MATHESON Delivers: Gases, Equipment, and Services for Metal Fabrication Industry

Gases – Gas Handling Equipment – Welding and Cutting Tools
Safety Products – Support, Training, Service
Metal Fabrication can mean many things. The industry itself spans a wide range of business types and applications. With this diversity comes a wide range of requirements for compressed gases and related products, services, and expertise.

- Trains, Trucks, Containers
- Modules and Parts for Motor Vehicles
- Shipbuilding and Repair
- Automotive and Repair
- Rail Fabrication
- Railroad Containers, Equipment, and Cars
- Aerospace
- Food, Wine, and Beer Processing
- Chemical and Pharmaceutical Manufacturing
- Boilers, Vessels, Carpentries
- Construction, Civil Engineering, External Maintenance
- Tubes and Other Semi-Finished Metallic Products
- Refining & Oil, Coal & LNG Transportation
- Petrochemicals
- Utilities & Waste Management
- Maintenance & Turnaround Operations
- General Fabrication
- Others

Almost as long as the list of industrial segments is the list of materials used in metal fabrication… each with its own properties.

- Carbon Steel
- Steel Alloys
- High Nickel Content Alloys
- Chromium Content Alloys
- Copper Content Alloys
- Stainless Steel
- Duplex, Super Duplex
- Galvanized Steel
- Aluminum
- Iron
- Plated Materials
- Oxidized Materials
- Specialized Metals, Titanium, Zirconium, Magnesium
- Others

MATHESON supports the metal fabrication industry with gases and equipment and related items from a national footprint of over 200 locations to serve and supply you.
Welding Applications

In any welding application, the suitable choice of shielding gas (or welding gas) can improve weld quality, decrease fume and spatter, and reduce overall costs. The MATHESON Welding & Cutting Team can help you evaluate your current process parameters, and evaluate options.

MATHESON's commitment to your success in welding does not stop with cylinders filled with gas.

MATHESON wants to help you improve your process and its results; and earn your business by saving you time and money.

**MATHESON Delivers:**
- Application Specific Shielding Gas Mixtures (MATHESON Select® Brand)
- Argon, Oxygen, Welding Mixtures
- Specific Laser Mixes for Welding
- Gases: Cylinders, 6, 12 and 16-Pack-Racks, Micro Bulk and Bulk
- Gas Handling: Regulators, Manifolds, Switchovers
- Welding Supplies: Wire, Rods, Holders, Electrodes
- Welding Equipment: Power Supplies, Torches, Guns, Regulators
- Welding Apparel: Goggles, Helmets, Gloves, Jackets, Blankets
- General Industrial Tools, Saws, Drills
- NANOCHEM®: Delivering the Highest Quality Gas Supply for Critical Weld Requirements.

Tools and supplies – as well as packaged gas – are available from over 200 locations nationwide (and growing).

Cutting Applications

As is the case with welding, the appropriate choice of cutting gas plays an important part in the success, speed, and effectiveness of cutting applications.

The MATHESON Welding & Cutting Team can help you take a look at your tools, processes, and gas – with an eye toward better quality and lower total cost.

**MATHESON Delivers:**
- Cutting Fuel Gases: Oxyfuel – Acetylene, Propylene, Propane, Others
- Plasma Cutting Gases:– Argon, Hydrogen, Nitrogen, Oxygen
- Lasing and Assist Gases: O₂, N₂ and a Full Line of Lasing Gases
- Gases for Brazing and Soldering
- Cutting and Grinding Abrasives, Tools, Supplies

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Lasing Applications

The use of a Laser-based welding or cutting system carries with it the expectation of high quality & throughput. An out-of-spec or out-of-compliance laser gas mix can lead to reduced performance, lower quality, or laser failure.

The MATHESON Welding & Cutting Team can help get the most out of your lasing application by delivering consistent, reliable, and accurately prepared gas products.

**MATHESON Delivers:**
- Welding and Cutting Gas Blends that Meet Stringent AWS 5.32 Code and Manufacturer Specs
- Gases for Reactive Cutting Applications
- Auto Switchover Manifolds
- Cutting and Grinding Tools and Supplies

Tools and supplies – as well as packaged gas – are available from over 200 locations nationwide (and growing).
Safety Equipment

No task is so urgent or important that it should not be done safely. In our own labs, plants, and offices we adhere to the motto “Safety First.”

MATHESON Delivers:
- An Extensive Line of Safety Equipment from World Class Manufacturers
- Everything from Basic Personal Protection Equipment to the Most Advanced, Programmable Safety Devices

Allow MATHESON to help you keep your workers safe.

Clean Air Solution; Workplace Safety

Your manufacturing processes may create welding smoke, fumes, grinding dust, etc. Your work or process may take place in poorly ventilated or completely confined spaces.

MATHESON employs cutting edge principles and technology, and is able to offer practical and affordable solutions for a healthier, and more environmentally friendly workplace.

MATHESON Delivers:
- Gases and Consumables Designed to Reduce Fumes and Hexavalent Chromium Emissions for Lower Environmental Impact
- Clean Air Systems
- Large Capacity Dust Collector Systems
- Air Filtering Systems
- Ventilation Systems, Commercial Fans, and Cooling Equipment
- Breathing Air

Allow MATHESON to help you keep your workers free from unhealthy exposure.
Forklift Fleet Support

If your business, facility, or work process depends on forklifts to keep your facility running, MATHESON supplies the propane to keep your forklifts running.

MATHESON Delivers:
• 33 Pound and 43 Pound Packaged Propane Cylinders
• Bulk Propane for On-Site Fueling
• Other Size Packages for Special Requirements

*We can do more than simply supply your propane; we can help you manage your propane inventory.*

Automation

Many welding or cutting applications can be automated using robotic systems. MATHESON has standard robotic systems for many common applications such as straight lines, circles or arcs, and orbital welds. Our specialists can also customize a system for your more specialized processes.

We even have our own welding and cutting Automation Design and Testing Center in Waverly, NE.

MATHESON Delivers:
• Robotics
• Hard Automation
• Numerically-Controlled Cutting Machines

*Automation can improve productivity and worker safety. Find out if automation can help you.*

Packaging Versatility

What is your application? Your rate of gas consumption? Your process downtime? Your operating environment and location? How often do you change out cylinders? These questions, and many more, will help us help you with the right solution for gas packaging.

MATHESON Delivers:
• Complete Gas Distribution Options / Systems
• Cylinders
• 6, 12, or 16-packs
• Multiple Packs with Auto Switch-over Capability
• Micro-Bulk
• Bulk

*When it comes to packaging, MATHESON delivers answers that keep you focused on results, and not the gas.*
MATHESON Delivers Safety

MATHESON places the highest value on Safety – in our own facilities, and in yours. Every day.

- We value our safety record, and we’ve received many industry awards for our safe operations.
- We offer a full range of products for safe handling and storage of gas ... as well as a complete line of safety equipment.
- Invite us to perform a safety audit of your facility and/or conduct a safety presentation.

MATHESON Delivers Quality

MATHESON also places the highest value on Quality. Our plants are certified to ISO 9001 standards, and we employ Lean Six Sigma (LSS) principles to measure and improve our quality results on a basis of continuous improvement.

MATHESON Delivers Customer Service

Throughout our history of serving customers, MATHESON has always placed a premium value on the relationship we build and maintain with every one of our customers. We have over 200 locations nationwide ready to serve you.

- Ask us about enhanced supply chain management.
- Ask us about on-line ordering and certificates of analysis.
- Ask us how we can lower your cost of ownership and gas use.

MATHESON Delivers Sustainability

MATHESON is committed, at all levels, and in all locations, to principles of Sustainability and Corporate Responsibility. Our principles embrace Environmental Sensitivity, Community Support, and Financial Performance. Our aim is to ensure uninterrupted access to our products and services.
MATHESON Delivers AWS A5.32 Compliant Shielding Gases

MATHESON Select® Shielding Gases are application specific - each designed and prepared to improve your welding results while reducing waste and total welding process costs.

- Shielding Gas is Matched to Your Application
- Improved Safety and Environmental Impact
- Dedicated, Mix-specific Cylinder Inventory – Consistent Results
- Enhanced Weld Quality, Productivity, and Efficiency
- Lower Welding Costs

<table>
<thead>
<tr>
<th>MATHESON Select® Product</th>
<th>Alloy Selection</th>
<th>Process</th>
<th>Thickness Range</th>
<th>Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-25 Carbon Steel</td>
<td>GMAW Short Circuit Transfer</td>
<td>.063” - .250”</td>
<td>Requirement for deep penetration short arc on material &lt; .250”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CS / SS FCAW</td>
<td>250”+</td>
<td>Good arc transfer and penetration characteristics on materials &lt; .375”</td>
<td></td>
</tr>
<tr>
<td>C-20 Carbon Steel</td>
<td>GMAW Short Circuit / Spray / Pulsed Spray</td>
<td>.063”+</td>
<td>Excellent penetration characteristics</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel</td>
<td>MCAW Spray / Pulsed Spray</td>
<td>.125”+</td>
<td>Superior penetration characteristics. Accommodates all positions in limited pulse spray condition dependent on power source characteristics</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel / Stainless Steel</td>
<td>FCAW Spray</td>
<td>.125”+</td>
<td>Excellent arc transfer. Good penetration characteristics</td>
<td></td>
</tr>
<tr>
<td>C-15 Carbon Steel / Stainless Steel</td>
<td>GMAW Short Circuit / Spray Transfer</td>
<td>Light Gauge / Heavy</td>
<td>Excellent short arc / spray. Good penetration</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel</td>
<td>CS / SS FCAW</td>
<td>Structural Typically .250”+</td>
<td>Increased deposition rate and efficiency. Best arc characteristics</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel / Stainless Steel</td>
<td>MCAW Spray / Pulsed Spray</td>
<td>.125”+</td>
<td>Superior penetration characteristics. Accommodates all positions in limited pulse spray condition dependent on power source characteristics</td>
<td></td>
</tr>
<tr>
<td>C-10 Carbon Steel</td>
<td>GMAW Short Circuit / Spray Transfer</td>
<td>Light Gauge - Medium</td>
<td>Good all round shielding for GMAW / MCAW process considerations</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel</td>
<td>MCAW Spray / Pulsed Spray</td>
<td>.125”+</td>
<td>Superior penetration characteristics. Accommodates all positions in limited pulse spray condition dependent on power source characteristics</td>
<td></td>
</tr>
<tr>
<td>CO-104 Carbon Steel / Galvanized Steel</td>
<td>GMAW Short Circuit / Spray Transfer</td>
<td>Light Gauge - .50”</td>
<td>Excellent short arc / spray. Good penetration</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel</td>
<td>Pulsed Spray</td>
<td>.125”+</td>
<td>Increased deposition rate and efficiency. Best arc characteristics</td>
<td></td>
</tr>
<tr>
<td>C-2 Carbon Steel / Stainless Steel</td>
<td>GMAW Short Circuit / Spray Transfer</td>
<td>Materials &lt; .375”</td>
<td>Low oxidation potential / Excellent arc characteristics Little to no spatter / Low fume emissions</td>
<td></td>
</tr>
<tr>
<td>Ar</td>
<td>GMAW / GTAW</td>
<td>Materials &lt; .375</td>
<td>Good all round shielding gas for non ferrous materials</td>
<td></td>
</tr>
<tr>
<td>He-25 Aluminum / Non Ferrous</td>
<td>GMAW / GTAW</td>
<td>.19” - 1.50”</td>
<td>Much improved arc starting and reduced porosity</td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>GMAW / GTAW</td>
<td>.19” - 1.50”</td>
<td>Excellent arc energy to deal with oxide layer. Increased travel speed, 10%+ typical</td>
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</tr>
<tr>
<td>He-50 Aluminum / Non Ferrous</td>
<td>GMAW / GTAW</td>
<td>Heavier Sections 1.50”+</td>
<td>Good penetration / reduced porosity on heavier sections. Increased travel speed</td>
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</tr>
<tr>
<td>He-75 Aluminum / Non Ferrous</td>
<td>GMAW / GTAW</td>
<td>Heavy Sections - 2.00”+</td>
<td>Increased penetration on heavy sections</td>
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</tr>
<tr>
<td>HC-925 Stainless Steel</td>
<td>GMAW Short Circuit Transfer</td>
<td>Gauge - 250”</td>
<td>Limited parameter range. High heat input on light materials</td>
<td></td>
</tr>
<tr>
<td>HC-725 Stainless Steel / Nickel Based Alloys</td>
<td>GMAW Short Circuit / Spray / Transfer / Pulsed Spray Transfer</td>
<td>Gauge - 500”</td>
<td>Excellent short arc &amp; spray on Ni based materials. Stainless / Monel / Hastalloy / Inconel</td>
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</tr>
<tr>
<td>HC-32 Stainless Steel / Nickel Based Alloys</td>
<td>GMAW Short Circuit / Spray / Transfer / Pulsed Spray Transfer</td>
<td>Gauge - 500”</td>
<td>Excellent short arc spray and pulsed spray on Ni based materials. Stainless / Monel / Hastalloy / Inconel</td>
<td></td>
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<tr>
<td>HC-1018 Galvanized Steel / Stainless Steel</td>
<td>GMAW Short Circuit / Spray Transfer</td>
<td>Gauge - 500”</td>
<td>Excellent arc stability through zinc coatings. Reduced fume &amp; spatter</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel</td>
<td>CS / SS FCAW</td>
<td>.250”+</td>
<td>Noticable reduction in particulate &amp; fume emissions. Excellent metallurgical characteristics</td>
<td></td>
</tr>
<tr>
<td>Carbon Steel</td>
<td>MCAW Spray / Pulsed Spray</td>
<td>.125”+</td>
<td>Superior penetration characteristics. Accommodates all positions in limited pulse spray condition dependent on power source characteristics</td>
<td></td>
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<tr>
<td>AO-2 Carbon Steel</td>
<td>GMAW Short Circuit / Spray Transfer</td>
<td>Light Gauge / Cold Rolled</td>
<td>Very stable arc with reduced fume emissions</td>
<td></td>
</tr>
<tr>
<td>H-3 Stainless Steel (300 series)</td>
<td>GTAW</td>
<td>Light Gauge - .375”</td>
<td>Excellent color match and increased travel speeds</td>
<td></td>
</tr>
<tr>
<td>DP-1021 Duplex / Super Duplex</td>
<td>GMAW Short Circuit / Spray</td>
<td>Gauge - 500”</td>
<td>Excellent color match &amp; arc starting characteristics</td>
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<tr>
<td>DP-122 Duplex / Super Duplex</td>
<td>GMAW</td>
<td>Gauge - 500”</td>
<td>Excellent color match &amp; arc starting characteristics</td>
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<tr>
<td>APN-7* Aluminum</td>
<td>GTAW / GMAW</td>
<td>0.125” - 1.500”</td>
<td>Excellent penetration characteristics producing porosity free welds. Advanced process capability for ultimate arc control</td>
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<tr>
<td>HENON-237* Aluminum</td>
<td>GTAW / GMAW</td>
<td>0.125” - 1.500”</td>
<td>Superior penetration characteristics producing porosity free welds with narrow heat affected zone / increased travel speed</td>
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<tr>
<td>APN-10* Aluminum</td>
<td>GMAW</td>
<td>0.125” - 1.500”</td>
<td>Superior penetration characteristics producing porosity free welds with narrow heat affected zone</td>
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</tr>
<tr>
<td>HEPT-10* *Patent Pending</td>
<td>GMAW</td>
<td>0.125” - 1.500”</td>
<td>Superior penetration characteristics producing porosity free welds with narrow heat affected zone / increased travel speed</td>
<td></td>
</tr>
</tbody>
</table>