



# STARGON™ VS Welding Blend Helps Improve Throughput and Productivity While Reducing Overall Costs



Welded with STARGON™ VS welding blend and .045" 70S-6 welding wire – deposition rate of 17 lbs/hr



STARGON VS welding blend provides excellent penetration at maximum deposition rates with little or no weld spatter

## High Deposition Rates and Excellent Weld Quality for Carbon Steel MIG Welding

Linde's STARGON™ VS gas blend is a proprietary blend of argon, helium and carbon dioxide, designed to meet the demands of your MIG/MAG (GMAW) process with enhanced performance and lower operational costs. The STARGON VS gas blend provides high arc energy, which stabilizes the arc and allows maximum wire transfer rates and travel speeds, focused penetration and excellent bead appearance, including good wetting, flat crown and minimal spatter.

## STARGON™ VS Gas Blend Is Optimal for:

- Metal cored and solid wires
- All-position welding (F1, F2, F3, F4)
- High arc stability at both low and high amperages
- Jobs requiring changes in metal transfer modes and electrode types.

## Features and Benefits

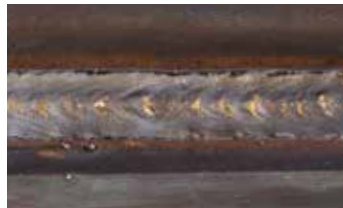
Features	Benefits
One gas, multiple applications	<ul style="list-style-type: none"> <li>→ Can be paired with a range of wire sizes and electrode types for carbon steel</li> <li>→ Can be used with multiple forms of metal transfer</li> </ul>
Wetting characteristics and low oxidation for enhanced performance	<ul style="list-style-type: none"> <li>→ Helium allows for exceptional heat transfer for better wetting of the puddle</li> <li>→ Excellent arc stability at both low and high amperages</li> </ul>
Reliable arc stability over a range of surface conditions	<ul style="list-style-type: none"> <li>→ Minimal porosity on galvanized sheet material</li> <li>→ Less spatter on surfaces with light oil/scale</li> </ul>

## Formulated for Higher Efficiency and Productivity

STARGON™ VS gas blend is compared here to common shielding gases C-25 (75% argon and 25% carbon dioxide) and C-10 (90% argon and 10% carbon dioxide) under the same conditions: 70S-6 .035" wire and 3/16" fillet weld. The results speak for themselves.

C-25 gas blend	C-10 gas blend	STARGON™ VS gas blend
Wire feed speed: 450	Wire feed speed: 600	Wire feed speed: 750
Voltage: 19.5	Voltage: 22	Voltage: 26.5
Deposition: 7.4 lbs/hr	Deposition: 9.8 lbs/hr	Deposition: 12.3 lbs/hr
Somewhat erratic arc and, large amount of spatter	Decreased spatter and increased travel speed compared to C-25 but has silicon deposits on the weld surface and some undercutting at the weld toes	Highly stabilized weld compared to C-25 and C-10 and completed 20% faster than C-10 and 40% faster than C-25 in CV

Shielding gases have natural limits on deposition. C-25 gas lacks enough energy in the arc to stabilize the weld at high deposition rates, leading to spatter and cold lapping. Although C-10 is able to match STARGON VS gas blend's 12.3 lbs/hr deposition rate, the quality is diminished by undercutting and crowning of the weld. If your project calls for a flat, clean weld at maximum wire feed and deposition rate, STARGON VS gas blend is the optimal choice.



C-25 gas blend



C-10 gas blend



STARGON™ VS gas blend

## Increase Throughput, Activity and Your Bottom Line

When welding with a 15% duty cycle, Linde's STARGON VS gas blend produced 15 parts per hour, a 20% increase in productivity over C-10 and a 40% increase when compared to C-25 welding in CV.

### Welding Cost Stack

	Units	C-25	C-10	STARGON™ VS gas blend
Max deposition rate	lbs/hr	7.30	9.80	12.30
Deposition efficiency	-	87%	94%	95%
Wire purchased	lbs	5,000	4,650	4,604
Gas flow	cfh	35	35	35
Arc-on time % (duty cycle)	-	15%	15%	15%
Bulk gas price	\$/ccf	\$4.00	\$5.00	\$6.50
Wire price	\$/lb	\$1.50	\$1.50	\$1.50
Labor/overhead rate	\$/hr	\$35.00	\$35.00	\$35.00
Cost of gas/year	\$/yr	\$958.90	\$830.36	\$851.46
Cost of wire/year	\$/yr	\$7,500.00	\$6,975.00	\$6,905.25
Cost of labor/year	\$/yr	\$159,817.35	\$110,714.29	\$87,329.27
<b>Cost of welding/year</b>	<b>\$/yr</b>	<b>\$168,276.26</b>	<b>\$118,519.64</b>	<b>\$95,085.98</b>
Savings with STARGON™ VS gas blend	\$/yr	\$73,190.28	\$3,433.66	

### Linde Inc.

10 Riverview Dr, Danbury, CT 06810, USA  
Phone 800.225.8247, www.lindedirect.com