



MATHESON REFINERY PROGRAM for Specialty Gas Supply

“Experience the MATHESON Commitment to Supply Chain Excellence”



MATHESON

ask. . .The Gas Professionals™

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MATHESON is a single source for industrial, medical, specialty, and electronics gases ... as well as gas handling equipment, high-performance purification systems, engineering and gas management services, and onsite gas generation.

MATHESON is the largest subsidiary of the Taiyo Nippon Sanso Corporation, one of the five largest suppliers of gases in the world. We have a depth of technology and resources that can come only from a global enterprise.

We also work hard to hold onto our local values, with personalized service and a real interest in understanding – and resolving – your gas use and management requirements.

MATHESON has the complex product profile and packaging options needed to service the refinery requirements for:

- Regulatory compliance of emissions
- Safety
- Process monitoring
- Finished product certification

MATHESON purifies its own C1 to C4 hydrocarbons to ensure use of the highest purity raw materials, and we have developed the Microshield series of cylinder preparations that ensure the long term stability of sub-ppm reduced sulfur components. MATHESON also applies state-of-the-art gas and liquid mixture engineering software that provides the optimal hydrocarbon mixtures needed by our customers.

The MATHESON Program for Refineries will maximize your operating efficiencies by addressing the six key parameters that customers must have from their suppliers to achieve supply chain excellence:

- **CONVENIENCE** using the MATHESON Item Master process that ensures fast re-ordering
- **QUALITY** system certification to ensure consistent reliability and safety
- **PRODUCTS** specifically designed to facilitate refinery applications and productivity
- **HEALTH & SAFETY** hazardous gas monitoring products plus equipment design integrity to protect your personnel and work environment
- **SUPPORT** whenever you need it from our sales, technical and service support teams
- **DELIVERY** options tailored to your operating needs

Our 85+ years of experience in industrial gas applications and equipment makes MATHESON an ideal provider for your gas, equipment, and services requirements.

Call us at **800-416-2505** or email us at **info@mathesongas.com** and let us know how we can help you.



CONVENIENCE

The MATHESON Item Master Process

MATHESON works with our customers to capture all gas or liquid mixture components, concentrations, calculated values, hydrocarbon dew point, and temperature. All of this information is applied order after order, and cylinder after cylinder, All you have to tell us is your item number.

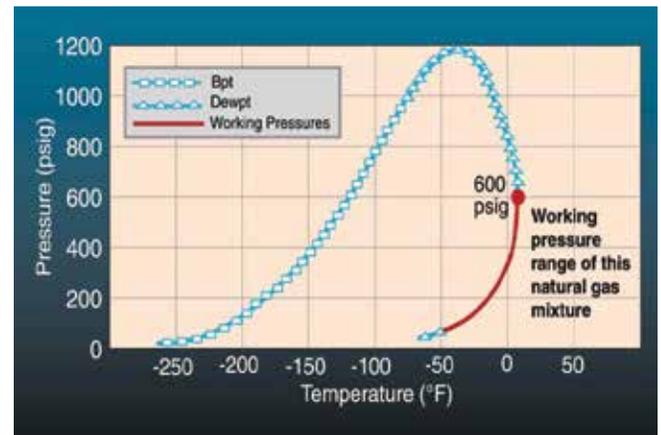
Additional MATHESON Convenience Features:

- Selected stocked products to provide emergency or “24-hour” delivery service
- Additional Certificate of Analysis copy available on request

QUALITY

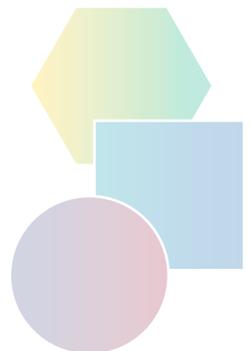
System Certifications

- **ISO 9001:2008 Certified Manufacturing Facilities:** Gas and equipment products manufactured to international industry standards
- **ISO 17025 Laboratory Accreditation** for certification of EPA Protocols and CalMAT environmental standards
- **Stable Mixture Technology:** Gas standards with NIST traceability from blending and analysis
- **Stability:** Microshield cylinder treatments that ensure the long term stability of reactive minor components
- **“C of A’s”:** Certificate of Analysis that provide the ISO 9000 quality contents for gas standard products
- **Unique Product Part Numbering:** Each customer mixture will be assigned an Item Number which captures all of the key product information, and ensures ease of ordering
- **State of the Art Engineering Software:** MATHESON applies state-of-the-art gas and liquid mixture engineering software that provides hydrocarbon mixture components and concentrations at optimized hydrocarbon condensation temperature, and cylinder fill pressure



Natural Gas Phase Diagram that MATHESON uses to optimize cylinder contents vs hydrocarbon dewpoint.

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PRODUCTS

Refinery Environmental Compliance: MATHESON has ISO 17025 Accreditation for EPA Protocols and CalMAT Standards

Refinery Process	Analyzer Used	Monitors	Zero Gas	Calibration Gas	Support/Span Gas
Fluid Catalytic Cracking Unit Catalyst Regenerators	NDIR	Carbon Monoxide	Nitrogen	EPA Protocol Concentrations from: ≥ 1 ppm in N ₂	CalMat 2 Concentrations from: ≥ 1 ppm in N ₂
Fuel Gas Combustion Devices	CEM GC/FPD/ECD	SO ₂ , O ₂ and H ₂ S	Nitrogen	NIST Traceable Standards for SO ₂ , O ₂ and H ₂ S	CalMat 2
Claus Sulfur Recovery Unit	CEM/ TRS GC/PFPD	SO ₂ , O ₂ , CO ₂ , or Total Reduced Sulfur including H ₂ S, COS and CS ₂ *	Nitrogen	EPA Protocols and NIST Traceable Standards	CalMat 2
Fired Heater Emissions Monitoring	CEM	NO _x , CO and CO ₂	Nitrogen	EPA Protocols	CalMat 2

*NOTE: COS (Carbonyl Sulfide) and CS₂ (Carbon Disulfide) do not have NIST SRM, and they will be certified with H₂S SRM using Total Reduced Sulfur GC/Chemiluminescent detector instrument.

Refinery Process Monitoring and Product Certification

Analyzer	Gas Type	Concentrations
Laboratory Process GC/FID Calibration	Refinery Gas Standards – Liquid and Gas	Any concentration and combination of Methane, Ethane, Ethene, Propane, Propene, 1,3 Butadiene, 1-Butene, i-Butene, Hydrogen and Nitrogen
Laboratory Process GC/FPD and GC/PFPD Calibration	Total Reduced Sulfur Mixtures	At sub-ppm concentrations in inert gas, and hydrocarbon gas and liquid phase balances. Microshield treated aluminum cylinders ensure stability of both gas and liquid phase standards. Available with N ₂ , He and H ₂ balances.
Laboratory Process GC/FID Calibration	BTEX Standards	From 1 ppm to 100 ppm
Laboratory Process GC/FID Calibration	Research Grade Hydrocarbons	Complete with impurities analysis



Packaging Options for Liquid Hydrocarbon Mixtures

- MATHESON mixture engineering results will be used to assist you with optimization of the correct package and head pressure
- Piston cylinders for liquids with both low and high vapor pressure components
- Size 1F Low pressure cylinders with FLET/Dual port valves/and head pressure
- Disposable cylinders (including LP5, in both aluminum and steel and LP10)
- High pressure cylinders with FLET/Dual port valves/and head pressure

MATHESON Equipment to Support Refinery Facility Gas Usage

- Cylinder regulators for quantitative gas delivery
- Gas panels for control of gas supplies
- Automated manifolds and alarms for control of high volume gas usage

HEALTH & SAFETY

Monitoring for OSHA Compliance

- MATHESON Portables LEL and H₂S/CO/Methane/ Air mixtures for your safety and industrial health programs. Many more standard and custom mixtures and pure gases, and gas delivery products are available (see the MATHESON Portables Catalog)
- Gas Cabinets and Panels for safe hazardous gas handling and delivery to point of use
- Hazardous gas monitoring systems including fixed and portable instruments, plus Kitagawa tubes
- On-site safety training programs and education products to enhance and improve safety awareness

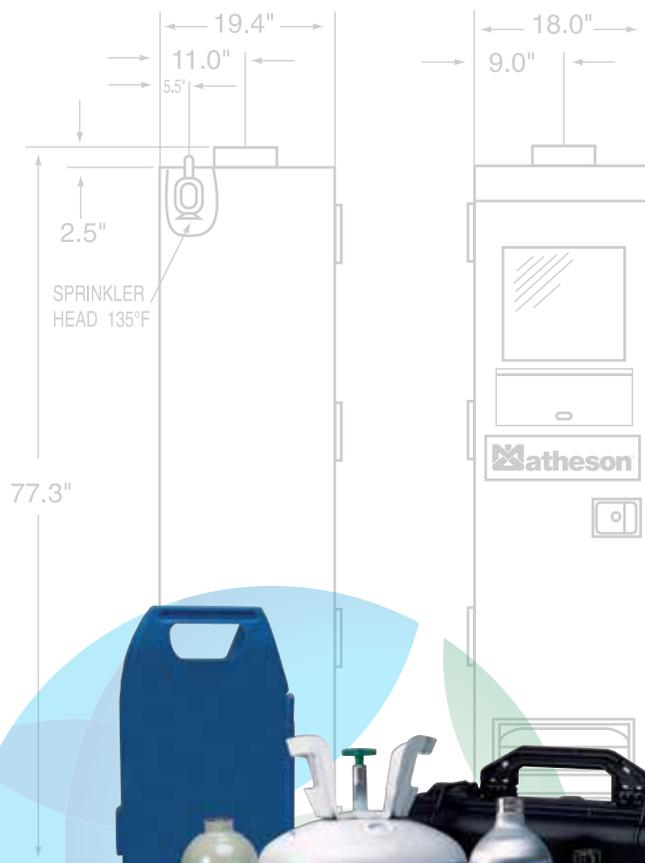
SUPPORT

MATHESON Technical and Service Support:

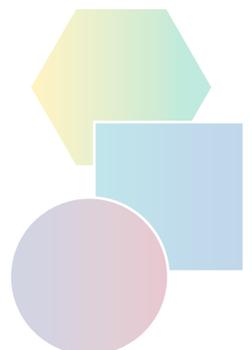
- Expert mixture phase engineering using state-of- the-art software
- Specialty Gas Team who understand petrochemical products and cylinder package options - (Product Manager, Technical Service Coordinator, Gas Operations Team, and Customer Service Team)
- Personalized service at your door with field sales, and on the phone with dedicated customer service representatives
- Dedicated customer service representatives assigned to your account
- MATHESON's Customer Arrangements systematize your products and pricing

DELIVERY

- Designed to suit your facility and operating hours
- Options for delivery



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Our mission is to deliver innovative improvements to the Refinery industry ... in ways that have tangible benefit and cost effectiveness for our customers. We can offer you the best gas supply for your business from single cylinders to 6-, 12-, and 16-packs, to liquid dewars, to microbulk, to bulk, to onsite supply.



Cylinders



Multipacks



Liquid Dewars



Microbulk



Cryogenic Tanks



Onsite & Pipeline Plants

MATHESON is committed, without limitation, to be your "go to" company for maximizing profits and minimizing operating costs.

Thank you for your interest in our specialty gas and equipment products. For more information, please visit the MATHESON website @ www.mathesongas.com, or call our customer service center @ **800-416-2505** to have one of our sales representatives contact you directly.

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