MATHESON

The Gas Professionals

Specialty Gases and Equipment

Cylinder Information

- <u>Cylinder Comparison Chart</u>
- Standard Gases Cylinder Size Chart
- Semiconductor Gases Cylinder Size Chart
- Cylinder Diagrams
- <u>CGA Connection Chart</u>
- <u>Cylinder Connection Diagrams</u>
- <u>Restrictive Flow Orifices</u>
- Diameter Index Dimensions for Electronic Gases

Pure Gas Information

- GC Carrier Gas Selection Chart
- Pure and Support Gases for Process Analyzers

Gas Mixture Information

- Capabilities Overview
- Gold Standard Calibration Mixtures
- <u>Gas Mixture Technology</u>
- <u>Mixture Grades</u>
- How to Order Calibration Gas Mixtures
- <u>Component Blending Library</u>

Industries Served

- Laboratory Program for Specialty Gas Supply
- Petrochemical Industry Program for Specialty Gas Supply
- Refinery Program for Specialty Gas Supply
- Stack Emission Calibration Program
- Natural Gas Standards

Pure Gases

- <u>Acetylene</u>
- <u>Air</u>
- Ammonia
- <u>Argon</u>
- Boron Trichloride
- <u>Boron Trifluoride</u>

- <u>n-Butane</u>
- <u>Carbon Dioxide</u>
- <u>Carbon Monoxide</u>
- <u>Chlorine</u>
- Deuterium
- Ethane
- Ethylene
- Halocarbon C318 (Octafluorocyclobutane)
- <u>Helium</u>
- <u>Hydrogen</u>
- Hydrogen Bromide
- Hydrogen Chloride
- Hydrogen Sulfide
- Isobutane
- <u>Krypton</u>
- <u>Methane</u>
- <u>Methyl Fluoride</u>
- <u>Neon</u>
- Nitric Oxide
- Nitrogen
- Nitrous Oxide
- Oxygen
- Propane
- Propylene
- Sulfur Dioxide
- Sulfur Hexafluoride
- <u>Xenon</u>

Gas Mixtures

- <u>Acetaldehyde</u>
- <u>Acetone</u>
- <u>Acetylene</u>
- <u>Acrylonitrile</u>
- <u>Ammonia</u>
- <u>Argon</u>
- <u>Benzene</u>



Gas Mixtures continued

- <u>1,3-Butadiene</u>
- Butane
- <u>1-Butene</u>
- cis and trans 2-Butene
- n,s,t-Butyl Mercaptan
- Carbon Dioxide
- Carbon Disulfide
- <u>Carbon Monoxide</u>
- Carbonyl Sulfide
- <u>Chlorine</u>
- Chloroform
- <u>Deuterium</u>
- Dimethyl Disulfide
- Dimethyl Ether
- Dimethyl Sulfide
- Ethane
- Ethanol
- Ethyl Mercaptan
- Ethylene
- Halocarbon 12 (Dichlorodifluoromethane)
- Halocarbon 22 (Chlorodifluoromethane)
- Halocarbon 114 (1,2-Dichlorotetrafluoroethane)
- Halocarbon 134A (1,1,1,2-Tetrafluoroethane)
- Halocarbon 1113 (Chlorotrifluoroethylene)
- Halocarbon C318 (Octafluorocyclobutane)
- <u>Helium</u>
- <u>Hexafluoropropylene</u>
- <u>Hexane</u>
- <u>Hydrogen</u>
- <u>Hydrogen Bromide</u>

Carrier Gases and Other Instrument Gases

- GC Carrier Gas Selection Chart
- Instrument Support Electron Capture Detector Mixtures
- Instrument Support Flame Ionization Detector Mixtures
- Instrument Support Nuclear Counter Mixtures
- Instrument Support Thermal Conductivity Detector Mixtures
- Gases for Process Analyzers

- Hydrogen Chloride
- Hydrogen Sulfide
- <u>Isobutane</u>
- <u>Isobutylene</u>
- Isopropanol (2-Propanol)
- <u>Methane</u>
- Methanol
- <u>Methyl Mercaptan</u>
- <u>Nitric Oxide</u>
- <u>Nitrogen</u>
- <u>Nitrogen Dioxide</u>
- <u>Nitrous Oxide</u>
- <u>n-Octane</u>
- <u>Oxygen</u>
- <u>n-Pentane</u>
- <u>1-Pentene</u>
- Perfluoropropane
- <u>Propane</u>
- <u>n-Propyl Mercaptan</u>
- Propylene
- <u>Styrene</u>
- <u>Sulfur Dioxide</u>
- <u>Sulfur Hexafluoride</u>
- <u>Toluene</u>
- <u>1,1,1-Trichloroethane</u>
- <u>1,1,2-Trichloroethane</u>
- <u>Vinyl Chloride</u>
- Vinyl Methyl Ether
- <u>Xylene</u>

Laser Gases

- Excimer Laser Gas Mixtures Hydrogen Chloride Gas Mixtures
- Molecular Laser Gas Neon Mixtures

EPA Protocol and Other Calibration Gases

- Environmental Compliance Standards Gas Mixtures for 40CFR60 Appendix A Test <u>Methods</u>
- EPA Protocol Binary Mixtures
- EPA Protocol Multicomponent Mixtures
- <u>Cal-MAT™ Daily Standards</u>
- Cal-MAT™ Zero Gases Air, Acid Rain CEM Grade
- Cal-MAT[™] Zero Gases Nitrogen, Acid Rain CEM Grade
- Custom Natural Gas BTU Mixtures and Component Standards
- Standard Natural Gas Mixture Formulations
- Liquid Hydrocarbon Standards
- Engine Emission Standards
- <u>Aromatic Subset Mixture for EPA Method TO-14A 14 Component Mixture</u>
- Chlorinated Hydrocarbon Subset Mixture for EPA Method TO-14A 19 Component Mixture
- Internal Standard and Tuning Mixture for EPA Method TO-14A 4 Component Mixture
- BFB Tuning Standard for GC/MS for EPA Method TO-14A 1 Component Mixture
- BTEX Mixtures
- BTEX plus MTBE Mixtures

Portable Gases

- Product Line Overview
- Portable Cylinder Size Specifications
- <u>Calibration Products for Safety Applications</u>
- Calibration Products for Laboratory Analysis
- Calibration Products for Air Toxics Monitoring
- Pure Gases in Lecture Bottles
- Pure Gases
- <u>Two Component Mixtures</u>
- <u>Multicomponent Mixtures</u>
- Model RFM-0030 MicroMATE™ Portable Cylinder Regulator

Gas Regulators

General Information

- Product Line Overview
- <u>Regulator Selection and Performance</u>
- <u>Basic Regulator Selection Chart</u>
- Specialty Regulator Selection Chart
- <u>Guide to Regulators</u>

Single Stage Gas Regulators

- Model 3530 Single Stage High-Purity Brass
- Model 3510 Single Stage High-Purity Stainless Steel
- Model 18 Single Stage General Purpose Brass
- Model 3610 Single Stage High-Purity with Tied Diaphragm Stainless Steel
- Model 3550 (Brass) & 3570 (Stainless Steel) Single Stage High-Purity Miniature
- Model 3200 Single Stage High Purity, High Flow Brass, Stainless Steel
- Model 3030 & 3040 Single Stage High Purity-High Delivery Pressure Brass
- Model 30305 & 3040S Single Stage High Purity-High Delivery Pressure Stainless Steel
- Model 3060A Single Stage High Purity-High Delivery Pressure, Non-Relieving Stainless Steel
- Model 3060AR Single Stage High Purity-High Delivery Pressure, Self-Relieving Stainless Steel

Dual Stage Gas Regulators

- Model 2210 Miniature Dual Stage Brass
- Model 3120 Dual Stage High-Purity Brass
- Model 3810 Dual Stage High-Purity Stainless Steel
- Model 1250 Dual Stage Brass
- Model 81 Dual Stage General Purpose Brass
- Model 3850 (Brass) & 3870 (Stainless Steel) Dual Stage High-Purity Miniature
- Model 3540 Heated Dual Stage Brass

Line Regulators

- Model 3420 High Purity Line Brass
- Model 3430 High Purity Line Stainless Steel
- Model 3450 High Purity-High Flow Line Stainless Steel
- Model 3200 Single Stage High Purity, High Flow Brass, Stainless Steel
- Model 3470 General Purpose Line Brass

Lecture Bottle Regulators

- Model 3010 Single Stage Corrosive Service Lecture Bottle Monel/SS/Hastelloy
- Model 3320 Single Stage Non-Corrosive Lecture Bottle Brass
- Model 3550 (Brass) & 3570 (Stainless Steel) Single Stage High-Purity Miniature
- Model 3850 (Brass) & 3870 (Stainless Steel) Dual Stage High-Purity Miniature

Regulators for Corrosive Gases

- Model 3210 Single Stage Corrosion Resistant Monel
- Model 3630 Single Stage High Flow with Tied Diaphragm SS, Hastelloy
- Model 3610 Single Stage High-Purity with Tied Diaphragm SS

Calibration Gas Regulators

- Model 3345 MicroMATE™ Preset Flow Rate Brass
- Model 3359 MicroMATE™ Preset Flow Rate Stainless Steel
- Model 3347 MicroMATE™ Variable Flow Rate Brass
- Model RFM-0030 MicroMATE™ Low Flow & Pressure Aluminum
- Model DR490 Vacuum Actuated Aluminum

Low Pressure and Sub Atmospheric Gas Regulators

- Model 81-2 Dual Stage General Purpose Low Delivery Pressure Brass
- Model 3396 Single Stage High Purity Absolute Pressure Brass
- Model 3491 General Purpose Vacuum Line Brass
- Model 3494 High-Purity Absolute Pressure Line Stainless Steel
- Model 3700 Low Pressure Line Cast Zinc

Gas Regulators for Special Applications

- Model 81F General Purpose with Flowmeter Brass
- Model 3590 Low Dead Volume Stainless Steel
- Model 6342 Back Pressure Brass

Semiconductor Grade Regulators

- Model 9001 Panel with Pigtail
- Model 9300 & 9310 Single Stage Semiconductor Grade
- Model 9330 Semiconductor Grade with Tied Diaphragm Line
- Model 9360 & 9370 Single Stage Semiconductor Grade with Tied Diaphragm
- Model 9460 & 9470 Dual Stage Semiconductor Grade with Tied Diaphragm

Gas Purge Assemblies: Tee Purge, Cross Purge

- Model 4753 thru 4755 Tee Purge Assemblies
- Model 4774 & 4775 Cross Purge Assemblies

Gas Delivery Systems

LabGas Systems® General Information

<u>LabGas Systems[®] Overview</u>

Modular Gas Control Components

- GasTrak Pro™ Gas Delivery Systems
- GasTrakSystems[™] Gas Delivery Systems

Gas Manifolds

- <u>SourceTrakSystems™ Manifold Systems</u>
- <u>Mini Manifold Systems</u>
- Single Station Manifold (Protocol Station)

Gas Switchovers

- <u>SwitchPro™ Cylinder Switchover Systems</u>
- LPX SwitchProSystems[™] Low Pressure Cylinder Switchover Systems

Gas Cabinets

- <u>Gas Cabinets</u>
- Model 1170 Cylinder Gas Cabinets
- Hard Hat Series Cylinder Gas Cabinets

Gas Distribution Panels

- Model PAN-9300 Series
- Model-5000 Gas Distribution Panels

Gas Control Accessories

- PM-24 Pressure Monitor
- Indicating Pressure Switch

Flow Measurement

Gas Flowmeters

- Product Line Overview Basic Flowmeters (Rotameters)
- <u>Tube-Cube</u>®
- High Accuracy Model FM-1050
- High Accuracy Model FM-1000
- High Capacity Model FM-1100 and FM-1127
- Proportioners and Mixers
- <u>Replacement Parts</u>
- Economical Model PG-1000
- Economical Model PM-1000
- Flowmeter Engineering Drawings

Mass Flow Measurement and Control

- Product Line Overview Mass Flow Equipment
- Model 827 Single Channel Mass Flow Digital Controller / Readout
- Model 8284 Four Channel Mass Flow Digital Controller / Readout (Dynablender-Plus)
- Model 819 Flow Meters and 829 Flow Controllers
- Computer Operated Blending Interface and Software (up to nine channels)

Purifiers and Filters

- Product Line Overview
- <u>PUR-Gas™ Cartridge Purification Systems</u>
- PUR-Gas[™] In-Line Purification Systems
- Oxygen Removing Hydrogen Purifiers
- High Pressure/Low Capacity Gas Purifiers
- <u>Model 465 Moisture Impurity Indicator</u>
- Depth Filters
- High Pressure Filters
- <u>Membrane Filters</u>

Gas Detection

Portable Glass Tube Gas and Vapor Detection System and Accessories

- Kitagawa Toxic Gas Detector System
- 8070 Qualitative Analysis Tubes and HazMat Kit
- 8014BAK Compressed Breathing Air Analysis Kit
- 8078 Indoor Air Quality Test Kit

Portable Gas Mixture Calibration Kits, including Portable Gas Cylinders

<u>CK2000 Portable Gas Mixture Calibration Kits</u>

Portable and Fixed Station Gas Detectors

- 8058 General Purpose Gas Detector
- 8081 Toxic Gas Leak Detector
- GasScanner Fixed Gas Detection
- BUBL Liquid Solution Leak Detector
- 8067 Multigas Leak Detector

Gas Control Valves

- Diaphragm Packless Valve
- <u>Miniature Needle Valves</u>
- <u>Needle Valves</u>
- Lecture Bottle Control Valves
- <u>Manual Control Valves</u>
- <u>Check Valves</u>
- Valve Handle Lockouts
- <u>Excess Flow Control Valve</u>

Gas Management Accessories

Pressure Gauges and Gas Purge Assemblies

- Pressure Gauges
- Model 4753 thru 4755 Tee Purge Assemblies
- Model 4774 & 4775 Cross Purge Assemblies

High Pressure Gas Hoses, Gas Fittings, Quick Couplers, Connections

- Flexible Hoses
- <u>Pigtail Assemblies</u>
- Flex Hose Assemblies
- <u>Cylinder Connections</u>
- <u>Cylinder Quick Couplers</u>
- <u>DISS Cylinder Connections</u>

Gas Cylinder Accessories: Holders, Racks, Stands, Hand Trucks, Wrenches

- Bench Type Cylinder Holder
- <u>Wall Mounted Cylinder Holder</u>
- Gas Cylinder Storage Racks
- Cylinder Hand Trucks
- <u>Cylinder Wrenches</u>
- Cylinder Stand

Gas Cylinder Scales

- Cylinder Scale Electronic
- Cylinder Scale Manual

Miscellaneous Gas Accessories: Cylinder Warmers and Blankets, Sampling Cylinders, Wrenches

- Lecture Bottle Holders, Stands, Cabinets
- Flash Arrestors
- Gas Warmers and Cylinder Blankets
- Sampling Cylinders
- **DISS Torque Wrenches**

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