-1-Butene, 3-Methyl-1-Butene and 4-Methyl-1-Pentene each at 15 ppm	±10%	•		•	•						5-(*)
Natural Gas Standards 3% n-Butane, 0.5% Carbon Dioxide, 12.5% Ethane, 3% Isobutane, 0.5% Isopentane, 9% Nitrogen, 0.5% n-Pentane, 7% Propane in CH ₄ PR: 200 psig (also see page 196)	±2%		•								N900010-(*)
Natural Gas Calorimetric Reference Standard 0.4% n-Butane, 3% Carbon Dioxide, 3.5% Ethane, 0.02% n-Heptane, 0.05% n-Hexane, 0.4% Isobutane, 0.15% Isopentane, 0.1% Neopentane, 2.5% Nitrogen, 0.15% n-Pentane, 1% Propane in CH ₄ PR: 435 psig (also see page 196)	±5%		•								NB00060-(*)
Natural Gas GPA Reference Standard 3% n-Butane, 1% Carbon Dioxide, 9% Ethane, 0.5% Helium, 3% Isobutane, 1% Isopentane, 5% Nitrogen, 1% n-Pentane, 6% Propane in CH ₄ PR: 200 psig (also see page 196)	±2%		•								B000010-(*)
1-Olefins Plus C₂H₂ in N₂ Acetylene, 1-Butene, Ethylene, 1-Hexene, 1-Pentene and Propylene each at 15 ppm	±10%				•						3-(*)
2-Olefins in N₂ 2-Butene (cis & trans), 2-Hexene (cis & trans) and 2-Pentene (cis & trans) each at 15 ppm	±10%	•	•	•	•						4-(*)
Transformer Oil Mixture Acetylene, Carbon Dioxide, Carbon Monoxide, Ethane, Ethylene, Hydrogen, Methane, Nitrogen, Oxygen, Propane in Ar each at 100 ppm each at 1000 ppm	±5% ±2%		N/A N/A		• •			•			890-(*) 891-(*)

PR: Pressure restricted to indicated psig.

* To complete the part number, replace (*) with the liter amount of the desired cylinder size. For example, to order Methane in N₂ in a 14L cylinder, the part number will be 212-14.

† Minimum order quantity: 6 cylinders.

For TOC/VOC mixtures, see page 168.

Refer to pages 168 – 172 for Method TO calibration standards.