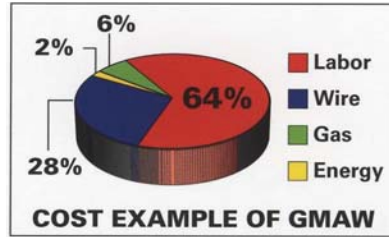




SHIELDING GASES FOR METAL ARC WELDING STAINLESS STEEL



Labor is the highest cost factor associated with gas metal arc welding. Shielding Gas can reduce labor costs, improve product quality, and increase weld productivity.

- 102** 98% argon / 2% oxygen
- 531** 66% argon / 33% helium / 1% carbon dioxide
- 592** 90% helium / 7.5% argon / 2.5% carbon dioxide

In gas metal arc welding (GMAW), also known as metal inert gas (MIG) welding, the weld metal is shielded from the atmosphere by a flow of shielding gas. To avoid contamination of the weld pool, five gases are utilized for shielding stainless steel with MIG process. **Argon** provides easy arc starts and a stable welding arc. **Helium** and **carbon dioxide** additions in argon increases the heat input to the weld and increase bead wetting. An **oxygen** addition in argon increases travel speeds, stabilizes the welding arc, and causes

592 is a three-part gas mixture of helium, argon, and carbon dioxide which provides good arc stability and increased depth of fusion. The high helium content provides heat input to overcome the sluggish weld pool with short circuiting mode of filler metal transfer. The active gas (carbon dioxide) in this mix is controlled to avoid surface oxidation and carbon absorption. This mix is recommended for stainless steel base materials less than 1/8".

a more fluid weld pool. Selecting the proper shielding gas is as important as selecting the

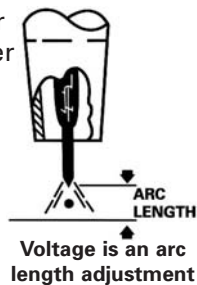
GMAW METAL TRANSFER			
✓ = Recommended ◆ = Acceptable	SHORT ARC	SPRAY ARC	PULSE
102	◆	✓	✓
531	✓	✓	✓
592	✓		

correct filler metal. The correct shielding gas can help control weld bead profile, weld deposition rates, penetration into base metal and weld discontinuities.

To help simplify selection and ordering of shielding gas mixtures, GTS developed a series of **ARGOBlend™** Brand Shielding Gas for welding stainless steel.

102 is a two-part gas mixture of argon and oxygen which improves arc stability and provides a more fluid weld pool. The filler metal transfer with argon / oxygen helps reduce spatter levels, and the fluid weld pool permits higher travel speeds.

531 provides higher welding speeds, a broad weld with a flat weld face, and good color match. 531 helps reduce porosity and improves alloy retention and corrosion resistance. The active gas (carbon dioxide) in this mix is controlled to avoid surface oxidation and carbon absorption. This mix will eliminate the need to stock two mixtures for welding stainless steel in short circuiting (90% helium / 7.5% argon / 2.5% carbon dioxide) and spray transfer (98% argon / 2% oxygen).



SHIELDING GASES FOR TIG WELDING STAINLESS STEEL

405 is a mixture of 95% argon and 5% hydrogen. This mixture will help reduce porosity, increases heat input, minimizes undercutting, and produces welds at low current levels due to the enhanced thermal properties. The reducing atmosphere also improves weld pool wetting and produces cleaner weld surfaces due to reduced surface oxidation.



STAINLESS STEEL

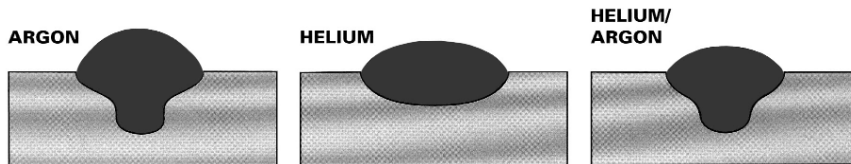


SHIELDING GASES FOR GAS METAL ARC WELDING ALUMINUM

- 325** 75% argon / 25% helium
- 350** 50% argon / 50% helium
- 375** 75% helium / 25% argon

In gas metal arc welding (GMAW), also known as metal inert gas (MIG) welding, the weld metal is shielded from the atmosphere by a flow of shielding gas. To avoid contamination of the weld pool, two gases are utilized for shielding aluminum. Helium additions to argon will increase the heat input. The thicker the aluminum, the higher the percentage of helium in argon. As helium percentages increase, the arc voltage, and weld depth-to-width ratio will increase, while minimizing porosity. Selecting the proper shielding gas is as important as selecting the correct filler metal. The correct shielding gas can help control weld bead profile, weld deposition rates, penetration into base metal and weld defects.

To help simplify selection and ordering of shielding gas mixtures, GTS developed a series of **ARGO BLEND™** Brand Shielding Gases for welding aluminum.



325 is recommended for aluminum when an increase in heat input and excellent bead appearance are required. The small percentage of helium helps hold the heat in the weld pool area, which results in reduced porosity and better wetting action.

350 is utilized for welding thicker aluminum materials that require additional heat input. 350 has twice as much helium as 325. The increased percentage of helium improves wetting action, depth of fusion, and travel speeds on heavier materials that require the additional heat input. This mix will also help reduce porosity.

375 for welding the thickest aluminum (over 3"). Increased heat input provides highest travel speeds, highest weld pool fluidity, and improved wetting action. Recommended for mechanized welding of butt joints, aluminum pipe, and GMAW hot wire applications where higher deposit rates are required.



SHIELDING GASES FOR TIG WELDING ALUMINUM

ARGOTIG is 100% Argon (prepurified) that has a minimum purity of 99.998%. Due to the problems associated with gas tungsten arc welding aluminum when the shielding gas does not meet purity requirements, ARGOTIG is recommended for superior weld quality. Argon is preferred over helium for alternating current (AC) welding applications because of enhanced cleaning action, arc stability, and weld appearance.

325 is recommended for aluminum when an increase in heat input is required. The small percentage of helium helps hold the heat in the weld pool area, which results in reduced porosity and better wetting action. The superior arc starting and stable arc characteristics of argon with helium's higher thermal conductivity produce high-quality gas tungsten arc welds on aluminum.

Labor is the highest cost factor associated with gas metal arc welding. Controlling labor and overhead has the highest impact to welding costs. **ARGO BLEND™** can reduce labor costs, improve product quality and increase welding productivity.

CONTACT OUR CUSTOMER SERVICE GROUP AT 1-800-942-1148 AND ASK THAT A TECHNICAL REP CONTACT YOU



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