

**PRAXAIR'S HELI STAR™ SS – ARGON/HELIUM/CARBON DIOXIDE BLEND**  
 FOR ALL FORMS OF GMAW (MIG/MAG WELDING) OF STAINLESS STEEL

Praxair's HeliStar™ SS is a precision blend of argon, helium, and carbon dioxide which is designed for use as a universal shielding gas for stainless steel welding applications. It operates well in all types of metal-transfer (i.e short-circuiting, pulsed, and conventional spray). Praxair's HeliStar SS produces good welding characteristics and excellent weld chemistry control. Its low oxidizing potential also makes it suitable for joining Inconel™, Monel™, copper-nickel, and high alloy steels.

Nearly 98% of all reactive elements will become deposited weld metal. The active carbon dioxide component will maintain or slightly increase the carbon level of the weld deposit for some austenitic stainless steels.

The additional heat input provided by the helium component allows greater travel speeds and reduced distortion when compared with Ar/O<sub>2</sub> and Ar/CO<sub>2</sub> blends.

**Product Features**

- Helium-enhanced blend.

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- Argon-based blend.

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- Low oxidizing potential.

**Benefits**

- Improved bead wetting/excellent bead shape.
- Higher travel speed/reduced distortion.
- Good performance with all types of metal transfer ("Hi-Sil" wire is recommended for optimum results in short-circuiting transfer).

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- Good arc starting characteristics.
- Good arc stability.
- Lower weld fume levels.
- Greater control of base metal distortion.

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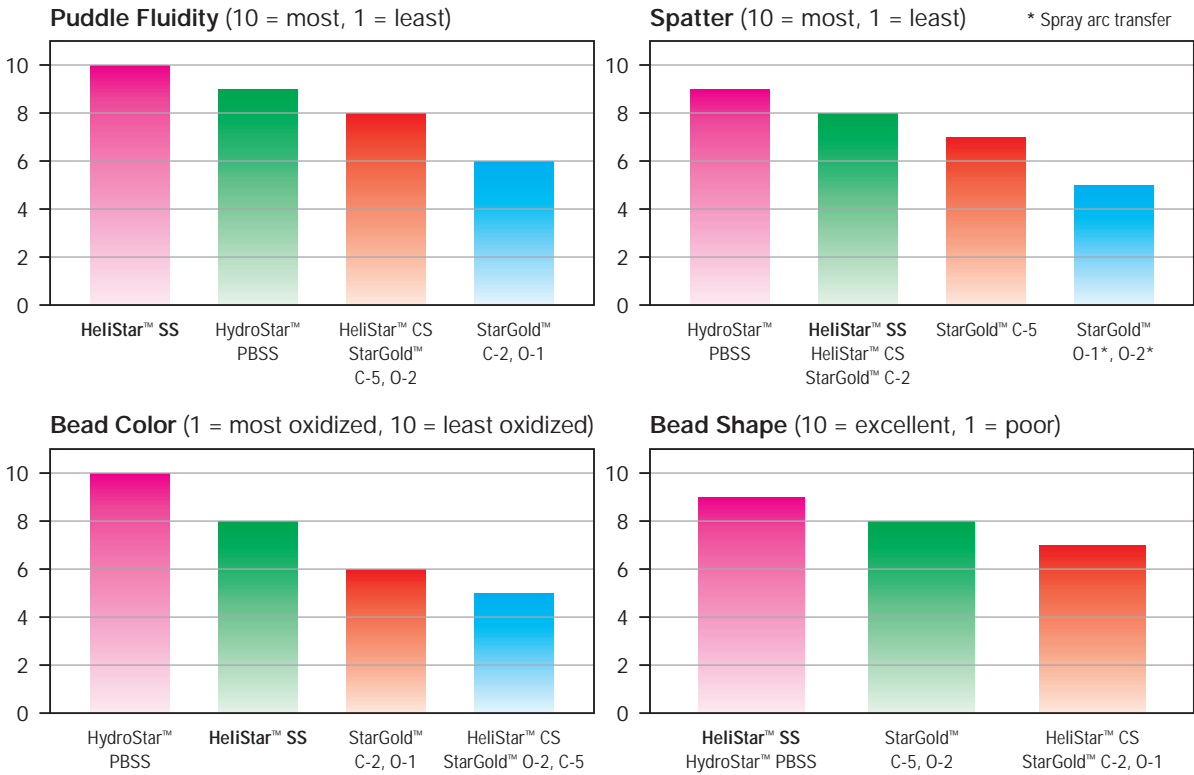
- Excellent weld surface appearance.
- Good chemistry control and corrosion resistance.

**Typical Applications**

- Joining thin gauge stainless used in cylinders and food equipment with conventional and pulsed spray transfer.
- Fabrication of stainless components using short circuiting transfer – for railcars and other transportation applications.
- Heavy and thin wall stainless steel tanks.
- Welding Inconel and other copper-nickel piping materials.
- Joining corrosion and abrasion resistant materials such as Inconel 625 and Hasteloy™ C.

## Performance Characteristics

Illustrated below are comparisons between shielding gas blends used with the MIG process and 308L filler wire, over a range of operating conditions. They should be used to aid in shielding gas selection for a specific application.



**Note:** The selection of the appropriate shielding gas can become quite complex due to the large variety of operating conditions (base metal, chemistry and thickness, metal transfer, wire

selection, welding position, etc). Please consult with your Praxair representative for the best option available for your application.

## Welding Conditions Selection Table - 316 Stainless

	Wire diameter (inches)	Wire feed speed (ipm)*	Current level (amps)	Voltage (volts)**
<b>Short Arc</b>	0.035 (0.9 mm) hi-sil	160-200	80-120 (short arc)	17-19
	0.045 (1.2 mm) hi-sil	110-130	90-140 (short arc)	18-21
<b>Pulse Arc</b>	0.035 (0.9 mm) hi-sil	180-210	70-110 (pulse arc)	19-20 (average)
	0.045 (1.2 mm) hi-sil	100-275	90-170 (pulse arc)	21-23 (average)
	0.035 (0.9 mm) hi-sil	350-425	170-190 (spray arc)	25-29
	0.045 (1.2 mm) hi-sil	225-275	190-210 (spray arc)	26-29

\*\* Hi-sil wire/steep slope/inductance recommended.

\*\*\* Voltage level for 60 Hz power supply; with 50 Hz, add 3 volts.



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