



## Introduction

Matheson is an established manufacturer of NIST traceable engine emission calibration gas mixtures. Manufacturers of engines, cars and trucks, plus states and facilities are involved with Inspection and Maintenance testing. Matheson has standard and custom gas mixtures complying with Federal and State regulations, in aluminum and steel cylinders as appropriate, including the Portable cylinder options, and in both 1% and 2% certification accuracies.

For high volume users, Matheson has UniBlend™ batch blending technology for 2-100 identical cylinders.

In support of engine research programs being conducted at universities and engine manufacturers, Matheson has oxygenated gas standards, and custom Toxic Organic gas mixtures for analysis of vehicle emissions.

**Table 1: Inspection and Maintenance Standard Mixtures**

Inspection/Maintenance Calibration Gas	Component Concentration					Grades Available		
	Propane	Carbon Monoxide	Carbon Dioxide	Nitric Oxide	Balance Nitrogen	MRG 1% Dual	Primary 1% Single	Certified Plus 2% Single
BAR 97 High	3200 ppm	8%	12%		•	•	•	•
BAR 97 High with NO	3200 ppm	8%	12%	3000 ppm	•	•	•	•
BAR 97 Low	200 ppm	0.5%	6%		•	•	•	•
BAR 97 Low with NO	200 ppm	0.5%	6%	300 ppm	•	•	•	•
BAR 90 Midrange	1200 ppm	4%	12%		•	•	•	•
BAR 90 Low	300 ppm	1%	6%		•	•	•	•
BAR 84 Low	600 ppm	1.6%	11%		•	•	•	•

Matheson provides NIST traceable standards at the specified mixture grades. If California BAR certification is required, please inquire.

**Cylinders:** Aluminum 1R, 2R, 3R filled to 2000 psig (BAR 97 High mixtures may have reduced fill pressure). CGA 350, except mixtures containing NO (Nitric Oxide) require CGA 660.

MicroMAT™ 221 liter portable cylinders filled to 260 psig.

Steel 1A, 2, 3 filled to 1650 psig (mixtures without nitric oxide) CGA 350.

**Table 2: Single and Multiple Component Options**

Any combination of components and concentrations may be selected into balance Nitrogen or Air. Nitric oxide containing mixtures cannot have Air balance gas or go into sizes 1A, 2 or 3.

Minor Component	Concentration Available	Grades Available			Cylinder Sizes
		MRG 1% Dual Cert.	Primary 1% Accuracy	Certified Plus 2% Accuracy	
Propane	≥ 1 ppm	•	•	•	1A, 2, 3, 1R, 2R, 3R,
Carbon Monoxide	≥ 8 ppm	•	•	•	Portable 221 liter
Carbon Dioxide	≥ 300 ppm	•	•	•	1R, 2R, 3R
Nitric Oxide	≥ 8 ppm		•	•	1R, 2R, 3R

⚠ 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](http://www.P65Warnings.ca.gov).



Table 3: Engine Emissions Research Mixtures

Minor Component	Available Concentration	Available Balance Gases	Reference Multipurpose Mixture Section
Ethanol	1-400 ppm	Air, Nitrogen	Page 84
Methanol	1-400 ppm	Air, Nitrogen	Page 97
MTBE	1-500 ppm	Nitrogen	Page 142
Toxic Organics	100 ppb - 10 ppm	Nitrogen	Page 141

*Inquire for pricing. Nitrogen Balance CGA-350. Air Balance CGA 590. 1R, 2R, 3R cylinders.*