

# DISCOVER THE BLUESHIELD™ ADVANTAGE

Welding, cutting and safety products

**PRODUCTS CATALOG**





# BLUESHIELD™

## Our welding brand

### FOR ADVANCED METALWORKING: BLUESHIELD™ IS WHAT YOU NEED!

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Since 1911, Air Liquide has been the benchmark for welding and cutting gases in Canada. Registered in 1963, Air Liquide's BLUESHIELD™ brand offers innovative welding products and gas mixtures suitable for all welding processes and applications.

BLUESHIELD™ is a brand of choice in the Canadian welding industry, always living up to its reputation for excellence, innovation, reliability and superior performance.

Manufactured according to our specifications, these products are carefully selected to offer our customers an excellent quality-price ratio. The BLUESHIELD™ brand includes a wide range of exclusive welding products, including gases, cutting tables, abrasives, welding tools and accessories, filler metals, safety equipment and consumables, including Canadian-made products at very competitive prices.

### PROMISE TO BLUESHIELD™ CUSTOMERS

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Ensuring long-lasting, quality welds, better work, safer and even more cost-effective.

### THE BLUESHIELD™ SOLUTION

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Air Liquide specialists have developed optimal combinations of filler metals and gases to ensure the perfect compatibility of these critical elements during welding operations. This is now complemented by safety equipment and a wide range of high-quality abrasive products.



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# CYLINDER GASES

## SECTION I

GAS SUPPLY METHOD | MICROBULK | CYLINDER TRANSPORT AND HANDLING | CYLINDER SIZE AND COLOUR CHART | THE TOPS | FLAMAL™ GAS | PURE GASES | ALBEE™ RANGE | BLUESHIELD™ AND ARCAL™ GAS | LASAL™ GAS | ALIGAL™ GAS | CUTTING TABLES



## GAS SUPPLY METHOD

Air Liquide, a world leader in the production of industrial gases, offers you a wide range of gas supply options to meet your needs.



## CYLINDERS

- Our cylinder gases are available in gaseous or liquid form in several sizes (2 to 450 L) and pressures (low, high and extra high).
- For light use, explore our ALBEE™ range, lightweight and portable, as well as our small cylinders with tulip caps for greater portability and safety.
- For larger volumes, our XPR (extra high pressure) cylinders are ideal and reduce the need for frequent cylinder replacement.
- Explore our exclusive selection of innovative ALTOP™, SMARTOP™ and EXELTOP™ valves and caps for greater simplicity, safety and savings.

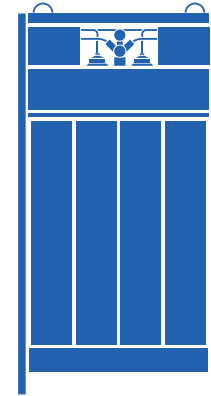
## MANIFOLD

- Responds to greater gas consumption needs.
- Workstations supplied by pipelines from the manifold.
- Reduces cylinder handling.
- Available with either manual or automatic switch-over system.



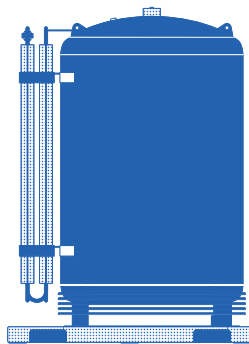
## IN STORES OR AT A DEPOT

- More than 70 Air Liquide Stores and 700 depots where you find gas cylinders located in strategic areas across Canada.
- Meet with our experts for useful advice.
- Browse our wide range of products and solutions.
- Get your products right away.



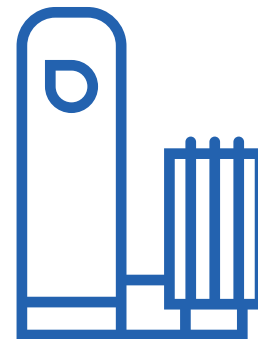
## BULK PACK

- Available for pure gases and certain mixes.
- 16 cylinders in a steel frame, also available for XPP (extra high pressure) cylinders.
- Ideal for a monthly consumption of 240 to 500 m<sup>3</sup> /month.
- Single outlet connection to connect to your main line.
- No gas loss through evaporation.



## MICROBULK

- Suitable for medium and large volumes with permanent or semi-permanent installation.
- Ideal for a monthly consumption of 500 m<sup>3</sup> to 3,000 m<sup>3</sup> /month.
- Small cryogenic tank installed on site and filled by small tanker trucks.
- Gas distributed to workstations through pipelines.
- The gas flow must be regular to avoid evaporation losses.



## BULK

- Suitable for large and very large volumes, with permanent installation.
- Ideal for a monthly consumption of more than 3,000 m<sup>3</sup> /month.
- Cryogenic tank installed on site and filled by tanker trucks.
- Allows a continuous gas supply on a large industrial scale.
- The gas flow rate must be high and continuous to avoid evaporation losses.

For more information, contact your Air Liquide representative or visit [airliquide.ca](http://airliquide.ca)



## MICROBULK

### EFFICIENT, COMPACT AND READY TO INSTALL

With our SKIDTANK program, enjoy a supply adapted to your needs

### FEATURES: ALL-IN-ONE CONCEPT

#### 1 VESSEL

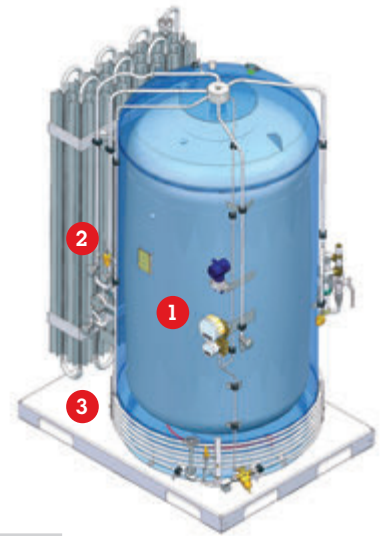
- Stainless steel tank.
- Completely equipped: valves, safety valves, level gauge, pressure gauge.
- Panel for telemetry system.

#### 2 VAPORIZER

- Standard flow rate 100 Nm<sup>3</sup>/h.
- Option 130 Nm<sup>3</sup>/h.

#### 3 SKID

- Handling of the complete system with forklift truck or crane (when empty).
- Serves as a foundation, no (or little) work required.



## BENEFITS

### A TURNKEY SOLUTION:

- Ready to use.
- No or little work required and simplified permits.
- Installed and maintained by Air Liquide teams.

### SIMPLE USE:

- Automatic gas control and on-site delivery.
- Eliminates cylinder handling and management.
- Significantly improves the safety of your operations.
- Non-permanent installation.

### SAVES MONEY:

- Reduces gas deliveries through increased storage capacity.
- Saves time and manpower by eliminating cylinder handling and management.
- Reduces residual gas losses.
- Frees up space.

## APPLICATIONS



Metal fabrication  
& welding



Laser



Microbrewery



Greenhouses



Laboratory



Pharmaceuticals

## SUPPLY

Available for:

- Nitrogen
- Argon
- Oxygen
- Carbon Dioxide
- Compatible with our mixers

Contact us and discover how **Air Liquide's Microbulk solution** can improve your operations



Available in Quebec, Ontario and British Columbia; Contact our representatives to confirm availability in your area.

## IMPORTANT

WE WILL NOT BE RESPONSIBLE FOR CYLINDERS LEFT AFTER WORKING HOURS.  
PLEASE OBTAIN A SIGNED RECEIPT FOR EMPTY CYLINDERS AT ALL TIMES.

### NO SMOKING



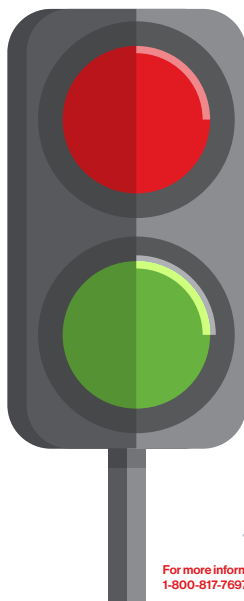
### HAZARD ALERT



### NO NAKED FLAME

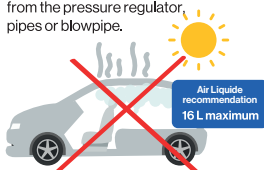


## SAFELY TRANSPORT YOUR CYLINDERS



### BEWARE OF LEAKS

- A cylinder is never totally empty. A few litres of acetylene can cause the trunk of a vehicle to explode.
- A leak is more likely to occur from the pressure regulator, pipes or blowpipe.



### BEWARE OF SHOCKS

- Even when slanted inside a trunk, a cylinder can become a dangerous projectile in case of a frontal shock or rollover.



For more information:  
1-800-817-7697 / 310-WELD (9353) (ONAB,SK)

### WHAT YOU SHOULD DO

- Dismantle all equipment during transportation.



- Air out the vehicle.



- Do not transport your cylinders in a non ventilated trunk or space of a vehicle.
- Do not leave the cylinders inside the vehicle for a long period of time.
- Secure the cylinders in an upright position.



Depending on the nature and quantity of the products, the transportation may be subjected to the Transport of Dangerous Goods regulation in terms of:

- Display of Dangerous Goods Safety Marks (i.e. Placards)
- Shipping documentation
- Circulation on roads designated for dangerous goods
- Training on the regulation and the products transported

## SAFELY HANDLE YOUR CYLINDER

### CYLINDER

Put the cylinder onto a transportation cart and make sure it's fixed with a chain. The use of a cart makes the transport faster, easier and safer.

\*Magnetic cart illustrated



Large cylinders are heavy.



### ENSURE CYLINDER IS SECURE

An attached cylinder = peace of mind!



### WEAR INDIVIDUAL PROTECTION



- Safety glasses
- Protective wear
- Safety gloves
- Safety footwear

**IN CASE OF EMERGENCY (24H/7): CALL 514-878-1667**

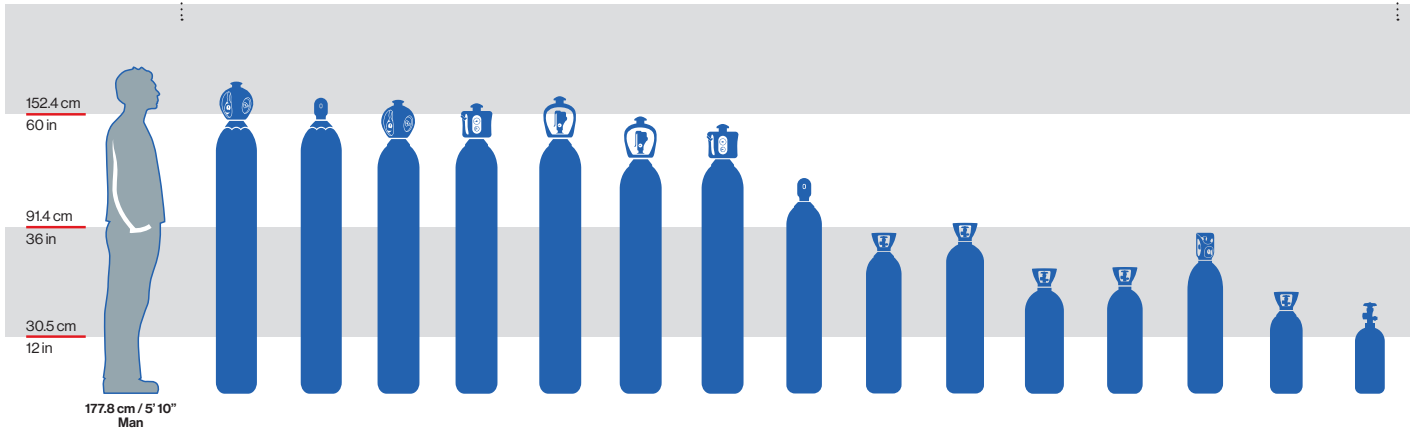




# CYLINDER SIZE CHART

Find what's right for you with Air Liquide Canada. We offer a wide range of cylinder sizes and a variety of caps to optimize your operations. Refer to the following pages to find what's right for you.

**HIGH PRESSURE**



		50 XPR™ EXELTOP™ COMPACT	50 XPR™	50 EXELTOP™	50 ALTOP™	50 SMARTOP™	44 SMARTOP™	44 ALTOP™	22	16	16AL**	14AL**	11AL**	11 ALBEE™	9 TULIP	4
HEIGHT	MM	1,702	1,623	1,615.4	1,592.6	1,638.3	1,524	1,478.3	1,193.8	889	937.3	693.4	698.5	883.9	566.4	355
	IN	67	63.9	63.6	62.7	64.5	60	58.2	47	35	36.9	27.3	27.5	34.8	22.3	14
DIAMETER	MM	229	229	235.7	235.7	235.7	235.7	235.7	178	178	184.15	203.2	184.15	178	172	133
	IN	9	9	9.3	9.3	9.3	9.3	9.3	7	7	7.25	8	7.2	7	6.7	5.2
TARE WEIGHT	KG	67	67	60.8	60.8	60.8	52.2	52.2	29	22.2	13.9	11.4	10.2	14	10	4.3
	LBS	147.7	147.7	134	134	134	115	115	64	49	30.7	25.1	22.6	31	22	9.5
WATER CAPACITY	L	50	50	49.1	49.1	49.1	43.3	43.3	37.2	14.4	15.7	13.4	10.7	11	7.87	3.6
	IN <sup>3</sup>	3,051.2	3,051.2	2,995	2,995	2,995	2,640	2,640	2,270	942	960	816	650	672	480	220

Character size 5' 10" (1,780 mm) to illustrate the height of the cylinders.

**NOTE:** In the following pages, please note that for volumes and pressures, metric values (kPa and m<sup>3</sup>) are calculated at 15°C (59°F), while imperial values (psig and ft<sup>3</sup>) are calculated at 21°C (70°F). All pressure values indicated are typical values.

\*\* AL corresponds to our aluminum cylinders.

## AL'S TIP

Identify XPR cylinders (very high pressure - 4,500 psig) with their star-shaped neck and XPR label.



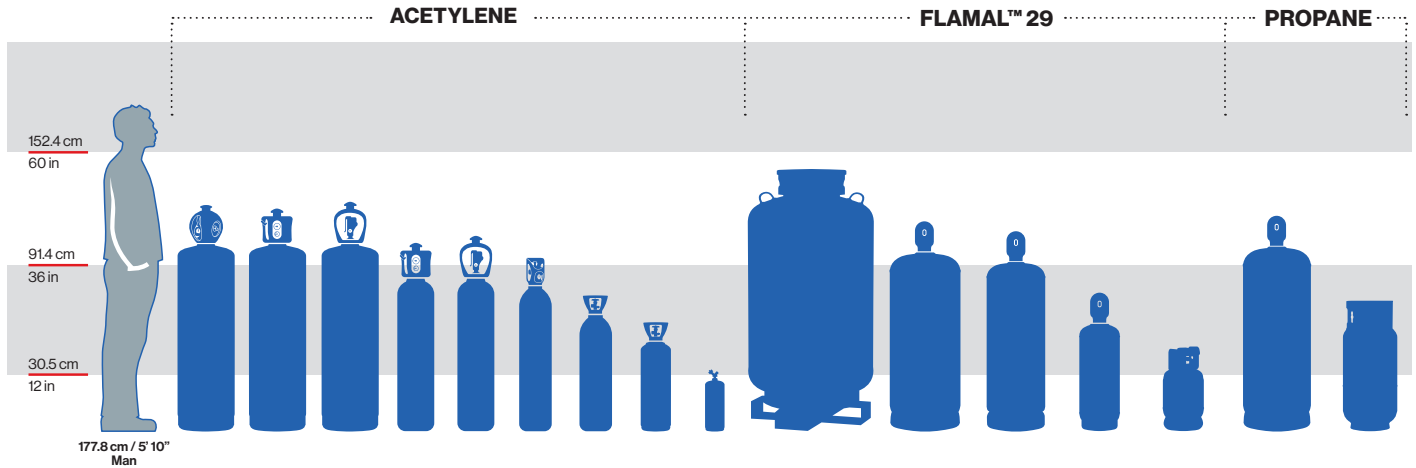
**PRESSURE:**  
16,820 kPa @ 15°C (2,492 psig @ 70°F)



**PRESSURE:**  
30,380 kPa @ 15°C (4,500 psig @ 70°F)



## CYLINDER SIZE CHART



		69 EXELTOP™	69 ALTOP™	69 SMARTOP™	23 ALTOP™	23	14 ALBEE™	14	8 TULIP	2	450	108	65	28	13	100	33 1/3	
		ACETYLENE										FLAMAL™ 29					PROPANE	
HEIGHT	MM	1,247	1,224	1,270	1,054	1,099.8	960	749.3	604.5	340.4	1,445.3	1,150.9	1,095.4	766.7	462	1,196.9	718.8	
	IN	49.1	48.2	50	41.5	43.3	37.8	29.5	23.8	13.4	56.9	45.3	43.1	30.2	18.2	47.12	28.3	
DIAMETER	MM	304.8	304.8	304.8	203.2	203.2	178	177.8	152.4	97.3	762	368.3	304.8	226.1	226.1	377.8	312.4	
	IN	12	12	12	8	8	7	7	6	3.8	30	14.5	12	9	8.9	14.87	12.3	
TARE WEIGHT	KG	98.9	98.9	98.9	41.2	41.2	23	23.4	12.9	4	157	32.7	26.3	12.24	6.35	31.75	10.9	
	LBS	218	218	218	90.9	90.9	51	51.6	28.5	8.8	346.1	72	58	27	14	70	24	
WATERCAPACITY	L	68.4	68.4	68.4	25.1	25.1	14	14	7.9	2.1	454	108.1	64.95	27.6	11.9	108.1	36.3	
	IN <sup>3</sup>	4,171	4,171	4,171	1,530	1,530	855	855	480	128	2,7704.8	6,596.6	3,963.5	1,682.4	726.2	6,595.6	2,217.35	

Character size 5' 10" (1,780 mm) to illustrate the height of the cylinders.

**NOTE:** In the following pages, please note that for volumes and pressures, metric values (kPa and m<sup>3</sup>) are calculated at 15°C (59°F), while imperial values (psig and ft<sup>3</sup>) are calculated at 21°C (70°F). All pressure values indicated are typical values.

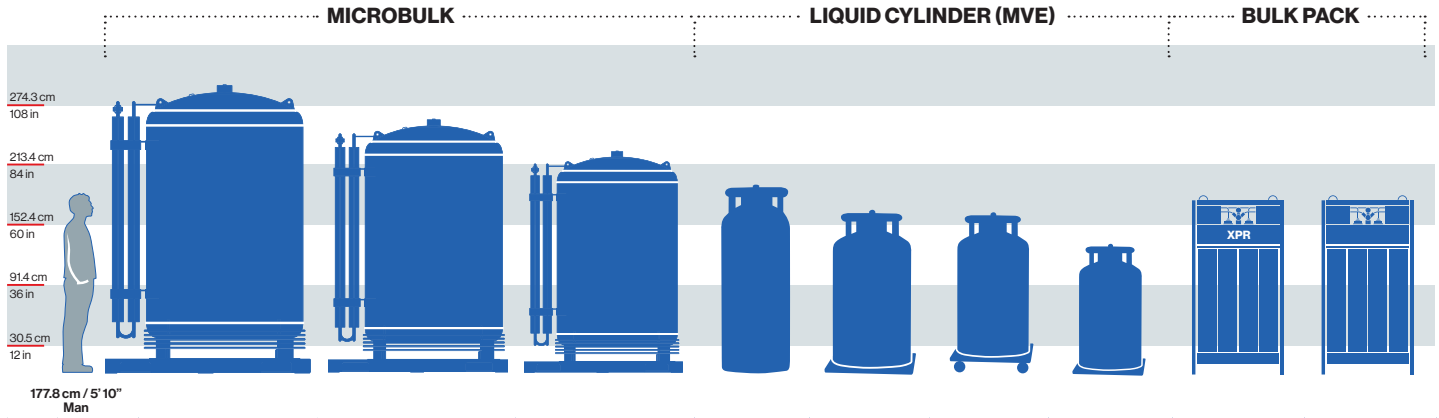
### AL'S TIP

Air Liquide uses a standard method of cylinder identification worldwide: The size represents the number of litres of water contained in the cylinder.

E.g., A size 16 cylinder contains 16 litres of water.



# CYLINDER SIZE CHART



SIZE*		3,000 L	2,000 L	1,000 L	300 L	450 L	240 L	180 L	16 X 50 XPR COMPACT	16 X 50
HEIGHT	MM	2,850	2,710	2,210	1,876	1,574.8	1,343.7	1,612.9	1,879.6	1,879.6
	IN	112	106	87	73.9	62	52.9	63.5	74	74
DIAMETER	MM	1,500	1,350	1,100	660	762	660.4	508	FRAME: 1,054.1 x 1,016	FRAME: 1,054.1 x 1,016
	IN	59.0	53.1	43.3	26	30	26	20	41.5 x 40	41.5 x 40
TARE WEIGHT	KG	2,180	1,750	1,120	195	568	136.1	117.9	1,362.3	1,263.1
	LBS	4,806	3,858	2,569	430	1,250	300	260	3,003.2	2,784
WATER CAPACITY	L	2,960	2,150	1,050	311	428	230	185	800	785.6
	IN <sup>3</sup>	780	566	277	82	26,118.2	14,035.5	11,289.4	48,819	47,920

177.8 cm / 5' 10" Man

Character size 5' 10" (1,780 mm) to illustrate the height of the cylinders.

**NOTE:**

In the following pages, please note that for volumes and pressures, metric values (kPa and m<sup>3</sup>) are calculated at 15°C (59°F), while imperial values (psig and ft<sup>3</sup>) are calculated at 21°C (70°F). All pressure values indicated are typical values.

\*The number corresponding to the size of the cylinders refers to the water capacity, in litres.













## AL'S TIP

Microbulk  
The smart bulk supply





# COLOUR OF INDUSTRIAL GAS CYLINDERS

				
<b>ACETYLENE</b> Page 015	<b>ALIGAL™</b> Page 026	<b>ARCAL™, ALMIG™, ALTIG™</b> Page 024	<b>ARGON</b> Page 017	<b>BLUESHIELD™</b> Page 023
				
<b>CO<sub>2</sub></b> Page 017	<b>COMPRESSED AIR</b> Page 018	<b>FLAMAL™ 29</b> Page 016	<b>HELIUM BALLOON</b> Page 019	<b>HYDROGEN</b> Page 019
				
<b>INDUSTRIAL HELIUM</b> Page 018	<b>LASAL™</b> Page 025	<b>NITROGEN</b> Page 020	<b>OXYGEN</b> Page 015	<b>PROPANE</b> Page 016

BLUESHIELD, ALTIG, EXELTOP, XPR™: Air Liquide Canada Inc. • ALBEE, ALMIG, ARCAL, ALTOP, LASAL, ALIGAL, FLAMAL 29, SMARTOP™: Air Liquide S.A.



## INNOVATIVE CYLINDERS

Explore and discover our exclusive selection of Air Liquide valves and heads for more safety, simplicity and savings!

### EXELTOP™: THE GAUGE OF PERFORMANCE FOR OPTIMAL PRECISION AND MAXIMUM PERFORMANCE

#### Benefits

- Performance gains: intuitive handling, guarantee of a precise and stable gas flow delivery
- Save money: no need to buy or replace your regulator; Air Liquide provides maintenance before each delivery
- Save gas: perfect sealing thanks to the on/off lever; maximum use of the gas in the cylinder
- Save time: ready to use thanks to the integrated regulator, on/off lever and Quick Connect coupling
- Work safely: one-touch gas shut-off; pressure reducing valve protects; no exposure to high pressure; ergonomically designed cap



#### FEATURES

- Integrated pressure reducer with double trigger
- Quick Connect
- Ergonomic, shock-absorbing cap
- On/off lever with new design
- Integrated pressure gauge

### ALTOP™: THE INDUSTRY STANDARD SIMPLICITY AND SAVINGS AT YOUR FINGERTIPS

#### Benefits

- Saves money: no regulators to buy or repair
- Save time: unique coupling and quick changeover
- Simplifies your operations: no cap or regulator to handle, gas control and pressure adjustment at your fingertips, gas level always visible
- Improves safety: built-in check valve, handle and knob for easy handling and safety



#### FEATURES

- An integrated pressure reducing valve
- Integrated check valve
- On/Off lever
- Ergonomic cap, shock absorber

### SMARTOP™: SMART, SIMPLE AND UNIQUE SIMPLIFY YOUR GAS CYLINDER USE

#### Benefits

- Save time: fast cut-off system; easy purging; easy handling thanks to the ergonomic cap
- Improve the safety of your operations: progressive opening in two steps; emergency cylinder closure in one single movement; valve protected by a robust cap
- Save gas: detection of cylinders left open; permanent pressure gauge for checking the gas remaining in the cylinder



#### FEATURES

- A positive pressure valve and a non-return device
- A permanent pressure gauge
- Ergonomic cap
- On/Off lever



# EXELTOP™

Optimum  
precision,  
maximum  
performance



## DIRECTIONS FOR USE

- 1** Connect your flexible hose



- 2** Check that the setting wheel is at zero



- 3** Lift the on/off lever



- 4** Adjust the required output pressure or flow rate



- 5** Ready for high-precision welding!



# FLAMAL™ GAS: FOR YOUR OXYGEN PROCESSES

AIR LIQUIDE CANADA OFFERS A COMPLETE RANGE OF FLAMAL™ GASES FOR YOUR OXYGEN PROCESSES.

Refer to the following pages to find the gas that best suits your application and that will allow you to optimize your flame processes:

- Increase productivity
- Improve quality
- Reduce waste and losses
- Increase safety

APPLICATION GUIDE							
GAS	FLAME CUTTING	THERMAL FLAME SPRAYING	HARDENING BY QUENCHING	BRAZING, SOLDERING BRAZING	HEATING, BENDING AND STRAIGHTENING	CLEANING REFILLING	ADVANTAGES
ACETYLENE	X	X	X		X		<ul style="list-style-type: none"> <li>• Produces the highest flame temperature of all common fuel gases</li> <li>• Produces a highly concentrated heat</li> </ul>
FLAMAL™ 29	X	X	X	X	X		<ul style="list-style-type: none"> <li>• Combines the performance characteristics of acetylene with the safety and ease of use of propane</li> <li>• Allows for quick start and is ideal for cutting and piercing</li> <li>• Provides efficient BTU transfer in heating applications</li> <li>• The most versatile fuel gas</li> </ul>
OXYGEN	X		X			X	<ul style="list-style-type: none"> <li>• Available with our innovative ALTOP™, SMARTOP™, EXELTOP™ caps for easier and safer use</li> <li>• Available in bulk</li> </ul>
PROPANE				X	X		<ul style="list-style-type: none"> <li>• Cost savings</li> <li>• Produces a high BTU rate</li> </ul>



## ACETYLENE

CYLINDER COLOUR: BLACK

### APPLICATIONS

Flame welding, brazing, soldering, braze welding; flame cutting; thermal spraying; hardening by quenching; carbon black production.

### ADVANTAGES

- A high flame temperature and concentrated heat distribution allow fast starts and excellent performance for parking and chamfering.
- The characteristics and composition of the acetylene flame make it the only choice for gas fusion welding.



A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464161	2	N/A	0.28	10.10	200	1,530 kPa (250 psig)
A0464183	8	TULIPE	1.10	39.67	520	1,530 kPa (250 psig)
A0464154	14	N/A	2.08	70.00	410	1,530 kPa (250 psig)
A0464187	14	ALBEE™	2.08	70.00	023	1,530 kPa (250 psig)
A0464184	23	SMARTOP™	3.60	129.83	410	1,530 kPa (250 psig)
A0464144	23	ALTOP™	3.60	129.83	023	1,530 kPa (250 psig)
A0464185	69	SMARTOP™	10.30	371.46	410	1,530 kPa (250 psig)
A0968087	69	EXELTOP™	10.30	363.74	QUICK CONNECT	1,530 kPa (250 psig)



### AL'S TIP

Acetylene is a fuel gas used in combination with oxygen for the welding of metals and cutting of steels, as well as related oxyacetylene processes involving the heating, forming and heat treatment of metals.

## OXYGEN

CYLINDER COLOUR: RED

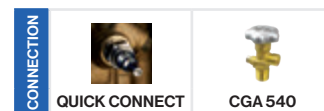
### APPLICATIONS

Flame welding, brazing, soldering, braze welding; flame cutting; flame spraying; hardening by quenching; heating, bending and straightening; metal cutting; cleaning.

### ADVANTAGES

- Optimize your operations using our selection of innovative heads ALTOP™, SMARTOP™, EXELTOP™. (Please refer to page 012 for more details)

A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464890	4	-	0.57	20.64	540	14,960 kPa (2,217psig)
A0464910	9	TULIPE	1.39	50.00	540	14,960 kPa (2,217psig)
A0464188	11	ALBEE™	2.30	77.69	022	20,000 kPa (2,960psig)
A0464880	16	N/A	2.75	99.00	540	16,820 kPa (2,492psig)
A0464884	22	N/A	3.45	124.30	540	14,960 kPa (2,217psig)
A0464912	44	SMARTOP™	6.90	248.68	540	14,960 kPa (2,217 psig)
A0464809	44	ALTOP™	6.90	248.68	22	14,960 kPa (2,217 psig)
A0464914	50	SMARTOP™	9.38	331.25	540	17,820 kPa (2,640psig)
A0464811	50	ALTOP™	9.38	331.25	022	17,820 kPa (2,640psig)
A1186744	50	EXELTOP™	9.38	331.25	QUICK CONNECT	17,820 kPa (2,640psig)
A0464833	180 L	N/A	138.83	5,006.57	Gas: 540 Liquid: 440	1,585 kPa (230 psig)
A0464835	240 L	N/A	168.84	6,125.06	Gas: 540 Liquid: 440	1,585 kPa (230 psig)
A0464838	450 L	N/A	360.36	12,995.78	Gas: 540 Liquid: 440	1,585 kPa (230 psig)
A0464817	16 X 50	N/A	150.04	5,411.08	540	17,820 kPa (2,640psig)



Hazard Classification: Gas: 2.2 (5.1) / Liquid: 2.2 (5.1) | UN number: Gas: UN1072 / Liquid: UN1073

\* Availability may vary by region  
 \*\* m<sup>3</sup> to 15°C; pi<sup>3</sup> to 70°F





## FLAMAL™ 29

CYLINDER COLOUR: **YELLOW**

### APPLICATIONS

Flame cutting; flame spraying; hardening by quenching; brazing and soldering; heating, bending and straightening.

### ADVANTAGES

- A stable, high-energy, propylene-based gas that offers the best characteristics of acetylene combined with those of propane in terms of safety and ease of use.
- FLAMAL™ 29 produces 70% more heat than propane in its primary flame and twice as much heat as acetylene in its secondary flame.
- The unique and balanced heat distribution makes FLAMAL™ 29 the most versatile of all fuel gases and provides fast start-up during cutting and drilling as well as efficient energy transfer (BTU) during heating operations.



A NUMBER	SIZE*	HEAD*	WEIGHT		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			KG	LB		
A0464587	13	N/A	11.00	5.00	510	800 kPa (135 psig)
A0464589	28	N/A	11.30	25.00	510	800 kPa (135 psig)
A0464591	65	N/A	26.30	25.00	510	800 kPa (135 psig)
A0464585	108	N/A	45.40	100.00	510	800 kPa (135 psig)
A0464583	450	N/A	190.50	420.00	510	800 kPa (135 psig)

UN number: UN1077 | Hazard Classification: 2.1

## PROPANE

CYLINDER COLOUR: **WHITE**

### APPLICATIONS

Flame cutting; flame spraying; hardening by quenching; brazing and soldering; heating, bending and straightening.

### ADVANTAGES

- Liquefied petroleum gas that offers good performance in applications that require a good overall heat balance that is cost-effective.
- The secondary propane flame produces a large amount of energy.



A NUMBER	SIZE*	HEAD*	WEIGHT		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			KG	LB		
A0464932	33 1/3	N/A	14.00	30.80	-	720 kPa (120 psig)
A0464917	100**	N/A	45.40	100.00	510	720 kPa (120 psig)

UN number: Gas: UN1978 | Hazard Classification: 2.1

### AL'S TIP

The propane is supplied in liquid form at a vapour pressure of 827 kPa (120 psig) at 15°C.

As with FLAMAL™ 29, the outflow velocity and vapour pressure of the gas will vary with temperature.

\* Availability may vary by region

\*\* Do not use for flame applications.  
Propane is generally used as an engine (forklift) fuel.



## PURE GASES

### INDUSTRIAL ARGON

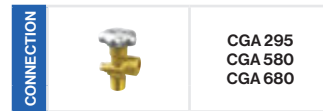
CYLINDER COLOUR: **DARK GREEN**

#### APPLICATIONS

Shielding gases; bleed and drag for GTAW and GMAW welding; inerting.

#### ADVANTAGES

- Heavier than air, provides effective protection.
- Completely inert: does not react chemically with the molten bath.



A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464190	11	ALBEE™	2.29	82.58	032	20,000 kPa (2,960 psig)
A0464326	16	N/A	2.75	99.26	580	16,820 kPa (2,492 psig)
A0464328	22	N/A	3.43	123.77	580	14,960 kPa (2,217 psig)
A0464340	50 XPR	N/A	15.06	543.11	680	30,380 (4,500 psig)
A0464317	180	N/A	119.50	4,309.61	Gas: 580 Liquid: 295	1,585 kPa (230 psig)
A0464318	240	N/A	133.11	4,800.31	Gas: 580 Liquid: 295	1,585 kPa (230 psig)
A0464320	450	N/A	352.58	12,715.48	Gas: 580 Liquid: 295	1,585 kPa (230 psig)
A0464312	16 X 50 COMPACT	N/A	240.96	8,689.75	680	30,380 (4,500 psig)

UN number: Gas: UN1006 / Liquid: UN1951 | Hazard Classification: Gas: 2.2 / Liquid: 2.2

### INDUSTRIAL CARBON DIOXIDE

CYLINDER COLOUR: **LIGHT GREY**

#### APPLICATIONS

Shielding gases; processing, packaging, transportation and refrigeration of meat, frozen food and dairy products; inerting.



A NUMBER	SIZE*	HEAD*	WEIGHT		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			KG	LB		
A0464529	9	TULIPE	5.96	13.00	320	5,723 kPa (830 psig)
A0464506	14 AL	N/A	9.07	20.00	320	5,723 kPa (830 psig)
A0464514	37	N/A	22.68	50.00	320	5,723 kPa (830 psig)
A0464534	37	Syphon	22.68	50.00	320	5,723 kPa (830 psig)
A0464519	44	N/A	29.30	64.60	320	5,723 kPa (830 psig)
A0464536	44	Syphon	29.30	64.60	320	5,723 kPa (830 psig)
A0464485	180	N/A	187	421.26	Gas: 320 Liquid: 320	2,413 kPa (350 psig)
A0464487	240	N/A	240	529.11	Gas: 320 Liquid: 320	2,413 kPa (350 psig)

UN number: Gas: UN2187 / Liquid: UN1013 | Hazard Classification: Gas: 2.2 / Liquid: 2.2

#### AL'S TIP

Refer to our sections "Shielding Gases" and "ALIGAL™" (page 023, 024) to learn more about our ARGON or CO<sub>2</sub> based gases that will allow you to optimize your welding operations and your food industry operations.

\* Availability may vary by region  
 \*\* m<sup>3</sup> to 15°C; pi<sup>3</sup> to 70°F



## PURE GASES

### COMPRESSED AIR

CYLINDER COLOUR: DARK GREY

#### APPLICATIONS

- Industrial grade compressed air is used to operate pneumatic tools, inflate tires and clean parts.
- Breathable compressed air is used in applications that require a portable source of breathing air.

A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464558	9	N/A	1.31	47.10	346	14,960 kPA (2,217 psig)
A0464572	44	N/A	6.53	325.48	346	14,960 kPA (2,217 psig)

UN number: Gas: UN1002 | Hazard Classification: 2.2



### INDUSTRIAL HELIUM

CYLINDER COLOUR: BROWN

#### APPLICATIONS

Helium is used extensively in metal fabrication as an inert shielding gas for arc welding. It is used as a pure gas and in some mixtures with argon for TIG or MIG welding.

#### ADVANTAGES

- In some applications, helium has an advantage over argon in gas shielded arc welding because it provides more heat in the arc for the same current intensities and arc lengths. This results in greater penetration, which is preferable when welding thicker material, when higher welding speeds are required or when welding metals with high thermal conductivity.

A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464640	50	N/A	8.10	292.07	580	17,820 kPA (2,640 psig)
A0464596	16 X 50	N/A	129.58	4,673.04	580	17,820 kPA (2,640 psig)

UN number: Gas: UN1046 | Hazard Classification: 2.2



\* Availability may vary by region

\*\* m<sup>3</sup> to 15°C; ft<sup>3</sup> to 70°F



## PURE GASES

### HELIUM FOR BALLOONS

CYLINDER COLOUR: **GREEN LIME**

#### APPLICATIONS

Balloon filling.

#### ADVANTAGES

- One of the main properties of helium is that it is much lighter than air. For this reason, helium is often used to inflate balloons.



A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464614	9	N/A	1.21	43.64	580	14,960 kPA (2,217 psig)
A0464599	11AL	N/A	1.49	53.63	580	14,960 kPA (2,217 psig)
A0464603	16	N/A	2.42	87.16	580	14,960 kPA (2,217 psig)
A0464595	50	N/A	8.10	291.76	580	14,960 kPA (2,217 psig)

UN number: Gas: UN1046 | Hazard Classification: Gas: 2.2

## SAFETY WARNING

It is important to remember that inhaling helium can be fatal and can cause anoxia. Oxygen is necessary to sustain life. If another gas, such as helium, is inhaled, it takes the place of vital oxygen and can cause death.

### HYDROGEN

CYLINDER COLOUR: **TURQUOISE**

#### APPLICATIONS

- Used as a fuel gas in combination with oxygen, hydrogen produces a relatively low flame temperature and is also useful for brazing aluminum and magnesium as well as for soldering lead.
- Hydrogen can be safely compressed to withstand underwater pressures, oxyhydrogen cutting torches are sometimes used by divers.
- Mixed in small quantities with argon, hydrogen can significantly improve the quality of stainless-steel welds.



A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464648	44	N/A	5.41	195.08	350	13,610 kPA (2,015 psig)
A0464645	16 x 44	N/A	86.56	3,121.28	350	13,610 kPA (2,015 psig)

UN number: Gas: UN1049 | Hazard Classification: Gas: 2.1

\* Availability may vary by region  
\*\* m<sup>3</sup> to 15°C; ft<sup>3</sup> to 70°F



# PURE GASES

## NITROGEN

CYLINDER COLOUR: **LIGHT BROWN**

### APPLICATIONS

Purging applications in the heating / ventilation / plumbing industries; purging and inerting in refineries and the petrochemical sector. In liquid form, nitrogen is used to freeze perishable foods; in gaseous form, it is used to preserve fresh foods to delay maturation and deterioration; used as a more environmentally friendly option for tire inflation.

### ADVANTAGES

- Inert.
- Colourless, odourless, tasteless gas.
- Intense cold in liquid form.
- Prevents oxidation and combustion.

A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
			M <sup>3</sup>	FT <sup>3</sup>		
A0464793	9	TULIPE	1.27	45.64	580	14,960 kPA (2,217 psig)
A0464186	11	ALBEE™	2.05	73.93	032	20,000 kPA (2,960 psig)
A0464739	11AL	N/A	1.53	55.32	580	14,960 kPA (2,217 psig)
A0464746	16	N/A	2.48	89.54	580	16,820 kPA (2,492 psig)
A0464748	16AL	N/A	2.26	81.61	580	14,960 kPA (2,217 psig)
A0464778	50 XPR	N/A	13.03	469.79	680	30,380 kPA (4,500 psig)
A0464700	180	N/A	112.21	4,046.86	Gas: 580 Liquid: 295	1,585 kPA (230 psig)
A0464703	240	N/A	136.68	4,929.26	Gas: 580 Liquid: 295	1,585 kPA (230 psig)
A0464706	450	N/A	291.93	10,527.92	Gas: 580 Liquid: 295	1,585 kPA (230 psig)
A0464689	16 X 50 COMPACT	N/A	208.43	7,516.62	680	30,380 kPA (4,500 psig)
A0464714	160 LCLW	N/A	100.4	3,620.87	Gas: 580 Liquid: 295	1,585 kPA (230 psig)
A0464717	240 LCLW	N/A	136.68	4,929.26	Gas: 580 Liquid: 295	1,585 kPA (230 psig)



UN number: Gas: UN1066 | Hazard Classification: Gas: 2.2 / Liquid: 2.2

### AL'S TIP

Nitrogen is mainly found in the atmosphere, where it accounts for 78 % by volume of the air we breathe. But nitrogen is also found:

- In the Earth's crust, to a limited extent (in the form of nitrates, etc.)
- In organic form (in the living or dead plants and organisms which form humus)
- And in mineral form (ammonia), and thus contributes to soil fertility

\* Availability may vary by region  
\*\* m<sup>3</sup> to 15°C; pi<sup>3</sup> to 70°F



# ALBEE™

## Our range of portable cylinders



### APPLICATIONS

Welders, auto mechanics, contractors, maintenance specialists, plumbers, HVAC contractors

### ADVANTAGES



SAFER



EASY TO BUY



EASY TO USE



EASY TO EXCHANGE

	A NUMBER	SIZE*	APPLICATIONS / PROCESSES	CGA	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)	
	ALBEE™ COOL (NITROGEN)	A0464186	11	Pressure testing; purging; brazing	032	700 psig
	ALBEE™ FLAME (ACETYLENE)	A0464187	14	Brazing, welding/ flame cutting	032	3,000 psig
	ALBEE™ FLAME (OXYGEN)	A0464188	11	Brazing, welding/ flame cutting, heating, cleaning	032	3,000 psig
	ALBEE™ WELD (MIG ARGON GAS MIX)	A0464189	11	Welding: FCAW	032	3,000 psig
	ALBEE™ WELD (PURE ARGON)	A0464190	11	Welding: GTAW; GMAW	032	3,000 psig

### Comparison of ALBEE™ volumes and sizes and regular cylinders

	ALBEE™			SIZE 8/9			SIZE 16 (16AL FOR NITROGEN)		
	VOLUME (M³)	VOLUME (FT³)	WEIGHT OF THE EMPTY CYLINDER IN KG	VOLUME (M³)	VOLUME (FT³)	WEIGHT OF THE EMPTY CYLINDER IN KG	VOLUME (M³)	VOLUME (FT³)	WEIGHT OF THE EMPTY CYLINDER IN KG
ALBEE™ COOL - NITROGEN	2.1	75	14	1.3	46	10	2.3	82	14
ALBEE™ FLAME - ACETYLENE	2.1	75	23	1.1	40	13	-	-	-
ALBEE™ FLAME - OXYGEN	2.3	83	14	1.39	50	10	2.75	99	22
ALBEE™ WELD - MIG ARGON GAS MIX	2.5	89	14	1.38	50	10	2.75	99	22
ALBEE™ WELD - PURE ARGON	2.3	83	14	1.38	50	10	2.75	99	22

\* The number corresponding to the size of the cylinders refers to the water capacity, in litres.



# BLUESHIELD™ AND ARCAL™

Air Liquide offers you a complete range of shielding gases for your welding activities, whatever your processes and base materials. In the following pages you will find our ranges.

- **BLUESHIELD™**: Our range for all your welding activities.
- **ARCAL™**: Our selection of technical gases for greater optimization of your operations.

## NEW NAMES - SAME GAS

Several gases have recently been renamed such as **BLUESHIELD™ 11 / 12** in an effort to simplify our range. The new gas names refer to the ISO 14175:2008 shielding gas classification standard for a better reading of the product.

Please note that the composition of the gas remains the same as the one you have been familiar with. Please refer to the table below to find the equivalences between the new and previous names.

BRAND	GAS NAME	FORMER NAME	COMPOSITION	GMAW			GTAW			MCAW		FCAW		PAC
				CARBON STEEL	STAINLESS STEEL	ALUMINIUM	CARBON STEEL	STAINLESS STEEL	ALUMINIUM	CARBON STEEL	STAINLESS STEEL	CARBON STEEL	STAINLESS STEEL	
<b>BLUESHIELD™</b>	<b>BLUESHIELD™ A</b>	BLUESHIELD™ ARGON	ARGON			X	X	X	X					
	<b>BLUESHIELD™ 6</b>	-	ARGON / CO <sub>2</sub>	X						X				
	<b>BLUESHIELD™ 7</b>	-	ARGON / CO <sub>2</sub>	X						X		X	X	
	<b>BLUESHIELD™ 8</b>	-	ARGON / CO <sub>2</sub>	X						X		X	X	
	<b>BLUESHIELD™ 9</b>	-	HELIUM / ARGON / CO <sub>2</sub>		X									
<b>ARCAL™</b>	<b>ARCAL™ He25</b>	BLUESHIELD™ 1	ARGON / HELIUM			X	X	X	X					
	<b>ARCAL™ He50</b>	BLUESHIELD™ 2	ARGON / HELIUM			X	X	X	X					
	<b>ARCAL™ He75</b>	BLUESHIELD™ 3	ARGON / HELIUM			X	X	X	X					
	<b>ALTIG</b>	-	ARGON / HELIUM			X	X	X	X					
	<b>ARCAL™ R1-2</b>	BLUESHIELD™ 11	ARGON / HYDROGEN					X <sup>1</sup>						
	<b>ARCAL™ R1-5</b>	BLUESHIELD™ 12	ARGON / HYDROGEN					X <sup>1</sup>						
	<b>ARCAL™ R2-35</b>	BLUESHIELD™ 14	ARGON / HYDROGEN											X
	<b>ARCAL™ N5-5</b>	BLUESHIELD™ 15	NITROGEN / HYDROGEN					X <sup>2</sup>						X
	<b>ARCAL™ M-23</b>	BLUESHIELD™ 23	ARGON / CO <sub>2</sub>	X							X			
	<b>ARCAL™ CHROME</b>	ARCAL™ 12	ARGON / CO <sub>2</sub>		X						X	X		
	<b>ARCAL™ M14</b>	ARCAL™ 14	ARGON / CO <sub>2</sub>	X	X						X			
	<b>ARCAL™ SPEED</b>	ARCAL™ 21	ARGON / CO <sub>2</sub>	X							X			
	<b>ALMIG</b>	-	ARGON / CO <sub>2</sub>	X							X			
	<b>ARCAL™ M12He18</b>	ARCAL™ 121	ARGON / HELIUM / CO <sub>2</sub>		X									
	<b>ARCAL™ 211</b>	-	ARGON / HELIUM / CO <sub>2</sub>	X							X		X	X
<b>ARCAL™ N2-2</b>	ARCAL™ 39	ARGON / HELIUM / NITROGEN						X <sup>3</sup>						
<b>ARCAL™ M12He5N</b>	ARCAL™ 129	ARGON / CO <sub>2</sub> / HYDROGEN / HELIUM		X <sup>3</sup>										

<sup>1</sup>For austenitic stainless steel only (300 series) | <sup>2</sup>For back purge | <sup>3</sup>For Duplex & SuperDuplex only

**NOTE:** All applications (processes) shown in bold are recommended choices. Other applications, not mentioned, are also possible. Contact your Air Liquide representative to discuss your application.



# BLUESHIELD™: SHIELDING GASES - READY TO WELD

CYLINDER COLOUR: LIGHT BLUE

## ADVANTAGES

Established since 1963 in Canada, BLUESHIELD™ has become a standard of performance and quality for all your welding applications.

### NEW NAMES - SAME GAS

Note that several of our BLUESHIELD™ gases have recently been renamed and are now part of our ARCAL™ line. For BLUESHIELD™ 2, 3, 12, 14, 15, 23, gases, refer to page 24.



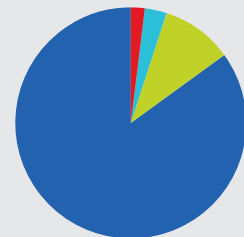
GAS NAME	A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
				M <sup>3</sup>	FT <sup>3</sup>		
BLUESHIELD™ A	A0464479	50	SMARTOP™	9.32	336.28	580	17,820 kPa (2,640 psig)
BLUESHIELD™ A	A0971141	50 XPR	EXELTOP™	9.32	336.28	QUICK CONNECT	17,820 kPa (2,640 psig)
BLUESHIELD™ 6	A0464431	50	SMARTOP™	15.93	574.59	580	16,820 kPa (2,492 psig)
BLUESHIELD™ 6	A0464429	50 XPR	N/A	15.93	574.59	680	30,380 kPa (4,500 psig)
BLUESHIELD™ 6	A0968067	50 XPR	EXELTOP™	15.93	574.59	QUICK CONNECT	30,380 kPa (4,500 psig)
BLUESHIELD™ 6	A0464420	16 X 50 XPR	N/A	254.92	9,193.48	680	30,380 kPa (4,500 psig)
BLUESHIELD™ 7	A0464439	50	ALTOP™	9.48	341.72	32	16,820 kPa (2,492 psig)
BLUESHIELD™ 7	A0464449	50	SMARTOP™	9.48	341.72	580	16,820 kPa (2,492 psig)
BLUESHIELD™ 7	A0464436	16 X 50	N/A	153.92	5,435.64	580	16,820 kPa (2,492 psig)
BLUESHIELD™ 8	A0464473	9	TULIPE	1.5	54.07	580	14,175 kPa (2,100 psig)
BLUESHIELD™ 8	A0464461	22	N/A	3.74	134.94	580	14,175 kPa (2,100 psig)
BLUESHIELD™ 8	A0464475	50	SMARTOP™	10.28	370.99	580	16,820 kPa (2,492 psig)
BLUESHIELD™ 8	A0464454	16 X 50	N/A	164.59	5,935.83	580	16,820 kPa (2,492 psig)
BLUESHIELD™ 9	A0464477	50	N/A	7.53	271.59	580	16,820 kPa (2,492 psig)

## AL'S TIP

### Did you know?

The cost of shielding gas represents only 2% of the total welding costs. Contact your Air Liquide representative to learn more about our optimized product combinations to help you reduce your labor costs.

- 2% - Shielding gas
- 3% - Safety products
- 10% - Consumables
- 85% - Labour



\* Availability may vary by region

\*\* m<sup>3</sup> to 15°C; p<sup>3</sup> to 70°F





# ARCAL™: OUR SHIELDING GASES - OPTIMIZE YOUR WELDING OPERATIONS

CYLINDER COLOUR: LIGHT BLUE

## ADVANTAGES

Launched in the 90's, ARCAL™ is a world-renowned brand of technical protective gases that will allow you to optimize your operations by:

- Reducing projections and smoke emissions.
- Reducing your operating costs.
- Meeting all your needs, even the most technical ones.
- Increasing the safety of your operations through optimized packaging with our selection of innovative cylinders and heads.



GAS NAME	FORMER NAME	A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
					M³	FT³		
ARCAL™ He25	BLUESHIELD™ 1	A0464352	50 XPR	N/A	15.48	558.19	680	30,380 kPa (4,500 psig)
ARCAL™ He25	BLUESHIELD™ 1	A0464348	16 X 50 COMPACT	N/A	247.68	8,931.04	680	31,380 kPa (4,500 psig)
ARCAL™ He50	BLUESHIELD™ 2	A0464373	50	N/A	8.32	300.02	580	16,820 kPa (2,492 psig)
ARCAL™ He75	BLUESHIELD™ 3	A0464399	50	N/A	8.06	290.66	580	16,820 kPa (2,492 psig)
ARCAL™ He75	BLUESHIELD™ 3	A0464371	16 X 50	N/A	128.96	4,650.56	580	16,820 kPa (2,492 psig)
ALTIMG	N/A	A0464251	16	N/A	2.61	94.24	-	16,820 kPa (2,492 psig)
ARCAL™ R1-2	BLUESHIELD™ 11	A0464358	44	N/A	6.24	224.86	580	13,500 kPa (2,000 psig)
ARCAL™ R1-5	BLUESHIELD™ 12	A0464362	44	N/A	6.22	224.39	580	13,500 kPa (2,000 psig)
ARCAL™ R2-35	BLUESHIELD™ 14	A0464366	50	N/A	8.16	294.39	580	16,210 kPa (2,400 psig)
ARCAL™ N5-5	BLUESHIELD™ 15	A0464367	44	N/A	5.85	211.05	580	16,210 kPa (2,400 psig)
ARCAL™ M-23	BLUESHIELD™ 23	A0916405	50	SMARTOP™	9.11	328.57	580	16,820 kPa (2,492 psig)
ARCAL™ M-23	BLUESHIELD™ 23	A0464394	50 COMPACT	EXELTOP™	15.56	561.14	QUICK CONNECT	30,380 kPa (4,500 psig)
ARCAL™ M-23	BLUESHIELD™ 23	A0464383	16 X 50 COMPACT	N/A	248.95	8,978.16	680	30,380 kPa (4,500 psig)
ARCAL™ CHROME	ARCAL™ 12	A0967819	50 COMPACT	EXELTOP™	15.6	550.91	QUICK CONNECT	30,380 kPa (4,500 psig)
ARCAL™ M14	ARCAL™ 14	A0967843	50 COMPACT	EXELTOP™	15.23	549.28	QUICK CONNECT	30,380 kPa (4,500 psig)
ARCAL™ M14	ARCAL™ 14	A0464272	16 X 50 COMPACT	N/A	243.68	8,788.48	680	30,380 kPa (4,500 psig)
ARCAL™ SPEED	ARCAL™ 21	A0968065	50 COMPACT	EXELTOP™	16.08	579.83	QUICK CONNECT	30,380 kPa (4,500 psig)
ARCAL™ SPEED	ARCAL™ 21	A0464277	16 X 50 COMPACT	N/A	257.28	9,277.28	680	30,380 kPa (4,500 psig)
ALMIG	N/A	A0464249	16	-	2.81	101.42	-	16,820 kPa (2,492 psig)
ARCAL™ M12He18	ARCAL™ 121	A0967818	50 COMPACT	EXELTOP™	13.96	503.44	QUICK CONNECT	30,380 kPa (4,500 psig)
ARCAL™ M12He18	ARCAL™ 121	A0464255	16 X 50 COMPACT	N/A	223.36	8,055.04	680	30,380 kPa (4,500 psig)
ARCAL™ 211	N/A	A0967845	50 COMPACT	EXELTOP™	15.36	554.04	QUICK CONNECT	30,380 kPa (4,500 psig)
ARCAL™ 211	N/A	A0464281	16 X 50 COMPACT	N/A	245.76	8,864.64	680	30,380 kPa (4,500 psig)
ARCAL™ N2-2	ARCAL™ 39	A0972999	50 COMPACT	EXELTOP™	15.35	542.08	QUICK CONNECT	30,380 kPa (4,500 psig)
ARCAL™ M12He5N	ARCAL™ 129	A0967820	50 COMPACT	EXELTOP™	14.82	523.36	QUICK CONNECT	30,380 kPa (4,500 psig)

\* Availability may vary by region

\*\* m³ to 15°C; pi³ to 70°F

NOTE: All 50 XPR cylinders are equipped with CGA 680 connections. All ALMIG™ and ALTIMG™ cylinders are equipped with CGA 580 connections.



# LASAL™: OUR GASES FOR THE LASER INDUSTRY

CYLINDER COLOUR: LIGHT BLUE



## APPLICATIONS

Specially designed by Air Liquide for laser cutting and welding.

## ADVANTAGES

- LASAL™ gases and equipment improve productivity and quality, reduce operating and maintenance costs, and extend laser life.

MIX	A NUMBER	COMPOSITION	CGA CONNECTION	SIZE	VOLUME**		TYPICAL CYLINDER PRESSURE AT 15°C (70°F)	LASER MANUFACTURER	LASER SOURCES	AVAILABLE PURITIES	TRACES OF O <sub>2</sub>	MOISTURE	TRACES OF HYDROCARBON
					M <sup>3</sup>	FT <sup>3</sup>							
LASAL™ 1	A0464656	N <sub>2</sub>	580	52 XPR	9.87	356.1	20,360 kPa (3,000 psig)	Trumpf-Bystronic-Prima-Cincinnati Machine	Trumpf-Bystronic-Prima	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 2	A0464660	CO <sub>2</sub>	320	52 XPR	34.20	1,233.37	5,090 kPa (830 psig)	Trumpf-Bystronic-Prima-Cincinnati Machine	Trumpf-Bystronic-Prima	N45	<10 ppm	<20 ppm	<20 ppm
LASAL™ 4	A0464668	He	580	52 XPR	9.50	345.50	20,360 kPa (3,000 psig)	Trumpf-Bystronic-Prima-Cincinnati Machine	Trumpf-Bystronic-Prima	N50	<10 ppm	<5 ppm	<1 ppm
	A0464666			16 x 50	129.60	4,673.85							
LASAL™ 39	A0263880	N <sub>2</sub> / O <sub>2</sub>	580	52 XPR	10.25	369.7	20,360 kPa (3,000 psig)	Various	Rofin Sinar	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 41	A0464655	He / N <sub>2</sub> / CO <sub>2</sub>	580	52 XPR	9.01	324.18	17,820 kPa (2,460 psig)	Bystronic	Bystronic	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ P51	A0464675	He / N <sub>2</sub> / CO <sub>2</sub>	580	52 XPR	8.21	296.13	17,820 kPa (2,640 psig)	Mazak	Panasonic	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 53	A0464670	He / N <sub>2</sub> / CO <sub>2</sub>	580	52 XPR	9.06	326.74	20,360 kPa (3,000 psig)	Amada-LVD-Mazak	Fanuc	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 66	A0464671	He / N <sub>2</sub> / CO <sub>2</sub>	580	52 XPR	8.39	302.43	17,820 kPa (2,460 psig)	Amada-LVD-Mazak	Fanuc	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 83	A0464674	He / N <sub>2</sub> / CO <sub>2</sub>	580	52 XPR	8.47	395.52	17,820 kPa (2,460 psig)	Amada-LVD-Mazak	Fanuc	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 105	A0464657	He / N <sub>2</sub> / CO <sub>2</sub> / CO	580	50	6.98	251.72	13,600 kPa (2,015 psig)	Amada Mitsubishi	Mitsubishi	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 155	A0263874	He / N <sub>2</sub> / CO <sub>2</sub> / CO / H <sub>2</sub>	350	50	6.73	242.71	13,600 kPa (2,015 psig)	Altec 2	Altec 2	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 201	A0464662	He / N <sub>2</sub> / CO <sub>2</sub> / CO / O <sub>2</sub> / Xe	350	10	1.5	54.1	14,960 kPa (2,217 psig)	Manufacturers using Rofin Sinar sources	Rofin Sinar Slab Laser	-	<10 ppm	<5 ppm	<1 ppm
LASAL™ 2001	A0464661	N <sub>2</sub>	680	16 x 50 COMPACT	208.43	7,516.62	30,380 kPa (4,500 psig)	-	-	N48	<10 ppm	<10 ppm	-

### AL'S TIP

All LASAL™ gas cylinders are equipped with a check valve that maintains a positive residual pressure and eliminates the risk of gas contamination inside the cylinder.

\*\* m<sup>3</sup> to 15°C; ps<sup>3</sup> to 70°F



# ALIGAL™:

CYLINDER COLOUR: MAROON

ALIGAL™ is Air Liquide's international range of food grade gases created for food and beverage processing and packaging. The ALIGAL™ brand stands for the highest standards of quality and safety in modified atmosphere packaging, cooling, freezing, carbonation and inerting processes.

## REFER TO THIS PAGE TO FIND THE GAS YOU NEED TO:

- Maximize food safety and preservation.
- Limit processing costs.
- Improve product quality.



CONNECTION



CGA 295  
CGA 296  
CGA 320  
CGA 326

CGA 440  
CGA 540  
CGA 580

GAS NAME	COMPOSITION	MODIFIED ATMOSPHERE PACKAGING			PRESSURIZED BEVERAGE GAS					CARBONATATION	WHIPPED CREAM	INERTING
		FOOD (NUTS, COFFEE...)	RED MEATS	PREPARED MEALS (PIZZAS, PASTA, PASTRIES...)	WINE	SOFT DRINKS	STOUT BEER	LAGER BEER	ALE BEER			
ALIGAL™ 1	N <sub>2</sub>	X			X							X
ALIGAL™ 2	CO <sub>2</sub>			X		X				X		
ALIGAL™ 3	O <sub>2</sub>		X									
ALIGAL™ 5	N <sub>2</sub> O										X	
ALIGAL™ 12	CO <sub>2</sub> and N <sub>2</sub>			X			X					X
ALIGAL™ 13	CO <sub>2</sub> and N <sub>2</sub>			X					X			X
ALIGAL™ 15	CO <sub>2</sub> and N <sub>2</sub>			X				X				X
ALIGAL™ 28	CO <sub>2</sub> and O <sub>2</sub>		X									

GAS NAME	A NUMBER	SIZE*	HEAD*	VOLUME**		CGA CONNECTION	TYPICAL CYLINDER PRESSURE AT 15°C (70°F)
				M <sup>3</sup>	FT <sup>3</sup>		
ALIGAL™ 1	A0464245	11 AL	N/A	1.53	55.32	580	14,960 kPa (2,217 psig)
ALIGAL™ 1	A0464199	44	N/A	6.23	227.91	580	14,960 kPa (2,217 psig)
ALIGAL™ 1	A0464195	180L	N/A	112.21	4,046.86	Gas: 580 / Liquid: 295	1,585 kPa (230 psig)
ALIGAL™ 1	A0464196	240L	N/A	136.68	4,929.26	Gas: 580 / Liquid: 295	1,585 kPa (230 psig)
ALIGAL™ 2	A0464228	14 AL	N/A	9.09	20	320	5,090 kPa (830 psig)
ALIGAL™ 2	A0464230	37	N/A	22.68	50	320	5,090 kPa (830 psig)
ALIGAL™ 2	A0464224	180L	N/A	187	412.26	320	2,413 kPa (350 psig)
ALIGAL™ 2	A0464225	240L	N/A	240	529.11	320	2,413 kPa (350 psig)
ALIGAL™ 3	A0464239	44	N/A	6.9	248.68	540	14,960 kPa (2,217 psig)
ALIGAL™ 3	A0464237	180L	N/A	138.83	5,006.57	Gas: 540 / Liquid: 440	1,585 kPa (230 psig)
ALIGAL™ 3	A0464238	240L	N/A	169.84	6,124.06	Gas: 540 / Liquid: 440	1,585 kPa (230 psig)
ALIGAL™ 5	A0464240	22	N/A	14.6	32.2	326	4,650 kPa (745 psig)
ALIGAL™ 5	A0464242	44	N/A	29.3	68.5	326	4,650 kPa (745 psig)
ALIGAL™ 12	A0464201	11 AL	N/A	1.6	59.3	580	14,175 kPa (2,100 psig)
ALIGAL™ 12	A0464202	44	N/A	6.74	242.99	580	14,175 kPa (2,100 psig)
ALIGAL™ 13	A0464214	44	N/A	7.16	258.08	580	14,175 kPa (2,100 psig)
ALIGAL™ 15	A0464221	44	N/A	8.59	309.64	580	14,175 kPa (2,100 psig)
ALIGAL™ 28	A0464235	44	N/A	7.33	264.17	296	14,175 kPa (2,100 psig)

\* Availability may vary by region

\*\* m<sup>3</sup> to 15°C; pi<sup>3</sup> to 70°F

# PLASMA CUTTING SYSTEMS

## TRUST IN PERFORMANCE WITH OUR PLASMA ARC CUTTING SHIELDING GAS MIXTURES\*

\* Can be used for a restricted selection of plasma cutting tables.

### ARCAL™ R2-35 (BLUESHIELD™ 14)

#### YOUR PLASMA CUTTING SOLUTION

- Designed for plasma cutting
- Delivers smooth and oxid-free cut
- Allows to cut plates up to 150 mm

### ARCAL™ N5-5 (BLUESHIELD™ 15)

#### YOUR ECONOMICAL CHOICE

- Ideal plasma gas for PAC process
- Recommended for thin materials
- More economical than argon mixtures for plasma cutting

### THE BC1 - FOR SMALLER FABRICATION NEEDS

The BC1 is designed for small and medium manufacturers who need a quality plasma cutting table. Made with industrial components that are durable and require low maintenance, the BC1 is a very economical and easily operable solution that still has the seal of quality of BLUESHIELD™ products. The installation is simple, the performance is reliable and the cut is exact and easily reproducible.



#### FEATURES

- Compact unitized construction
- 6" x 6" aluminum gantry
- Dimensions: 5' x 5', 5' x 10' or 6' x 12'
- Self-Cleaning Dual V-Rails
- Dual linear ways on Z Axis
- Powerful 940 oz-in Nema 34 motors
- Automatic torch height controller
- Automatic arc voltage sampling
- Powerful laptop controller
- Integrated CAD / CAM / CNC software
- Hypertherm Powermax Plasma Sources

#### SPECIFICATIONS

- Available sizes: 5'x5', 5'x10' or 6'x12'
- Z-axis clearance: 5.5"
- Z-axis travel: 6"
- Repeatability: +/- .001"
- Cutting speed: up to 800 ipm
- Rapid traverse: 1,200 ipm
- Drive system X, Y, Z Axis: rack & pinion
- Standard work surface: steel slats



6" x 6" extruded aluminum gantry engineered for rigidity and strength. The side rails are bolted on machined surfaces (unitized construction).



The self-cleaning v-groove bearings and the 1.25" pinion gears gives the BC1 an excellent cutting positional accuracy.



The automatic torch height controller with its enclosed dual linear slides has rapid response sampling of over 10,000 times per second.



The integrated CAD/CAM/CNC Pro Software is powerful and easy to use. Features a built in library of parts.



## PLASMA CUTTING SYSTEMS

### THE BC1 S - LIGHT INDUSTRIAL CUTTING SOLUTION

Designed for reliability and ease of use, the BC1S is an affordable light industrial solution thanks to its Hypertherm plasma sources. With a rugged unitized construction and a fully machined steel bridge, the BC1S is a machine capable of handling heavy workloads while offering you precise movement.

#### FEATURES

- Compact unitized construction
- 6" x 6" steel gantry
- Dimensions: 5' x 10' or 6' x 12'
- Powerful stepper motors on all axis
- HD automatic torch height controller
- 19" touchscreen controller in industrial housing
- Integrated CAD / CAM / CNC Software
- Hypertherm Powermax and MaxPro200



### THE BC1 HD - HYPERTHERM FULL SUITE WITH XPR PLASMA

The BC1HD is a light industrial cutting table for those who wish to have the power of the Hypertherm XPR170 plasma source as well as the benefits of the Edge Connect Controller and Pronest 2019 Software. With its rugged unitized construction and a fully machined steel bridge, the BC1HD is the perfect machine for heavy workloads, offering you unparalleled precision for the price.

#### FEATURES

- Compact unitized construction
- 6" x 6" Steel gantry
- Dimensions: 5' x 10' or 6' x 12'
- Bosch Rexroth Servomotors (EtherCat)
- HD automatic torch height controller
- Hypertherm Edge Connect Controller
- Hypertherm Pronest CAD/CAM Software\*
- Hypertherm XPR170 plasma source

\* Offline version only



### BLUEPLASMA™

#### PROTECT YOUR PLASMA AND LASER CUTTING TABLES

A NUMBER	MFG	DESCRIPTION	SIZE		STD PACK
			METRIC	US GAL	
A1165431	BLU-PL10KG	Liquid	10 kg	22 lbs	1



# SPECIALTY GASES

## SECTION II

10 MOST COMMON SECTORS OF ACTIVITY | ALPHAGAZ™ PURE GASES | GAS MIXTURES | CHEMICAL GASES | ENVIRONMENTAL COMPLIANCE | CALGAZ™ FOR CALIBRATION | PURES AND OTHER SUPPORT GASES | EQUIPMENT | CYLINDER SPECIFICATIONS



# 10 MOST COMMON SECTORS OF ACTIVITY



## Automobile



### AUTOMOTIVE, AIRCRAFT, HEAVY MOTORIZED EQUIPMENT & ENGINE MANUFACTURERS

- Laboratory • Product line emission control
- Final assembly emission control
- Stack emission control



## Petrochemical



### PETROLEUM REFINERIES

- Research • Quality control • Air pollution • Process control • Pilot plant operations
- Batch process • Catalyst regeneration

### CHEMICAL MANUFACTURERS

- Research • Quality control
- Process control



## Research & Development



### ANALYTICAL LABS

- Instrument Calibration • Research
- Sample Analysis



## Industrial Emission



- Air pollution monitoring
- Process control
- Pilot plant operations



## Nuclear



### NUCLEAR POWER PLANTS & NUCLEAR RESEARCH

- Instruments for measuring radioactivity and ionization



## Environment



### **WATER TREATMENT PLANTS**

- Quality control • Monitoring

### **AIR POLLUTION CONTROL & MONITORING**

- Calibration of instruments in laboratories • Remote and mobile test stations
- Remote and mobile monitoring stations



## Biochemistry



- Research Laboratory



## Pharmaceutical



### **PHARMACEUTICAL INDUSTRY**

- Research
- Consumed in production
- Sterilization



## Food



- Quality control



## Universities



### **POST SECONDARY EDUCATIONAL INSTITUTIONS**

- Research





## ALPHAGAZ™ PURE GASES

### INNOVATIVE TECHNOLOGY THAT CHANGES THE USE OF PURE GASES IN THE LABORATORY

Choosing the right gas products for a particular analytical instrument and application can be confusing. Air Liquide has simplified gas selection by reducing the complex and confusing matrix of available gas grades down to two levels of purity as represented in our ALPHAGAZ™ product line. Instead of focusing on the total purity of the gas, we set limits on the critical impurities that affect the performance of the instrument and application used.



#### THREE PRODUCT LINES, TWO PURITY RANGES AVAILABLE

An Air Liquide research and development team surveyed major analytical instrument manufacturers to determine the recommended gas purity for their instrumentation. Studies were then conducted on many of these instruments to determine the effect of varying levels of impurities on their performance. Our findings indicated that two basic ranges for gas purity are necessary to ensure optimal performance of analytical instruments in most applications.

### ALPHAGAZ™ 1

#### ONE CONVENIENT GRADE FOR MANY APPLICATIONS

ALPHAGAZ™ 1 products exceed purity recommendations of most laboratory instrument manufacturers with their 99.999% purity grade. Making them an obvious choice for all-around use in the laboratory. They are designed for analysis from percentage to ppm and provide guaranteed low impurity levels. ALPHAGAZ™ 1 pures are ideal for most analytic and process control applications, including petrochemical, secondary electronics and optoelectronics as well as scientific research and many other applications.

### ALPHAGAZ™ 2

#### HIGHER LEVELS OF PURITY ARE POSSIBLE

ALPHAGAZ™ 2 products, designed for analyses from ppm to ppb, exhibit the absolute lowest impurity levels available in the industry with up to 99.9998% purity grade. Making them the best choice for laboratory, analytic and process control applications where uncompromised ultra-high purity is needed.

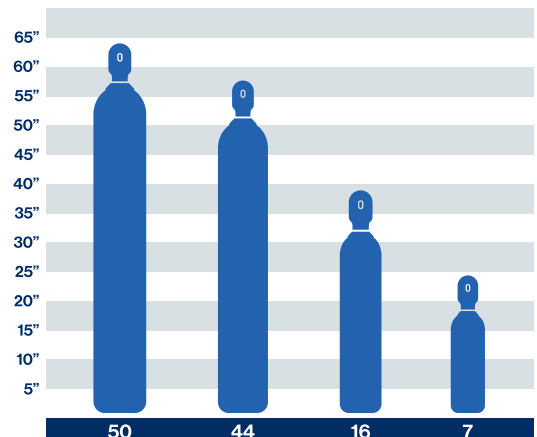
### ALPHAGAZ™ 1000

#### CRYOGENIC SOLUTIONS

ALPHAGAZ™ 1000 products include argon, nitrogen and helium in cryogenic liquid form. They feature the same purity specifications of 99.999% as ALPHAGAZ™ 1 and are useful when large volumes of gas are needed. Such as, nitrogen or argon used with ICP and FTIR instruments, or helium for cooling magnets in instruments such as NMR spectrometers.

## BENEFITS AND FEATURES

- Guaranteed low impurity levels protect instrument sensitivity ensuring peak performance
- Residual Pressure Valve (RPV) integrated to prevent atmospheric contamination
- Cylinder-to-cylinder consistency provides added performance reliability
- Cylinders come with blue plastic plug to guarantee product inviolability
- Product analysis is performed on each individual batch for purity guarantee and a Certificate of Conformity is provided
- Helps reduce cylinder inventory by eliminating need for supplemental pure gases
- Exclusively designed ergonomic cap and SMARTOP™ valve available with certain products



VGLs of 100L, 240L & 250L available for ALPHAGAZ™ 1000 (size dependant on product)



# ALPHAGAZ™ PURE GASES

**ALPHAGAZ™ PRODUCT RANGE, THE MOST ADEQUATE FOR ANALYSIS AND PROCESS CONTROLS.**



- Supplied in high pressure cylinders, equipped with AL innovative **SMARTOP™ valve**, or liquid containers.
- Three product lines, two purity ranges:
  - ALPHAGAZ™ 1 for analysis from % to ppm
  - ALPHAGAZ™ 1000 cryogenic liquid for analysis from % to ppm
  - ALPHAGAZ™ 2 for high-precision analysis from ppm to ppb
- A wide range of other pure gases and purity levels are also available.



## ALPHAGAZ™ SPECIFICATION

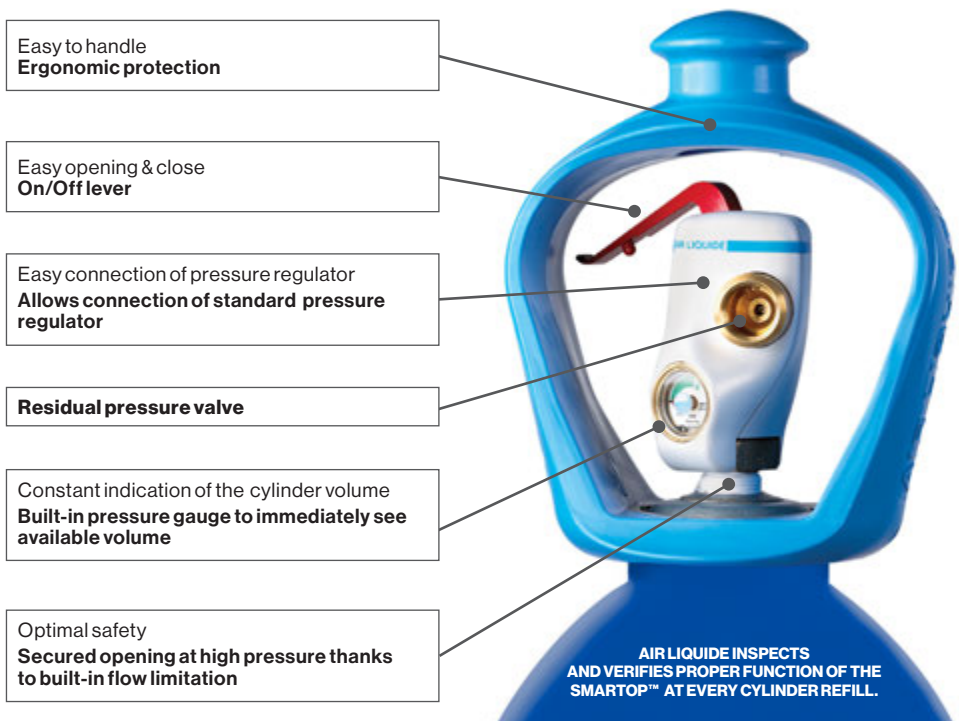
Most pure gas applications require specific impurity levels. Working with our research and development team, we made it easy for our customers to select the appropriate pure gas grade.

PRODUCT	GRADE	PRODUCT SPECIFICATIONS							
		PURITY%	CO <sub>2</sub> PPM	CO PPM	H <sub>2</sub> PPM	H <sub>2</sub> O PPM	N <sub>2</sub> PPM	O <sub>2</sub> PPM	THC PPM
AIR	ALPHAGAZ™ 1	N/A				<3		20-22%	<0.1
	ALPHAGAZ™ 2	N/A	<0.1	<1		<0.5		20-21%	<0.1
ARGON	ALPHAGAZ™ 1	99.999%				<3		<2	<0.5
	ALPHAGAZ™ 2	99.9995%	<0.5	<0.1	<0.1	<0.5		<0.5	<0.1
	ALPHAGAZ™ 1000	99.999%				<3		<2	<0.5
HELIUM	ALPHAGAZ™ 1	99.999%				<3		<2	<0.5
	ALPHAGAZ™ 2	99.9998%	<0.5	<0.1		<1		<0.5	<0.1
	ALPHAGAZ™ 1000	99.999%				<3		<2	<0.5
HYDROGEN	ALPHAGAZ™ 1	99.999%				<3		<2	<0.5
	ALPHAGAZ™ 2	99.9998%	<0.5	<0.1		<0.5	<1	<0.5	<0.1
NITROGEN	ALPHAGAZ™ 1	99.999%				<3		<2	<0.5
	ALPHAGAZ™ 2	99.9998%	<0.5	<0.1	<0.1	<0.5		<2	<0.1
	ALPHAGAZ™ 1000	99.999%				<3		<2	<0.5
OXYGEN	ALPHAGAZ™ 1	99.999%				<3		<2	<0.5
	ALPHAGAZ™ 2	99.9995%	<0.5	<1	<0.1	<0.5	<3		<0.1

## EXCLUSIVE SMARTOP™

**SIMPLER, SAFER AND MORE RELIABLE**

Especially designed ergonomic cap and valve eases and simplifies cylinder operation.



Easy to handle  
**Ergonomic protection**

Easy opening & close  
**On/Off lever**

Easy connection of pressure regulator  
**Allows connection of standard pressure regulator**

**Residual pressure valve**

Constant indication of the cylinder volume  
**Built-in pressure gauge to immediately see available volume**

Optimal safety  
**Secured opening at high pressure thanks to built-in flow limitation**

AIR LIQUIDE INSPECTS AND VERIFIES PROPER FUNCTION OF THE SMARTOP™ AT EVERY CYLINDER REFILL.



# GAS MIXTURES

## GAS AND LIQUID MIXTURES TYPICAL SPECIFICATIONS

Our product classes redefine mixture versatility. Each has unique specifications to meet different needs as summarized below. Refer to the previous page for additional information about each product class.

TYPICAL SPECIFICATIONS	EPA PROTOCOL CLASS	CERTIFIED		
		Primary	Certified Plus	Certified
<b>Typical Applications</b>	Calibration Standards to Meet Government Regulations	Calibration and Process Control		
<b>Concentration Range</b>				
1-49 ppm	Blend Tolerance ±% Analytical Accuracy ±%	5 1	1 ppm - 5,000 ppm Blend Tolerance +/- 5% Analytical Accuracy +/- 1% based on the gravimetric values	1 ppm - 5,000 ppm Blend Tolerance +/- 5% Analytical Accuracy +/- 5% based on the analytical values
50-99 ppm	Blend Tolerance ±% Analytical Accuracy ±%	5 1	5,000 ppm to 5% Blend Tolerance +/- 2% Analytical Accuracy +/- 1% based on the gravimetric values	5,000 ppm to 5% Blend Tolerance +/- 2% Analytical Accuracy +/- 5% based on the analytical values
100-9,999 ppm	Blend Tolerance ±% Analytical Accuracy ±%	5 1	5,000ppm to 5% Blend Tolerance +/- 2% Analytical Accuracy +/- 2% based on the analytical values	5,000 ppm to 5% Blend Tolerance +/- 10% Analytical Accuracy +/- 2% based on the analytical values
1-1.9 %	Blend Tolerance ±% Analytical Accuracy ±%	5 1	> 5,000 ppm to 50% Blend Tolerance +/- 1% Analytical Accuracy +/- 1% based on the gravimetric values	> 5,000 ppm to 50% Blend Tolerance +/- 5% Analytical Accuracy +/- 2% based on the analytical values
2-15.9 %	Blend Tolerance ±% Analytical Accuracy ±%	5 1		
16-49 %	Blend Tolerance ±% Analytical Accuracy ±%	5 1		
<b>Analytical Traceability</b>	NIST, VSL or Other Recognized Reference Standard	Air Liquide or Other Reference Standards		
<b>Process Traceability</b>	Not Applicable	Weight, Pressure or Standards		

## GAS MIXTURE SPECIFICATIONS

### NOMINAL CONCENTRATION

The concentration of the component which is desired is referred to as the nominal concentration. This is the target for the mixture preparation.

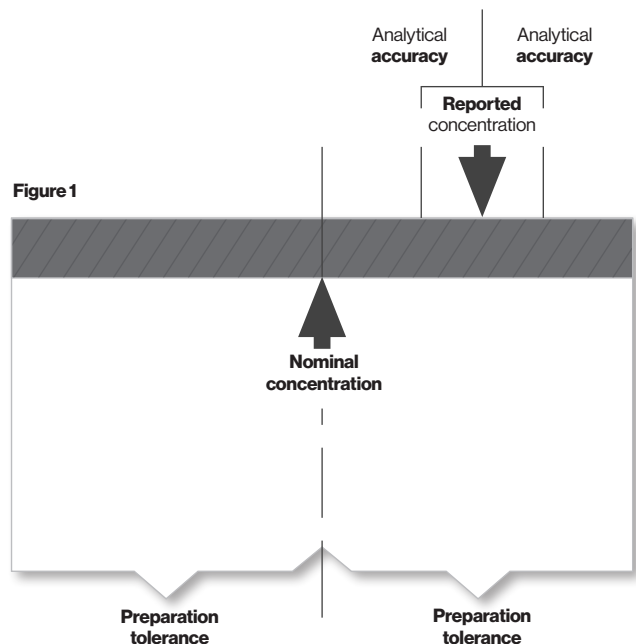
### PREPARATION TOLERANCE

This is the range in which the component concentration may actually fall relative to the nominal concentration.

### CERTIFICATION ACCURACY

This is the range of actual component concentration relative to the component concentration as reported on the cylinder analysis tag or analytical techniques to certify its gas mixtures.

These concepts are represented graphically in **Figure 1**. The standard specifications for gas mixtures offered are illustrated in the table above.





## CHARACTERISTICS OF GAS MIXTURES

As a member of the worldwide group of Air Liquide companies, Air Liquide Canada can offer its valued clients a full range of specialty gas mixtures for a limitless variety of applications. Air Liquide draws upon the expertise developed in our research laboratories and our extensive experience as the world leader in the compressed gas industry to provide gas mixtures of top quality.

### GAS COMPATIBILITY

Components in a gas mixture may react with each other or with the materials of construction of the cylinder. These laws of nature may prevent the preparation of particular gas mixtures. Please contact your Air Liquide representative to ensure the feasibility of the requested mixture.

**CALL US : 1-800-217-2688**

### SAFETY RECOMMENDATIONS:

For your safety and to help ensure the stability of mixtures, Air Liquide strongly recommends that the following steps be followed:

- **Avoid exposing the cylinders to temperatures below 10°C**
- **Withdraw the gas at temperatures between 15°C and 25°C**
- **Do not withdraw the gas at excessive rates, i.e., there should be no evidence of frost on the gas handling equipment**
- **Do not use the gas once the pressure in the cylinder is below 10% of its initial pressure**
- **Use the appropriate gas handling equipment**

Air Liquide's highly qualified personnel are available to offer our clients support and advice in the choice of appropriate and safe gas handling systems for any application.

## CHEMICAL GASES



Air Liquide Canada offers more than 30 process chemicals in a variety of purity levels and package sizes, including but not limited to:

- **Ammonia (NH<sub>3</sub>)**
- **Chlorine (Cl<sub>2</sub>)**
- **Ethyl Chloride (C<sub>2</sub>H<sub>5</sub>Cl)**
- **Chlorine Dioxide (ClO<sub>2</sub>)**
- **Fluorine (F<sub>2</sub>) and derivatives**
- **Hydrocarbons (a wide variety)**
- **Hydrocarbon Refrigerants (a wide variety)**
- **Hydrogen Sulfide (H<sub>2</sub>S)**
- **Hydrogen Chloride (HCl)**
- **Hydrogen Fluoride (HF)**
- **Methyl Chloride (CH<sub>3</sub>Cl)**
- **Methylamines (MMA, DMA, TMA)**
- **Sulfur Dioxide (SO<sub>2</sub>)**
- **Sulfur Hexafluoride (SF<sub>6</sub>)**

With more than two dozen packaged sizes and the ability to provide custom packaging, we can meet virtually any need. You receive exactly what you request, in the package size you require, delivered right where you need it.



# ENVIRONMENTAL COMPLIANCE

## EPA CALIBRATION GAS MIXTURES

Air Liquide is the world's foremost authority and supplier of environmental calibration gas mixtures. With an extensive portfolio that includes EPA Protocol Class products, we offer the industry's most accurate calibration standards engineered to help avoid non-compliance fines.

Air Liquide Canada has recently developed the expertise to produce EPA mixtures locally, to better service our customers.



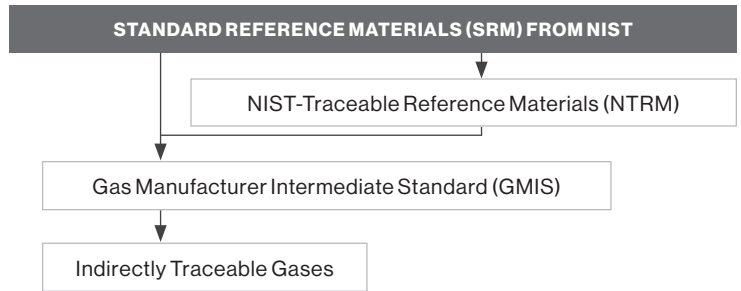
## RECOMMENDED APPLICATIONS FOR EPA PROTOCOL GAS PRODUCTS

- Relative Accuracy Test Audits
- Linearity checks
- Stack monitor calibration
- Cylinder Gas Audits (CGAs)
- Ambient monitor calibration
- Scrubber efficiency verification
- Certification of CEM systems
- Environmental auditing

### GUARANTEED CERTIFICATION AND STABILITY

Air Liquide follows current revisions of EPA procedures G1 and G2 found in "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards" dated September 1997. By incorporating rigorous quality assurance procedures and three decades of experience manufacturing environmental calibration mixtures, we are able to offer the most comprehensive portfolio of reactive and nonreactive protocol gases.

## METROLOGY STANDARDS TRACEABILITY HIERARCHY



### EPA PROTOCOL CLASS SPECIFICATIONS

<b>Blend tolerance +/- %</b>	5
<b>Analytical accuracy +/- %</b>	1
<b>Analytical traceability</b>	NIST reference standards
<b>Component verification</b>	Laboratory analysis of all minor components
<b>Certificate of analysis</b>	Analyzed concentrations, traceability, and expiration date reported





# CALGAZ™ FOR CALIBRATION

CALGAZ™ IS THE GLOBAL LEADER IN SPECIALTY CALIBRATION GASES



- Full-range of gas and cylinder offering for safety, marine, hygiene, and health
- ISO 9001-2008 certification and ISO 17025:2005 accreditation



## GAS MIXTURES

- All gas mixtures are made gravimetrically
- All gas mixtures are NIST Weight Traceable and fully traceable back to their original raw materials
- Lot analysis on transfilled cylinders

## REGULATORS

- All regulators are designed and built in-house
- Rigid quality control of all supplied machined parts
- Statistical Process Control in place
- 100% of regulators are function tested
- All regulators are leak checked



## CALGAZ™ CYLINDER SIZE CHART

MODEL #	LITERS	DIMENSIONS	MIXTURES	PRESSURE
<b>1AL</b>	11	12" x 3" / 300 mm x 76 mm	Limited	155 psig/10.7 bar
<b>2AL</b>	34	11.375" x 3" / 289 mm x 76 mm	Reactive, Non-reactive	500 psig/35.5 bar
<b>7HP</b>	34	11" x 3" / 279 mm x 76 mm	Non-reactive	494 psig/34 bar
<b>6DM</b>	58	3.26" x 8.09" / 83 mm x 204 mm	Non-reactive	1,000 psig/69 bar
<b>8AL</b>	58	14.25" x 3.5" / 362 mm x 89 mm	Reactive, Non-reactive	500 psig/34.5 bar
<b>6D</b>	103	13.875" x 3.25" / 352 mm x 83 mm	Non-reactive	1,000 psig/69 bar
<b>10AL</b>	116	15" x 3.5" / 381 mm x 89 mm	Reactive, Non-reactive	1,000 psig/69 bar

Note: Only the most commonly ordered sizes have been included in the above table.



# PURES AND OTHER SUPPORT GASES

## AVAILABLE PURES AND COMPOUNDS\*

Air Liquide offers the most comprehensive inventory of blending components in the world. A listing of the many compounds that Air Liquide can provide as a pure or used in the preparation of mixtures is provided below, including alkanes, alkenes, aromatics, halocarbons, semiconductor gases, isotopes and deuterated materials. Air Liquide can also synthesize compounds that are not generally available.

Acetaldehyde	Butanol	Chlorodifluoromethane	Dibromomethane	2,3-Dimethylpentane
Acetic Acid	i-Butane	1-Chloro-1,1-difluoroethane	1,2-Dibromoethane	2,4-Dimethylpentane
Acetone	n-Butane	Chloroethane	1,2-Dibromoethylene	2,3-Dimethyl-1-pentene
Acetonitrile	i-Butanethiol	Chloroethylene	Di-t-butyl-Disulfide	Di-t-butyl Disulfide
Acetophenone	n-Butanethiol	1-Chloro-1-fluoroethane	Dichlorobenzene (o,m,p)	Di-i-propyl Disulfide
Acetyl Chloride	i-Butanol	1-Chloro-1-fluoroethylene	1,4-Dichlorobutane	Di-n-propyl Disulfide
Acetylacetone	n-Butanol	1-Chloro-3-fluorobenzene	1,4-Dichloro-2-butene, cis-	Di-i-propyl Sulfide
Acetylene	t-Butanol	Chloroform	1,4-Dichloro-2-butene, trans-	Di-n-propyl Sulfide
Acetylene Dibromide	2-Butanone	Chloromethane	3,4-Dichloro-1-butene	Dimethyl Acetamide
Acetylene Dichloride	1-Butene	2-Chloroethyl Ethyl Sulfide	1,1-Dichloro-1-fluoroethane	Dimethyl Disulfide
Acetylene Tetrachloride	2-Butene, cis-	2-Chloroethyl Vinyl Ether	Dichlorodifluoromethane	Dimethyl Ether
Acrylic Acid	2-Butene, trans-	Chloromethyl Methyl Sulfide	Dichloroethane	Dimethyl Formamide
Acrylonitrile	Butyl Acetate	2-Chloro-2-methylpropane	Dichloroethylene	Dimethyl Sulfide
Allene	i-Butyl Acetate	Chloropentafluoroethane	1,2-Dichloroethylene, cis-	Dimethyl Sulfone
Allyl Alcohol	Butyl Acrylate	Chloropentane (all isomers)	1,2-Dichloroethylene, trans-	Dimethyl Sulfoxide
Allyl Aldehyde	i-Butyl Acrylate	1-Chloropropane	Dichlorofluoromethane	Dimethylacetamide
Allyl Chloride	Butyl Benzene (all isomers)	2-Chloropropane	Dichloromethane	2,2-Dimethyl-1-butene
Ammonia	n-Butyl Chloride	3-Chloropropylene	1,5-Dichloropentane	Dimethylcyclohexane (all isomers)
Amyl Acetate	t-Butyl Chloride	Chlorotoluene (o,m,p)	Dichloropropane	Dimethylcyclopentene (all isomers)
t-Amyl Alcohol	n-Butyl Cyclohexane	Chlorotrifluoroethylene	1,3-Dichloro-2-propanol	1,2-Dimethylcyclopentane
Amyl Chloride	n-Butyl Ether	Chlorotrifluoromethane	1,2-Dichloropropylene, cis-	1,3-Dimethylcyclopentane
t-Amyl Methyl Ether	t-Butyl Mercaptan	Cumene	1,2-Dichloropropylene, trans-	Dimethylhexane (all isomers)
Argon	s-Butyl Methyl Ether	i-Cumene	1,3-Dichloropropylene, cis-	Dodecane
Arsine	t-Butyl Methyl Ether	Cyclobutane	1,3-Dichloropropylene, trans-	Dodecene (all isomers)
Benzaldehyde	Butyl Methacrylate	Cyclodecane	Dichloro-i-propyl Ether	Ethane
Benzene	i-Butyl Methacrylate	Cycloheptane	Dicycloheptadiene	Ethanethiol
Benzyl Alcohol	1-t-Butyl-4-methylbenzene	Cycloheptene	Dicyclopentadiene	Ethanol
Benzyl Chloride	Butyl Sulfide	Cyclohexane	1,1-Diethylcyclopentane	Ethyl Acetate
Benzyl Mercaptan	n-Butylbenzene	Cyclohexanol	Diethyl Disulfide	Ethyl Acetylene
Biphenyl	i-Butylbenzene	Cyclohexanone	Diethyl Ether	Ethyl Acrylate
Boron Trichloride	i-Butylene	Cyclohexene	Diethyl Sulfide	2-Ethyl-1-butene
Boron Trifluoride	1,2-Butylene Oxide	Cyclooctane	Diethylbenzene (o,m,p)	Ethyl t-Butyl Ether
Bromobenzene	1-Butyne	Cyclopentadiene	Diethylene Glycol Diethyl Ether	2-Ethyl-1-hexene
Bromochloromethane	2-Butyne	Cyclopentane	Diethylene Glycol Dimethyl Ether	Ethyl Phenol (all isomers)
Bromochloropropane	Carbon Dioxide	Cyclopentanone	Difluoroethane	Ethyl Methacrylate
Bromodichloromethane	Carbon Disulfide	Cyclopentene	1,1-Difluoroethylene	Ethyl Methyl Sulfide
Bromoethane	Carbon Monoxide	Cyclopropane	Difluoromethane	Ethyl Sulfide
Bromoethylene	Carbon Tetrachloride	Decane	2,2-Difluoropropane	Ethyl Toluene (o,m,p)
1-Bromo-4-fluorobenzene	Carbon Tetrafluoride	i-Decane	1,2-Difluorotetrachloroethane	Ethylbenzene
Bromoform	Carbonyl Fluoride	Decene (all isomers)	2,2-Dimethylbutane	Ethylcyclohexane
Bromomethane	Carbonyl Sulfide	Deuterium	2,3-Dimethylbutane	1-Ethylcyclohexene
Bromotrifluoroethylene	Chlorine	Dibromochloromethane	2,3-Dimethyl-1-butene	Ethylcyclopentane
Bromotrifluoromethane	Chloroacetone	1,2-Dibromo-3-chloropropane	1,3-Dimethyl-4-ethylbenzene	2-Ethylhexyl Acetate
1,2-Butadiene	Chlorobenzene	1,2-Dibromo-1,1-difluoroethane	Dimethylheptane (all isomers)	2-Ethylhexyl Acrylate
1,3-Butadiene	Chlorobutane (all isomers)	Dibromofluoromethane	2,2-Dimethylpentane	Ethylene

☐ Reactive

▒ Non-reactive

\* This is a partial listing. Inquire about the availability of other gases. Materials are subject to availability at the time of purchase.



# PURES AND OTHER SUPPORT GASES

## AVAILABLE PURES AND COMPOUNDS\*

Air Liquide offers the most comprehensive inventory of blending components in the world. A listing of the many compounds that Air Liquide can provide as a pure or used in the preparation of mixtures is provided below, including alkanes, alkenes, aromatics, halocarbons, semiconductor gases, isotopes and deuterated materials. Air Liquide can also synthesize compounds that are not generally available.

Ethylene Glycol Diethyl Ether	n-Heptane	3-Methyl-2-pentene, cis-	Octene (all isomers)	Sulfur Dioxide
Ethylene Glycol Diphenyl Ether	Heptene (all isomers)	3-Methyl-2-pentene, trans-	n-Octyl Acetate	Tetrachloroethane (all isomers)
Ethylene Oxide	Hexadiene (all isomers)	4-Methyl-2-pentene, trans-	Oxygen	Tetrachloroethylene
3-Ethylpentane	Hexanal	1-Methyl-1-phenylethylene	Pentachloroethane	Tetrafluoroethane
Ethyltoluene (all isomers)	i-Hexane	1-Methyl-2-propanethiol	Pentadiene (all isomers)	Tetrahydrofuran
Fluorine	n-Hexane	2-Methyl-1-propanethiol	1,3-Pentadiene, trans-	Tetramethylbenzene (all isomers)
Fluorobenzene	1-Hexanethiol	2-Methyl-2-propanethiol	Pentafluoroethane	Trichlorobenzene (all isomers)
Fluorodecane (all isomers)	Hexanol (all isomers)	Methyl Propyl Disulfide	i-Pentane	1,1,1-Trichloroethane
Fluoroethylene	Hexanone (all isomers)	1-Methyl-2-propylbenzene	n-Pentane	1,1,2-Trichloroethane
Fluoroethane	Hexene (all isomers)	1-Methyl-3-propylbenzene	i-Pentanethiol	Trichloroethylene
Fluoropropane (all isomers)	Hydrogen	Methyl Vinyl Ether	n-Pentanethiol	Trichlorofluoromethane
Fluorotoluene (all isomers)	Hydrogen Arsenide	Methyl Vinyl Ketone	Pentanol (all isomers)	Trichloropropane (all isomers)
Fluoromethane	Hydrogen Bromide	Methylcyclohexane	Pentanone (all isomers)	Triethylbenzene
Formaldehyde	Hydrogen Chloride	Methylcyclohexene (all isomers)	Pentene (all isomers)	1,1,1-Trifluoroethane
Formic Acid	Hydrogen Cyanide	Methylcyclopentene (all isomers)	n-Pentyl Benzene	1,1,2-Trifluoroethane
Gasoline (specify formulation)	Hydrogen Fluoride	Methylcyclopropane	Pentyne (all isomers)	2,2,2-Trifluoroethanethiol
Reformulated Gasoline (RFG)	Hydrogen Sulfide	Methylheptane (all isomers)	Perchloroethane	2,2,2-Trifluoroethanol
Halocarbon 11	Isoprene	Methylhexane (all isomers)	Perfluorobenzene	Trifluorochloroethylene
Halocarbon 12	Krypton	Methylnonane (all isomers)	Perfluorobutane	Trifluoromethane
Halocarbon 13	Methacrylonitrile	Methyloctane (all isomers)	Perfluorocyclobutane	2,2,4-Trimethyl-1-pentene
Halocarbon 13b1	Methane	Methylpentane (all isomers)	Perfluoroethane	2,2,4-Trimethyl-2-pentene
Halocarbon 14	Methanethiol	Methylphenol (all isomers)	Phenol	2,3,3-Trimethyl-1-butene
Halocarbon 21	Methanol	2-Methylpropionitrile	Phenyl Acetylene	2,4,4-Trimethyl-1-pentene
Halocarbon 22	Methyl Acetate	n-Methylpyrrolidone	Phosgene	2,2,3-Trimethylbutane
Halocarbon 31	Methyl Acetylene	2-Methylthiophene	Propanal	Trimethylbenzene (all isomers)
Halocarbon 32	Methyl Acrylate	3-Methylthiophene	Propane	1,3,5-Trimethylcyclohexane
Halocarbon 112a	2-Methyl-1,3-butadiene	Naphthalene	i-Propanethiol	1,2,3-Trimethylcyclopentene
Halocarbon 113	2-Methyl-1-butanethiol	Neon	n-Propanethiol	Trimethylhexane (all isomers)
Halocarbon 114	2-Methyl-1-butene	Neopentane	n-Propanol	2,3,5-Trimethylhexane
Halocarbon 114a	3-Methyl-1-butene	Nitric Oxide	Propionitrile	Trimethylpentane (all isomers)
Halocarbon 115	Methyl Ethyl Ether	Nitrobenzene	i-Propyl Acetate	2,2,3-Trimethylpentane
Halocarbon 116	Methyl Ethyl Sulfide	Nitrogen Dioxide	n-Propyl Acetate	Undecane
Halocarbon 123	Methyl Formate	Nitrogen Trifluoride	i-Propyl Alcohol	Undecene (all isomers)
Halocarbon 123a	2-Methyl-1-heptene	Nitromethane	Propyl Cellosolve	4-Vinyl-1-cyclohexene
Halocarbon 134a	3-Methyl-2-hexanone	2-Nitropropane	i-Propyl Ether	Vinyl Acetate
Halocarbon 143	4-Methyl-1-hexene	3-Nitrotoluene	i-Propyl Fluoride	Vinyl Acetylene
Halocarbon 143a	Methyl Isocyanate	Nitrous Oxide	i-Propyl Sulfide	Vinyl Bromide
Halocarbon 152a	Methyl Methacrylate	i-Nonane	Propylcyclohexane (all isomers)	Vinyl Carbinol
Halocarbon 216	2-Methyl-1-octene	n-Nonane	Propylcyclopentane (all isomers)	Vinyl Chloride
Halocarbon 502	3-Methyl-1,4-pentadiene	Nonene (all isomers)	Propylene	Vinyl Fluoride
Halocarbon 1211	3-Methyl-2-pentanone	Octadiene (all isomers)	Propylene Carbonate	Vinyl Toluene
Helium	4-Methyl-2-pentanone	Octanal	Propylene Chloride	Toluene
Heptanal	2-Methyl-1-pentene	i-Octane	Propylene Oxide	Water
2-Heptanone	2-Methyl-2-pentene	n-Octane	Propyltoluene (all isomers)	Xenon
i-Heptane	3-Methyl-1-pentene	Octanone	Styrene	Xylene (o,m,p)

 Reactive

 Non-reactive

\* This is a partial listing. Inquire about the availability of other gases. Materials are subject to availability at the time of purchase.





# EQUIPMENT



In addition to supplying the gases themselves, we also offer **high-performance gas handling and safety equipment** that protects gas purity and integrity, and safely delivers it to your point-of-use.

- Regulators
- Switchover systems
- Manifolds
- Point-of-use panels, etc.

Choosing the right equipment ensures proper functioning of your application while maintaining personal safety. Regardless of what types of compressed gases or cryogenic liquids you are using, our complete equipment inventory includes everything you need to get the job done. Do it safely, efficiently and cost-effectively with equipment provided by Air Liquide.

## POINT-OF-USE PANEL AND SWITCHOVER MANIFOLDS



## REGULATORS



## GAS CYLINDER BRACKETS



## GAS CYLINDER BARRICADES



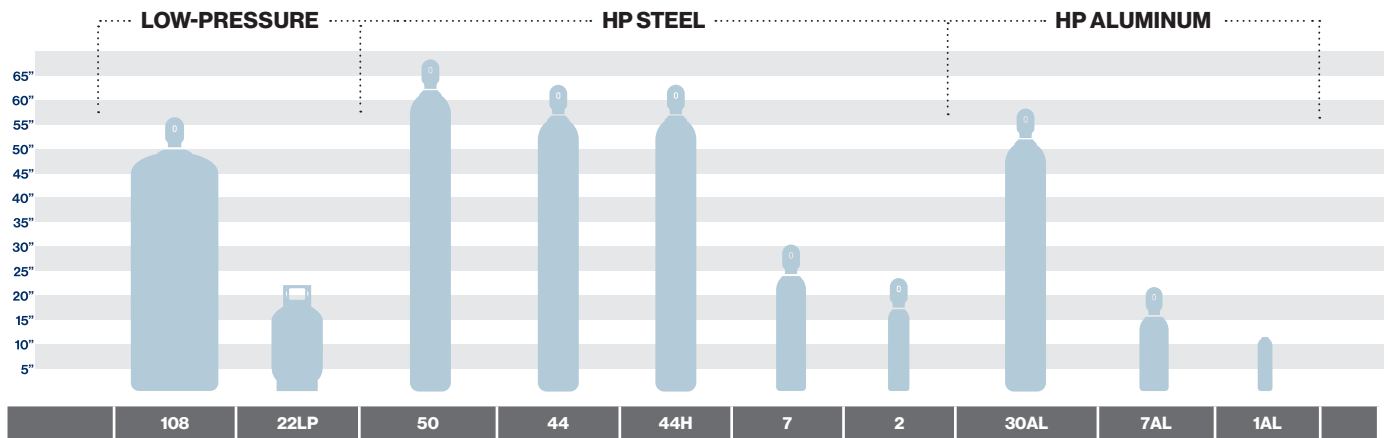
## GAS CYLINDER CABINETS





# CYLINDER SPECIFICATIONS

Pure Gases and Gas Mixtures



	DOT SPECIFICATION	SERVICE PRESSURE	APPROXIMATE CAPACITY / GAS AT STP		OUTSIDE DIAMETER	HEIGHT	TARE WEIGHT	INTERNAL WATER VOLUME	
	---	PSIG	CU.M.	LITERS	INCHES	INCHES	LBS	CU. FT.	LITERS
<b>108</b>	4BA	480	1.98	1,982	15	50	66	38	108
<b>22LP</b>	4BA	240	0.37	368	12	18	22	1,342	22
<b>50</b>	3AA	2,900	9.49	9,373	9	63	142	1.77	50
<b>44</b>	3AA	2,265	6.57	6,570	9	57	125	1.55	43.8
<b>44H</b>	3AA	3,500	9.57	9,571	9	57	189	1.55	43.8
<b>7</b>	3AA	2,015	0.93	934.6	6	24	30	0.25	6.96
<b>2</b>	3AA	2,015	0.302	302.1	4	18	15	0.08	2.25
<b>30AL</b>	3AL	2,015	4	3,993	8	53	53	1.04	29.5
<b>7AL</b>	3AL	2,216	0.88	878	7	16	17	0.21	5.96
<b>1AL</b>	3AL	2,216	0.14	142	3.2	11.7	2.3	0.035	1

## CYLINDER COMPARISON CHART

AIRLIQUIDE	Scott	Airgas	Linde	Matheson	Praxair
1AL	-	-	-	-	-
2	-	-	-	-	-
7	CL	35	007 (G)	3	G/UG
7AL	CL	33A	A07	3R	AG
22LP	5LP	25	L20	-	-
30AL	AL	150A	A31	1R	AS
44	A	200	044(k)	1A	K/UK
44H	-	-	-	1H	3K
50	-	-	-	-	-
108	XL	350	350	1F	FX



ALPHAGAZ™  
PURE GASES



CUSTOM  
MIXES



CHEMICAL  
GASES



CALGAZ™  
FOR  
CALIBRATION



EPA  
PROTOCOL  
MIXES



EQUIPMENT



Your complete  
laboratory solution





# ABRASIVES

## SECTION III

CUTTING ABRASIVES | GRINDING AND BLENDING ABRASIVES |  
POWER BRUSHES AND CARBIDE BURRS



# CUTTING ABRASIVES

## BLUECUT™ WORK FASTER

A premium performance cut-off wheel engineered to deliver a faster, cooler and higher-quality cut. Rigid, reinforced wheel adds stability and improves safety. **BLUECUT™** offers the lowest overall cost-per-cut on the market. Specially designed for use on steel and stainless steel.

- **Significant savings**
  - More cuts than the competition
  - Wears evenly offering long life
  - Engineered to cut faster for gains in productivity
- **Improved product safety and operator comfort**



### WORKS FOR ALL APPLICATIONS

A NUMBER	MFG	DIA.	WIDTH	ARBOR	TYPE	GRADE	MAX. RPM	STD PKG
A1066624	BLU-BC450T1T364	4 1/2" (114.3 mm)	3/64" (1.14 mm)	7/8" (22.23 mm)	Type 1 Flat	A-60 SBF	13,300	25
A1066625	BLU-BC500T1T364	5" (125 mm)	3/64" (1.14 mm)	7/8" (22.23 mm)	Type 1 Flat	A-60 SBF	12,200	25
A1066626	BLU-BC600T1T364	6" (152.4 mm)	3/64" (1.14 mm)	7/8" (22.23 mm)	Type 1 Flat	A-60 SBF	10,200	25
A1066627	BLU-BC450T27T364	4 1/2" (114.3 mm)	3/64" (1.14 mm)	7/8" (22.23 mm)	Type 27*	A-60 SBF	13,300	25
A1066628	BLU-BC500T27T364	5" (125 mm)	3/64" (1.14 mm)	7/8" (22.23 mm)	Type 27*	A-60 SBF	12,200	25
A1066629	BLU-BC600T27T364	6" (152.4 mm)	3/64" (1.14 mm)	7/8" (22.23 mm)	Type 27*	A-60 SBF	10,200	25
A1186114	BLU-BC700T1T116	7" (180 mm)	1/16" (1.6 mm)	7/8" (22.23 mm)	Type 1 Flat	A-60 SBF	8,600	25

\* Depressed center



STEEL  
ACIER

STAINLESS  
INOX

## BLUECHOP™ WORK EASIER

**BLUECHOP™** wheels are specially conceived for the demands of portable chop saw applications. The wheels guarantee quick cuts with minimal effort for user-friendly performance and longer lifespan.

- **Robust wheel for all types of hard-to-cut materials**
- **Fast, easy cutting action reduces load on motor, extending chop saw life**
- **Optimized for long life and substantial savings**



### CUTS VIRTUALLY ANYTHING WITH EASE

A NUMBER	MFG	DIA.	WIDTH	ARBOR	TYPE	GRADE	MAX. RPM	STD PKG
A1066642	BLU-BCH12T1T332	12" (305 mm)	3/32" (2.5 mm)	1" (25.4 mm)	Type 1 Flat	A-30 RBF	5,100	10
A1066643	BLU-BCH14T1T332	14" (355 mm)	3/32" (2.5 mm)	1" (25.4 mm)	Type 1 Flat	A-30 RBF	4,400	10



STEEL  
ACIER

STAINLESS  
INOX

# GRINDING AND BLENDING ABRASIVES

## BLUEGRIND™ WORK BETTER

BLUEGRIND™ is an excellent choice for a wide range of steel grinding operations. A perfect blend of high-strength abrasive grain for added durability and aggressive grinding action with less effort.

- Perfect balance for outstanding comfort
- Increased efficiency—get the job done faster
- Maximum grinding action, minimum effort



### PERFECT COMBINATION OF COMFORT AND EASE OF GRINDING

A NUMBER	MFG	DIA.	WIDTH	ARBOR	TYPE	GRADE	MAX. RPM	STD PKG
A1066644	BLU-BG450T27T14	4 1/2" (115 mm)	1/4" (7 mm)	7/8" (22.23 mm)	Type 27*	A-24 SBF	13,300	25
A1066621	BLU-BG500T27T14	5" (125 mm)	1/4" (7 mm)	7/8" (22.23 mm)	Type 27*	A-24 SBF	12,200	25
A1066622	BLU-BG600T27T14	6" (150 mm)	1/4" (7 mm)	7/8" (22.23 mm)	Type 27*	A-24 SBF	10,200	25
A1066623	BLU-BG700T27T14	7" (180 mm)	1/4" (7 mm)	7/8" (22.23 mm)	Type 27*	A-24 SBF	8,600	25
A1066630	BLU-BG450T27T18	4 1/2" (115 mm)	1/8" (3.5 mm)	7/8" (22.23 mm)	Type 27*	A-30 SBF	13,300	25
A1066631	BLU-BG500T27T18	5" (125 mm)	1/8" (3.5 mm)	7/8" (22.23 mm)	Type 27*	A-30 SBF	12,200	25
A1066632	BLU-BG600T27T18	6" (150 mm)	1/8" (3.5 mm)	7/8" (22.23 mm)	Type 27*	A-30 SBF	10,200	25
A1066633	BLU-BG700T27T18	7" (180 mm)	1/8" (3.5 mm)	7/8" (22.23 mm)	Type 27*	A-30 SBF	8,600	25

\* Depressed center



## BLUEBLEND™ WORK SMARTER

A solid-performing general purpose disc for use in the most demanding applications and markets—from industrial and metal fabrication to construction. Premium self-sharpening zirconia alumina abrasive grain is suitable for a superior material removal rate with less effort.

- Specially engineered to work with minimum pressure for less operator fatigue
- Superior material removal for a lower total cost
- Keeps its cutting edge for faster project completion



### THE MOST COMFORTABLE DISC ON THE MARKET

A NUMBER	MFG	DIA.	WIDTH	ARBOR	TYPE	GRADE	MAX. RPM	STD PKG
A1066634	BLU-BB450G40	4 1/2" (115 mm)	-	7/8" (22.23 mm)	Type 27*	40	13,300	10
A1066635	BLU-BB450G60	4 1/2" (115 mm)	-	7/8" (22.23 mm)	Type 27*	60	13,300	10
A1066636	BLU-BB450G80	4 1/2" (115 mm)	-	7/8" (22.23 mm)	Type 27*	80	13,300	10
A1066637	BLU-BB450G12	4 1/2" (115 mm)	-	7/8" (22.23 mm)	Type 27*	120	13,300	10
A1066638	BLU-BB500G40	5" (125 mm)	-	7/8" (22.23 mm)	Type 27*	40	12,200	10
A1066639	BLU-BB500G60	5" (125 mm)	-	7/8" (22.23 mm)	Type 27*	60	12,200	10
A1066640	BLU-BB500G80	5" (125 mm)	-	7/8" (22.23 mm)	Type 27*	80	12,200	10
A1066641	BLU-BB500G12	5" (125 mm)	-	7/8" (22.23 mm)	Type 27*	120	12,200	10
A1186108	BLU-BB600G40	6" (150 mm)	-	7/8" (22.23 mm)	Type 27*	40	10,200	10
A1186109	BLU-BB600G60	6" (150 mm)	-	7/8" (22.23 mm)	Type 27*	60	10,200	10
A1186110	BLU-BB600G80	6" (150 mm)	-	7/8" (22.23 mm)	Type 27*	80	10,200	10
A1186111	BLU-BB700G40	7" (180 mm)	-	7/8" (22.23 mm)	Type 27*	40	8,600	10
A1186112	BLU-BB700G60	7" (180 mm)	-	7/8" (22.23 mm)	Type 27*	60	8,600	10
A1186113	BLU-BB700G80	7" (180 mm)	-	7/8" (22.23 mm)	Type 27*	80	8,600	10

\* Depressed center





## BRUSHES AND BURRS

### BLUEBRUSH™ WORK SMART

BLUEBRUSH™ wire brushes are designed for cleaning large surfaces and built to last so that you can work faster all while ensuring quality results

A NUMBER	MFG	DIA.	WIDTH	ARBOR	TYPE	GRADE	MAX. RPM	STD PKG
A1186100	BLU-BR300CRP5811T	3"	-	5/8-11"	Cup - crimped wire	.018 carbon wire	12,000	1
A1186101	BLU-BR300TWS5811T	3"	-	5/8-11"	Cup - knot-twisted	.015 carbon wire	12,000	1
A1186102	BLU-BR450STG5811T	4 1/2"	-	5/8-11"	Wheel - stringer bead	.020 carbon wire	15,000	1
A1186103	BLU-BR500STG5811T	5"	-	5/8-11"	Wheel - stringer bead	.020 carbon wire	15,000	1
A1186104	BLU-BR600STG5811T	6"	-	5/8-11"	Wheel - stringer bead	.020 carbon wire	10,000	1
A1186105	BLU-BR450KNT5811T	4 1/2"	-	5/8-11"	Wheel - knot twisted	.020 carbon wire	15,000	1
A1186106	BLU-BR500KNT5811T	6"	-	5/8-11"	Wheel - knot twisted	.020 carbon wire	15,000	1
A1186107	BLU-BR600KNT5811T	4 1/2"	-	5/8-11"	Wheel - knot twisted	.020 carbon wire	10,000	1

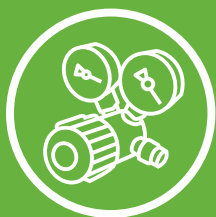


### BLUEBURR™ WORK SMOOTHLY

Made with material removal in mind, these BLUEBURR™ carbide burrs are perfectly balanced to ensure safety as well as fine finish.

A NUMBER	MFG	CONTENT BURR 1	CONTENT BURR 2	CONTENT BURR 3	CONTENT BURR 4	CONTENT BURR 5	STD PKG
A1187887	BLU-BU5PCKITDC	SA-1DC	SC-3DC	SF-5DC	SL-3DC	SD-3DC	1





# WELDING GAS EQUIPMENT

## SECTION IV

BLUESHIELD™ OUTFITS | BLUESHIELD™ TORCHES | WELDING, BRAZING AND HEATING TIPS | OPERATIONAL AND PERFORMANCE DATA FOR WELDING, BRAZING AND HEATING TIPS | CUTTING TIP SELECTION GUIDE | SINGLE-STAGE CYLINDER REGULATORS | BLUESHIELD™ TWO-STAGE CYLINDER REGULATORS | BLUESHIELD™ SINGLE-STAGE FLOWGAUGE FLOWMETER REGULATORS AND HOSE KITS | BLUESHIELD™ PIPELINE STATION REGULATORS | HIGH PRESSURE REGULATORS AND STATION DROP KITS | SAFETY DEVICES FOR OXY-FUEL GAS SYSTEMS





## BLUESHIELD™ OUTFITS

### SIZE MATTERS!

#### DUO MINI

##### THE IDEAL CHOICE WHEN PORTABILITY AND CONVENIENCE ARE IMPORTANT!

- Lightweight – less than 15 kg (32 lbs)
- Cuts up to 125 mm (5") thick and welds up to 10 mm (0.4")\*
- For welding up to 5 hours or cutting for approximately 45 minutes non-stop\*\*
- Ideal for maintenance, general repair or any application where portability is key

##### THE OUTFIT INCLUDES:

- Portable, plastic carrying case
- Oxygen cylinder size 4 (0.57 m<sup>3</sup>) \*\*\*
- Acetylene cylinder size 2 (0.28 m<sup>3</sup>)\*\*\*
- Regulator for oxygen, CGA540
- Regulator for acetylene, CGA200
- Torch handle
- Cutting attachment
- Welding tip
- Cutting tip
- Grade R twin-hose 3.8 m (12.5')
- Goggles
- Wrench
- Tip cleaner
- Flint lighter

\* With appropriate optional tips / \*\* Approximate figures / \*\*\* Gases sold separately



DUO MINI

#### DUO AND DUO JUNIOR

A NUMBER	MFG	CYLINDER	VOLUME <sup>1</sup>	
			M <sup>3</sup>	SCF
A0335393	DUO MINI	Acetylene 2	10.10	0.28
		Oxygen 4	20.64	0.57
A0244050	DUO JR	Acetylene 8	39.67	1.10
		Oxygen 9	50.00	1.39
A0244042	DUO	Acetylene 14	75.01	2.08
		Oxygen 16	99.02	2.75

<sup>1</sup> m<sup>3</sup> at 15°C; ft<sup>3</sup> at 70°F



DUO JUNIOR



DUO

### MEDIUM-DUTY

#### ALBEEKIT

##### CUTTING, WELDING AND BRAZING

##### Medium-duty applications

- Cut up to 150 mm (6")\*
- Weld up to 19 mm (3/4")\*

##### INCLUDES

- BLU-FIR312: Torch handset
- BLU-FIR512B: Cutting Attachment
- BLU-7122: Single-flame brazing/welding tip, Size: 2
- BLU-8020: Cutting Tip, Acetylene, Size: 0
- Grade "T" welding twin-hose, 1/4", 20 ft
- Flint lighter, welding goggles\*



A1077661

##### FEATURES

- In-line configuration of the cutting attachment tubes
- Tip mixing of gases
- Brass head
- Tube-within-a-tube construction of the torch handle

##### BENEFITS

- Increased tip life
- Excellent visibility for precision cutting
- Safer
- Reliable tip seating

\* With appropriate optional tips

# BLUESHIELD™ OUTFITS

## MEDIUM-DUTY

### UNIVERSAL

#### CUTTING, WELDING AND BRAZING

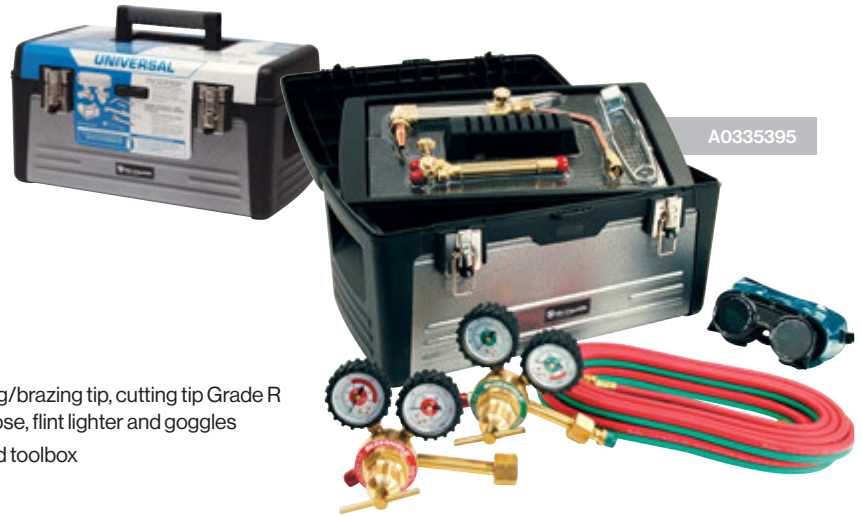
Medium-duty applications

- Cut up to 150 mm (6")\*
- Weld up to 10 mm (0.4")\*

#### INCLUDES

- BLUE312 torch handle and BLUE512B cutting attachment
- Oxygen and acetylene regulators with rubber booted gauges

\* With appropriate optional tips.



- Welding/brazing tip, cutting tip Grade R twin-hose, flint lighter and goggles
- Rugged toolbox

#### FEATURES

Booted gauges
In-line configuration of the cutting attachment tubes
Tip mixing of gases
Brass head
Tube-within-a-tube construction of the torch handle

#### BENEFITS

Increased gauge life
Excellent visibility for precision cutting
Safer, less risk of flashback
Reliable tip seating
Heavy outer tube for strength and rigidity

## HEAVY-DUTY

### PRODUCTOR

#### CUTTING, WELDING AND BRAZING

Heavy-duty applications

- Cut up to 200 mm (8")\*
- Weld up to 20 mm (0.8")\*

#### INCLUDES

- BLUE322 torch handle and BLUE522B cutting attachment
- 104/114 oxygen and acetylene regulators with 2.5" brass gauges

\* With appropriate optional tips



- Welding/brazing tip, cutting tip, Grade R twin-hose, flint lighter and goggles
- Rugged toolbox

#### FEATURES

Stainless steel regulator diaphragms
Triangular configuration of the cutting attachment tubes
Tip mixing of gases
Die forged naval brass head
Separate, brazed tube construction in the torch handle

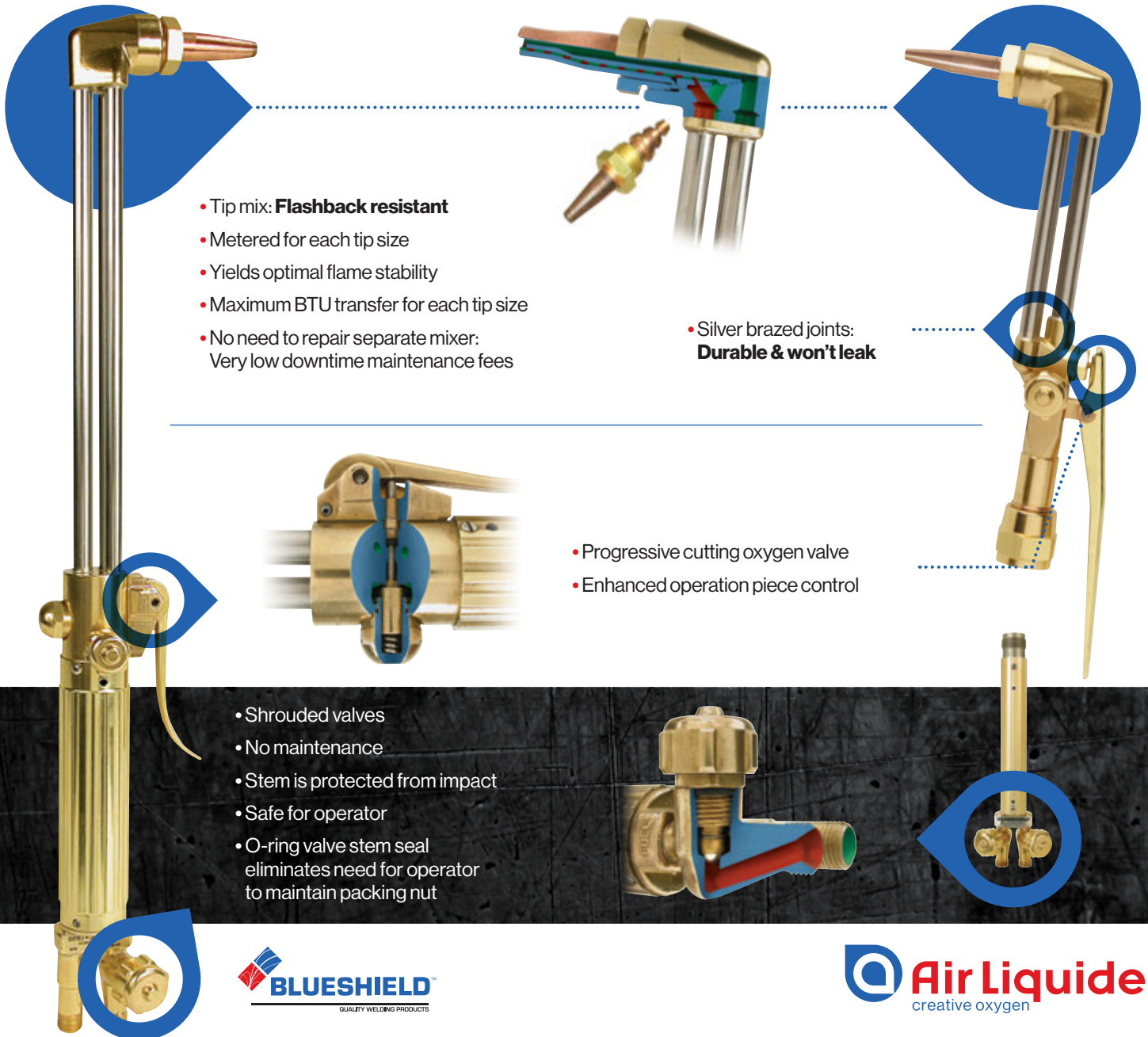
#### BENEFITS

Increased durability and low temperature resistance
Optimized for rigidity and strength
Safer, less risk of flashback
Excellent flow capacity, light weight, no possibility of mixed gases in the handle

# Cut with the SAFEST and the BEST

## THE BLUESHIELD™ Advantage (Models: 499 / 522 / 523 / 322)

BLUESHIELD™ line is the ideal choice for applications such as steel mills, scrap yards, mines, ship yards and mechanical contractors!



- Tip mix: **Flashback resistant**
- Metered for each tip size
- Yields optimal flame stability
- Maximum BTU transfer for each tip size
- No need to repair separate mixer:  
Very low downtime maintenance fees

- Silver brazed joints:  
**Durable & won't leak**

- Progressive cutting oxygen valve
- Enhanced operation piece control

- Shrouded valves
- No maintenance
- Stem is protected from impact
- Safe for operator
- O-ring valve stem seal  
eliminates need for operator  
to maintain packing nut



# BLUESHIELD™ TORCHES

## MEDIUM-DUTY

### BLUE312 TORCH HANDLE

- Cut up to 150 mm (6")

#### FEATURES

Sturdy, ribbed brass handle	Large, ribbed control valves, for ease of adjustment
Tube-within-a-tube handle design with four O-ring seals for safety and easy maintenance	Teflon valve packing provides long service life
Forged brass rear body	Stainless steel ball-tip valves seal tightly

A NUMBER	MFG	LENGTH MM	LENGTH IN	WEIGHT G	WEIGHT LB	CGA CONNECTION
A0291693	BLU-FIR312	200	8	383	0.84	'B' - SIZE (9/16" - 18 RH/LH)



A0291693

## MEDIUM-DUTY

### BLUE512B CUTTING ATTACHMENT

- Cut up to 150 mm (6")
- Weld up to 10 mm (0.4")
- Heat up to 47,000 BTU/hr

#### FEATURES

Brass torch head	Three-seat, tip-mix design for safety and multi-gas compatibility
Three in-line tube configuration	
Silver-brazed tube joints for leak integrity	

A NUMBER	MFG	LENGTH MM	LENGTH IN	WEIGHT G	WEIGHT LB
A0229404	BLU-FIR512B	216	8.5	508	1.12



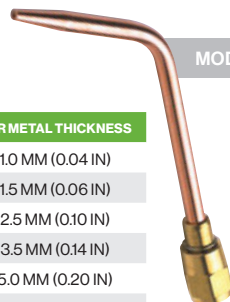
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### TIP SELECTION GUIDE FOR USE WITH BLUE312 TORCH HANDLE

#### MODEL 712

SINGLE-FLAME BRAZING/  
WELDING TIP-MIXER ASSEMBLY

A NUMBER	MFG	SIZE	FOR METAL THICKNESS
A0399772	BLU-7120	0	1.0 MM (0.04 IN)
A0399773	BLU-7121	1	1.5 MM (0.06 IN)
A0399774	BLU-7122	2	2.5 MM (0.10 IN)
A0399775	BLU-7123	3	3.5 MM (0.14 IN)
A0399776	BLU-7124	4	5.0 MM (0.20 IN)
A0399777	BLU-7125	5	6.5 MM (0.26 IN)
A0399778	BLU-7126	6	8.0 MM (0.31 IN)
A0399779	BLU-7127	7	10.0 MM (0.40 IN)

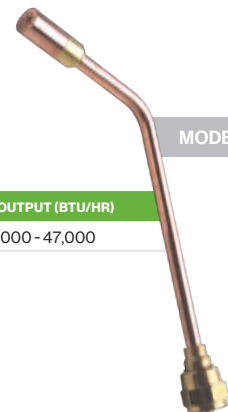


MODEL 712

#### MODEL 735

MULTI-FLAME HEATING  
TIP-MIXER ASSEMBLY

A NUMBER	MFG	SIZE	HEAT OUTPUT (BTU/HR)
A0399428	BLU-7356	6	37,000 - 47,000



MODEL 735



## BLUESHIELD™ TORCHES

### HEAVY-DUTY

### BLUE322 TORCH HANDLE

- Cut up to 200 mm (8")
- Weld up to 20 mm (0.8")
- Heat up to 1.3 million BTU/hr

#### FEATURES

Stainless steel coupling block for rugged durability

All-silver-brazed construction for strength, rigidity, and safety

Straight-through oxygen and fuel gas tubes keep gases separated for leak-proof safety

Light-weight, ribbed aluminum handle

Forged brass rear body

Large, ribbed control valves, silver-brazed to rear body for strength and rigidity

Shrouded valve packing provides long service life

Stainless steel ball-tip valves seal tightly

Spring-loaded valves with smooth torque control and anti-backlash for precise flame setting

A NUMBER	MFG	LENGTH MM	LENGTH IN	WEIGHT G	WEIGHT LB	CGA CONNECTION
A0291692	BLU-DRA322	240	9.5	595	1.3	'B' - SIZE (9/16" - 18 RH/LH)



A0291692

### HEAVY-DUTY

### BLUE522/BLUE523 CUTTING ATTACHMENTS

- Cut up to 200 mm (8")

#### FEATURES

Three-seat, tip-mix design keeps gases separated for safety

Universal fuel gas compatibility – just install the appropriate tip

Silver-brazed tube joints for leak integrity

Nickel alloy tubes in triangular configuration for superior rigidity and strength

Forged naval brass or stainless steel torch head for rugged durability

Ease-on cutting oxygen valve provides controlled flow for easy cut starts and piercing

Torch adapter with tapered O-ring seals for hand-tight connection to torch handle

A NUMBER	MFG	LENGTH MM	LENGTH IN	WEIGHT G	WEIGHT LB
A0229403	BLU-DRA523B	330	13	770	1.7
A0229400	BLU-DRA523SS	330	13	770	1.7
A0229401	BLU-DRA522B	250	10	700	1.5
A0229402	BLU-DRA522SS	250	10	700	1.5



A0229402

A0229401



## WELDING, BRAZING AND HEATING TIPS

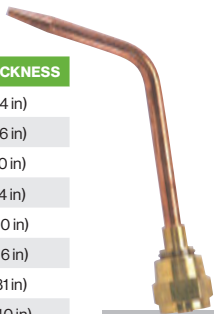
### TIP SELECTION GUIDE

FOR USE WITH BLUE322 TORCH HANDLE

#### MODEL 714

SINGLE-FLAME BRAZING/ WELDING TIP-MIXER ASSEMBLY

A NUMBER	MFG	SIZE	FOR METAL THICKNESS
A0399780	BLU-7140	0	1.0 mm (0.04 in)
A0399781	BLU-7141	1	1.5 mm (0.06 in)
A0399783	BLU-7142	2	2.5 mm (0.10 in)
A0399784	BLU-7143	3	3.5 mm (0.14 in)
A0399785	BLU-7144	4	5.0 mm (0.20 in)
A0399786	BLU-7145	5	6.5 mm (0.26 in)
A0399787	BLU-7146	6	8.0 mm (0.31 in)
A0399788	BLU-7147	7	10.0 mm (0.40 in)
A0399789	BLU-7148	8	12.0 mm (0.47 in)
A0399782	BLU-71410	10	20.0 mm (0.80 in)

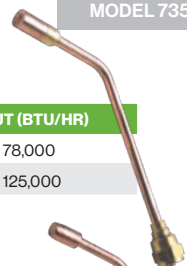


MODEL 714

#### MODEL 735

MULTI-FLAME HEATING TIP-MIXER ASSEMBLY

A NUMBER	MFG	SIZE	HEAT OUTPUT (BTU/HR)
A0399429	BLU-7358	8	68,000 - 78,000
A0399427	BLU-73510	10	109,000 - 125,000



MODEL 735

#### MODEL 740

MULTI-FLAME HEATING TIP-MIXER ASSEMBLY

A NUMBER	MFG	SIZE	HEAT OUTPUT (BTU/HR)
A0399431	BLU-74010	10	109,000 - 125,000
A0399433	BLU-74014	14	176,000 - 200,000



MODEL 740

### HEAVY-DUTY HEATING ASSEMBLIES

INDIVIDUAL COMPONENT SELECTION FOR USE WITH BLUE322 TORCH HANDLES

For use in pre-heating or post-heating weldments, general heating, bending, straightening, descaling, and flame cleaning applications

Ensure that there is adequate supply of oxygen and fuel gas (from manifolded cylinders or pipeline) before starting work. Insufficient gas supply will cause the tip to overheat and is hazardous to personnel

Select a gas mixer, an extension tube, and a multi-flame heating tip from the items shown below. Choose the mixer and tip to match the fuel gas being used (DO NOT use model 2290-H tips with acetylene)

Use 9.5 mm (3/8") diameter, Grade T welding hose for all heavy heating applications

#### THREAD LEGEND:

S 12.7 mm x 1.27 (1/2"-20) U 12.7 mm x 1.0 (1/2"-25)



STEP 1

#### GAS MIXERS WITH COUPLING NUT

FUEL GAS	GAS MIXERS	COUPLING NUT
FLAMAL™ 29 / PROPANE / NATURAL GAS	A0323545 (BLU-75360)	A0333390 (BLU-1532038)
ACETYLENE	A0323546 (BLU-7531113)	A0333390 (BLU-1532038)

CHOOSE YOUR MIXER + EXTENSION + RETAINER



#### STAINLESS STEEL EXTENSION TUBES (60° BEND)

A0277831 (BLU-SSE24) 610 mm (24 in) long  
A0277832 (BLU-SSE36) 915 mm (36 in) long

RETAINER

A0361867: BLU-01570416

STEP 2

#### MODEL 738

FOR USE WITH ACETYLENE

A NUMBER	MFG	SIZE	HEAT OUTPUT (BTU/HR)
A0399430	BLU-7382	2	218,000 - 250,000

CHOOSE YOUR HEATING TIP



#### MODEL 2290-H

FOR USE WITH FLAMAL™ 29, PROPYLENE, PROPANE OR NATURAL GAS \*

A NUMBER	MFG	SIZE	HEAT OUTPUT (BTU/HR)
A0399422	BLU-2290H1	1	100,000 - 200,000
A0399423	BLU-2290H2	2	138,000 - 325,000
A0399424	BLU-2290H3	3	212,000 - 575,000
A0399425	BLU-2290H4	4	400,000 - 812,000
A0399426	BLU-2290H5	5	450,000 - 1,000,000

\* Do not use model 2290-H with acetylene due to risk of backfire and overheating.



# OPERATIONAL AND PERFORMANCE DATA FOR WELDING, BRAZING AND HEATING TIPS

## WELDING AND BRAZING TIP ASSEMBLIES

MODEL	TYPICAL APPLICATIONS	DESCRIPTION	TIP SIZE	ORIFICES	FOR METAL THICKNESS	RECOMMENDED PRESSURES		ACETYLENE CONSUMPTION * L/MIN (CFH)
				DRILL SIZE		OXYGEN KPA (PSIG)	ACETYLENE KPA (PSIG)	
712	Used with BLUE312 torches	Long flame type	0	#72	1.0 mm (0.04 in)	7 (1)	7 (1)	0.2 (0.4)
			1	#68	1.5 mm (0.06 in)	7 (1)	7 (1)	0.5 (1)
			2	#62	2.5 mm (0.10 in)	14 (2)	14 (2)	1 (2)
			3	#56	3.5 mm (0.14 in)	21 (3)	21 (3)	3.8 (8)
714	Used with BLUE322 torches	Tip/Mixer assembly for general welding and brazing	4	#54	5.0 mm (0.20 in)	28 (4)	28 (4)	8 (17)
			5	#51	6.5 mm (0.26 in)	35 (5)	35 (5)	12 (25)
			6	#46	8.0 mm (0.31 in)	42 (6)	42 (6)	16 (34)
			7	#42	10.0 mm (0.40 in)	49 (7)	49 (7)	20 (43)
			8	#38	12.0 mm (0.47 in)	56 (8)	56 (8)	25 (52)
			10	#30	20.0 mm (0.80 in)	70 (10)	70 (10)	32 (67)

## MULTI-FLAME HEATING TIP ASSEMBLIES

MODEL	TYPICAL APPLICATIONS	DESCRIPTION	TIP SIZE	ORIFICES		RECOMMENDED PRESSURES		ACETYLENE CONSUMPTION * L/MIN (CFH)	REQUIRED NO. OF SIZE 69 ACETYLENE CYLINDERS	HEAT OUTPUT (BTU/HR)
				NO. OF HOLES	DRILL SIZE	OXYGEN KPA (PSIG)	ACETYLENE KPA (PSIG)			
735	Used with BLUE312 torches	Multi-flame tip /mixer assembly for medium-duty heating applications	6	6	#67	42-49 (6-7)	35-42 (5-6)	12-15 (25-32)	1	37,000 - 47,000
735	Used with BLUE322 torches	Multi-flame tip /mixer assembly for heavy-duty heating applications	8	8	#58	56-63 (8-9)	49-56 (7-8)	22-25 (46-53)	1	68,000 - 78,000
			10	10	#58	70-77 (10-11)	63-70 (9-10)	35-40 (74-85)	2	109,000 - 125,000
740	Used with BLUE322 torches	Multi-flame tip/mixer assembly for heavy-duty heating, bending, straightening and hardening applications	10	10	#58	70-77 (10-11)	63-70 (9-10)	35-40 (74-85)	2	109,000 - 125,000
			14	10	#52	98-105 (14-15)	91-98 (13-14)	57-64 (120-136)	3	176,000 - 200,000

\* NOTE: multiply acetylene consumption by 1.1 to obtain oxygen consumption.



# OPERATIONAL AND PERFORMANCE DATA FOR WELDING, BRAZING AND HEATING TIPS

## SEPARABLE, MULTI-FLAME HEATING TIPS

### ACETYLENE

MODEL	TYPICAL APPLICATIONS	MIXER REQUIRED	TIP SIZE	RECOMMENDED PRESSURE		OXYGEN CONSUMPTION L/MIN (CFH)	ACETYLENE CONSUMPTION L/MIN (CFH)	REQUIRED NO. OF SIZE 69 ACETYLENE CYLINDERS	HEAT OUTPUT (BTU/HR)
				OXYGEN KPA (PSIG)	ACETYLENE KPA (PSIG)				
738	Used with BLUE322 torches	A0323546 (BLU-7531113)	2	55-70 (8-10)	40-55 (6-8)	82-95 (175-200)	70-80 (148-170)	3 - 4	218,000 - 250,000

### FLAMAL™ 29 / PROPYLENE\*

MODEL	TYPICAL APPLICATIONS	MIXER REQUIRED	TIP SIZE	RECOMMENDED PRESSURE		OXYGEN CONSUMPTION L/MIN (CFH)	FLAMAL™ 29 CONSUMPTION L/MIN (CFH)	REQUIRED NO. OF SIZE 108 FLAMAL™ 29 CYLINDERS	HEAT OUTPUT (BTU/HR)
				OXYGEN KPA (PSIG)	FLAMAL™ 29 KPA (PSIG)				
2290-H	Used with BLUE322 torches	A0323545 (BLU-75360)	1	70-175 (10-25)	28-84 (4-12)	65-130 (140-280)	19-38 (40-80)	1 - 2	95,000 - 190,000
			2	105-315 (15-45)	49-154 (7-22)	90-215 (190-455)	26-60 (55-130)	1 - 2	130,000 - 308,000
			3	175-490 (25-70)	56-175 (8-25)	140-380 (295-805)	40-110 (85-230)	2 - 3	200,000 - 545,000
			4	350-770 (50-110)	70-210 (10-30)	265-535 (560-1135)	75-155 (160-325)	3 - 5	380,000 - 770,000
			5	420-945 (60-135)	98-280 (14-40)	300-660 (630-1400)	85-190 (180-400)	3 - 6	427,000 - 950,000

### PROPANE AND NATURAL GAS\*

MODEL	TYPICAL APPLICATIONS	MIXER REQUIRED	TIP SIZE	RECOMMENDED PRESSURE		OXYGEN CONSUMPTION L/MIN (CFH)	PROPANE CONSUMPTION L/MIN (CFH)	REQUIRED NO. OF 100 LB PROPANE CYLINDERS	HEAT OUTPUT (BTU/HR)
				OXYGEN KPA (PSIG)	PROPANE KPA (PSIG)				
2290-H	Used with BLUE322 torches	A0323545 (BLU-75360)	1	70-175 (10-25)	28-84 (4-12)	75-150 (160-320)	19-38 (40-80)	1 - 2	100,000 - 200,000
			2	105-315 (15-45)	49-154 (7-22)	105-245 (220-520)	26-60 (55-130)	1 - 2	138,000 - 325,000
			3	175-490 (25-70)	56-175 (8-25)	160-435 (340-920)	40-110 (85-230)	2 - 3	212,000 - 575,000
			4	350-770 (50-110)	70-210 (10-30)	300-615 (640-1300)	75-155 (160-325)	3 - 5	400,000 - 812,000
			5	420-945 (60-135)	98-280 (14-40)	340-755 (720-1600)	85-190 (180-400)	3 - 6	450,000 - 1,000,000

#### IMPORTANT SAFETY NOTE:

High capacity heating tips must be operated at high flow rates with forceful flames. Adjust the operating pressures with the flame lit and the torch valves wide open.

Throttling back the torch valves will starve the flame, resulting in overheating of the tip and possible backfire or flashback. If a particular tip provides too much heat for the job at hand change it for a smaller one.

Use 9.5 mm (3/8") ID, Grade-T hose for all heavy heating applications.

Before starting work, ensure that adequate gas supply is available to provide sufficient volume of oxygen and fuel gas. Manifold multiple cylinders together or supply gas via a shop pipeline system to achieve required flowrates.

1 L/min equals 0.06 m<sup>3</sup>/hr or 2.12 cfh.

Acetylene withdrawal rate per cylinder should not exceed 1/7th of the cylinder capacity per hour. FLAMAL™ 29 and propane cylinder withdrawal rates are determined by the size of cylinder being used, the amount of liquid remaining in the cylinder, and the ambient temperature.

The number of manifolded cylinders indicated in the above tables for FLAMAL™ 29 and propane are based on continuous withdrawal at 15°C from 30% full cylinders. Available withdrawal rate will increase if cylinders are more full or at higher temperatures, and decrease if cylinders are less full or at lower temperatures. Intermittent withdrawal may decrease the number of cylinders required compared to continuous withdrawal.

Install high flow hose line flashback arrestors and adjust regulator pressure settings to compensate for the pressure drop introduced by the safety devices.

\* NOTE: NOT for use with acetylene due to risk of backfire and overheating.





# BLUESHIELD™ TORCHES

## HEAVY-DUTY

### BLUE499 MANUAL CUTTING TORCH

A0400930

#### SAFETY AND COMFORT:

- Tip mixing of gases for safety and versatility
- Ergonomic Design

#### RUGGEDNESS AND DURABILITY:

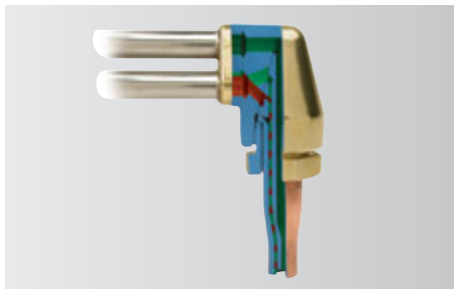
- Naval Brass or Stainless Steel head with nickel alloy triangular tubes for superior strength and durability in heavy or extreme-duty applications

#### PERFORMANCE:

- Cuts up to 300 mm (12 in) steel\*
- Excellent flow capacity
- Compatible with all popular fuel gases
- Ease-on cutting oxygen flow
- Spring-loaded fuel valve provides smooth torque control and anti-backlash for precise flame control

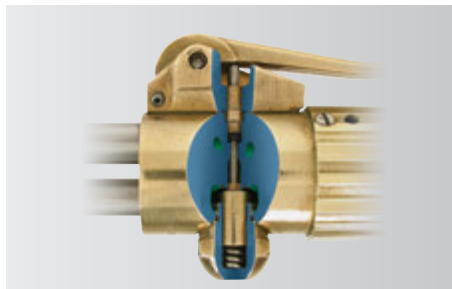
A NUMBER	MFG	WEIGHT		LENGTH		HEAD ANGLE	APPLICATION	HEAD MATERIAL	CUTTING CAPACITY		CONNECTIONS
		KG	LBS	MM	IN				MM	IN	
A0400930	BLU-DIA499B	1.41	3.1	513	20.2	90°	Heavy-duty	Naval Brass	300	12	B SIZE (9/16-18UNF) RH/LH
A0400931	BLU-DIA499SS						Extreme-duty	Stainless Steel			

\* With appropriate optional tips.



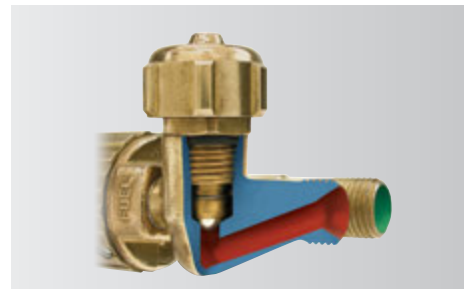
#### CUTTING TIP

- Tip mix design ensures maximum operator safety, allows operation with any fuel gas just by changing cutting tip, and requires less maintenance.
- Internal tip nut thread minimizes head damage.



#### OXYGEN VALVE AND LEVER

- All silver brazed tube joints provide rigidity and strength.
- Tapered cutting oxygen valve gives excellent ease-on control for piercing.
- Contoured cutting oxygen lever minimizes operator fatigue.



#### VALVES AND STEEL BALL SEAT







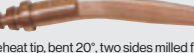



- Shrouded valves provide maximum stem protection and durability.
- Stainless steel ball seat ensures positive shut-off.
- Fuel valve is spring-loaded to provide smooth torque and anti-backlash for precise flame control.





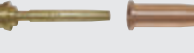



# CUTTING TIP SELECTION GUIDE

## TIPS FOR BLUESHIELD™ TORCHES

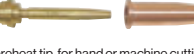

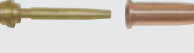



### ACETYLENE TIPS

A NUMBER	MFG	DESCRIPTION AND APPLICATION	PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE
A0398629	BLU-80200	 One-piece, medium preheat tip, for general purpose use.		802	4	3 mm (1/8 in)	00
A0398628	BLU-8020					6 mm (1/4 in)	0
A0398630	BLU-8021					13 mm (1/2 in)	1
A0398631	BLU-8022					25 mm (1 in)	2
A0398632	BLU-8023					38 mm (1 1/2 in)	3
A0398633	BLU-8024					50 mm (2 in)	4
A0398634	BLU-8025					100 mm (4 in)	5
A0398635	BLU-8026	150 mm (6 in)	6				
A0398637	BLU-80300	 One-piece, heavy preheat tip, for general purpose use on dirty, rusted or painted surfaces.		803	6	3 mm (1/8 in)	00
A0398636	BLU-8030					6 mm (1/4 in)	0
A0398638	BLU-8031					13 mm (1/2 in)	1
A0398639	BLU-8032					25 mm (1 in)	2
A0398640	BLU-8033					38 mm (1 1/2 in)	3
A0398641	BLU-8034					50 mm (2 in)	4
A0398642	BLU-8035					100 mm (4 in)	5
A0398643	BLU-8036					150 mm (6 in)	6
A0398644	BLU-8038	250 mm (10 in)	8				
A0398647	BLU-83800	 One-piece, light preheat tip, for straight-line and contour cutting of clean plate by hand or machine.		838	6	3 mm (1/8 in)	00
A0398646	BLU-8380					6 mm (1/4 in)	0
A0398648	BLU-8381					10 mm (3/8 in)	1
A0398649	BLU-8382					19 mm (3/4 in)	2
A0398650	BLU-8383					38 mm (1 1/2 in)	3
A0398645	BLU-8836	 One-piece, medium preheat tip, bent 20°, two sides milled flat, for grooving, gouging and removing imperfect welds.		883	6	8 mm x 8 mm (5/16 x 5/16 in)	6
A0398653	BLU-8838					11 mm x 11 mm (7/16 x 7/16 in)	8
A0398651	BLU-88310					13 mm x 13 mm (1/2 x 1/2 in)	10
A0398652	BLU-88312					15 mm x 13 mm (9/16 x 1/2 in)	12
A0398654	BLU-8951	 One-piece, medium preheat tip, bent 45°, one side milled flat, for hand-cutting rivet heads and bulkheads.		895	3	10 mm (3/8 in)	1
A0398655	BLU-8952					13 mm (1/2 in)	2
A0398656	BLU-8953					19 mm (3/4 in)	3

### FLAMAL™ 29 / PROPYLENE TIPS

A NUMBER	MFG	DESCRIPTION AND APPLICATION	PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE
A0398853	BLU-833SP68	 One-piece, medium preheat tip, for general purpose hand cutting.		833 SP	8	6 mm (1/4 in)	68
A0398852	BLU-833SP60					13 mm (1/2 in)	60
A0398851	BLU-833SP56					25 mm (1 in)	56
A0398850	BLU-833SP54					38 mm (1 1/2 in)	54
A0398849	BLU-833SP52					50 mm (2 in)	52
A0398848	BLU-833SP49					75 mm (3 in)	49
A0398847	BLU-833SP44					125 mm (5 in)	44
A0398846	BLU-833SP38					200 mm (8 in)	38
A0398862	BLU-835FS68	 Two-piece, heavy preheat tip, for hand or machine cutting.		835 FS	18	6 mm (1/4 in)	68
A0398861	BLU-835FS65					10 mm (3/8 in)	65
A0398860	BLU-835FS60					13 mm (1/2 in)	60
A0398859	BLU-835FS56				25 mm (1 in)	56	
A0398858	BLU-835FS54				38 mm (1 1/2 in)	54	
A0398857	BLU-835FS52				50 mm (2 in)	52	
A0398856	BLU-835FS49				75 mm (3 in)	49	
A0398855	BLU-835FS44				125 mm (5 in)	44	
A0398854	BLU-835FS38	200 mm (8 in)	38				
A0398869	BLU-836FH65	 Two-piece, heavy preheat tip, divergent nozzle, for high-speed machine cutting.		836 FH	18	10 mm (3/8 in)	65
A0398868	BLU-836FH60					13 mm (1/2 in)	60
A0398867	BLU-836FH56					25 mm (1 in)	56
A0398866	BLU-836FH54				38 mm (1 1/2 in)	54	
A0398865	BLU-836FH52				50 mm (2 in)	52	
A0398864	BLU-836FH49				75 mm (3 in)	49	
A0398863	BLU-836FH44				120 mm (5 in)	44	

### PROPANE / NATURAL GAS TIPS









A NUMBER	MFG	DESCRIPTION AND APPLICATION	PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE
A0399158	BLU-8190	 Two-piece, light preheat tip, for hand or machine cutting of clean plate.		819	10	6 mm (1/4 in)	0
A0399159	BLU-8191					13 mm (1/2 in)	1
A0399160	BLU-8192					25 mm (1 in)	2
A0399161	BLU-8193					38 mm (1 1/2 in)	3
A0399162	BLU-8194					64 mm (2 1/2 in)	4
A0399163	BLU-8195					100 mm (4 in)	5
A0399164	BLU-8260	 Two-piece, medium preheat tip, for general hand or machine cutting.		826	18	6 mm (1/4 in)	0
A0399165	BLU-8261					13 mm (1/2 in)	1
A0399166	BLU-8262					25 mm (1 in)	2
A0399167	BLU-8263				38 mm (1 1/2 in)	3	
A0399168	BLU-8264				50 mm (2 in)	4	
A0399169	BLU-8265				75 mm (3 in)	5	
A0399170	BLU-8266				150 mm (6 in)	6	
A0399171	BLU-8291	 Two-piece, heavy preheat tip, for general hand cutting.		829	10	13 mm (1/2 in)	1
A0399173	BLU-8292					25 mm (1 in)	2
A0399174	BLU-8293					38 mm (1 1/2 in)	3
A0399175	BLU-8295				100 mm (4 in)	5	
A0399176	BLU-8297				200 mm (8 in)	7	
A0399172	BLU-82910				300 mm (12 in)	10	









# CUTTING TIP SELECTION GUIDE

## TIPS FOR VICTOR™, PUROX™ AND HARRIS™ TORCH SEAT STYLES



### ACETYLENE TIPS

A NUMBER	MFG	DESCRIPTION AND APPLICATION	PREHEAT	STYLE	NUMBER OF PREHEATS	MATERIAL THICKNESS	SIZE
A0398670	BLU-V1101000	 <p>One-piece, medium preheat tip, for general hand or machine cutting.</p>		VICTOR 1-101	6	3 mm (1/8 in)	000
A0398669	BLU-V110100					6 mm (1/4 in)	00
A0398668	BLU-V11010					13 mm (1/2 in)	0
A0398671	BLU-V11011					19 mm (3/4 in)	1
A0398672	BLU-V11012					38 mm (1 1/2 in)	2
A0398673	BLU-V11013					64 mm (2 1/2 in)	3
A0398674	BLU-V11014					75 mm (3 in)	4
A0398675	BLU-V11015					125 mm (5 in)	5
A0398676	BLU-V11016					200 mm (8 in)	6
A0398678	BLU-V310100					 <p>One-piece, medium preheat tip, for general hand cutting.</p>	
A0398677	BLU-V31010	13 mm (1/2 in)	0				
A0398679	BLU-V31011	19 mm (3/4 in)	1				
A0398680	BLU-V31012	38 mm (1 1/2 in)	2				
A0398681	BLU-V31013	64 mm (2 1/2 in)	3				
A0398682	BLU-V31014	75 mm (3 in)	4				
A0398683	BLU-V31015	125 mm (5 in)	5				
A0398662	BLU-P42022	 <p>One-piece, medium preheat tip, for general hand cutting.</p>		PUROX 4202	6	3 mm (1/8 in)	2
A0398663	BLU-P42023					6 mm (1/4 in)	3
A0398664	BLU-P42024					16 mm (5/8 in)	4
A0398665	BLU-P42025					38 mm (1 1/2 in)	5
A0398666	BLU-P42027					100 mm (4 in)	7
A0398667	BLU-P42029					150 mm (6 in)	9
A0398657	BLU-H62900					 <p>One-piece, medium preheat tip, for general hand cutting.</p>	
A0398658	BLU-H62901	25 mm (1 in)	1				
A0398659	BLU-H62902	50 mm (2 in)	2				
A0398660	BLU-H62903	75 mm (3 in)	3				
A0398661	BLU-H62904	150 mm (6 in)	4				

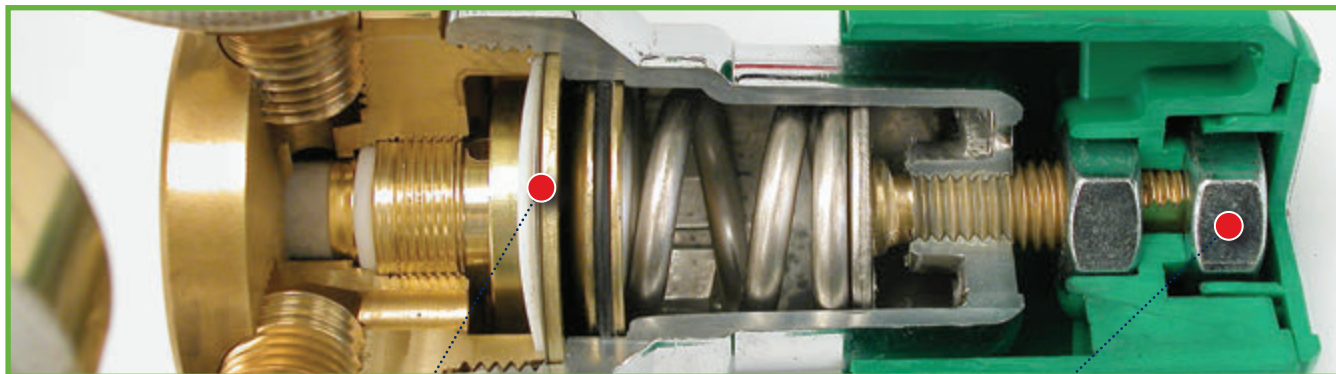
### FLAMAL™ 29 / PROPYLENE TIPS

A NUMBER	MFG	DESCRIPTION AND APPLICATION	PREHEAT	STYLE	MATERIAL THICKNESS	SIZE
A0399282	BLU-VGPP000	 <p>Two-piece, medium preheat, for general hand or machine torch cutting.</p>		VICTOR GPP	3 mm (1/8 in)	000
A0399281	BLU-VGPP00				6 mm (1/4 in)	00
A0399280	BLU-VGPP0				13 mm (1/2 in)	0
A0399283	BLU-VGPP1				19 mm (3/4 in)	1
A0399284	BLU-VGPP2				38 mm (1 1/2 in)	2
A0399285	BLU-VGPP3				64 mm (2 1/2 in)	3
A0399286	BLU-VGPP4				75 mm (3 in)	4
A0399287	BLU-VGPP5				125 mm (5 in)	5
A0399288	BLU-VGPP6				200 mm (8 in)	6
A0399291	BLU-V3GPP000				 <p>One-piece, medium preheat tip, for general hand cutting.</p>	
A0399290	BLU-V3GPP00	6 mm (1/4 in)	00			
A0399289	BLU-V3GPP0	13 mm (1/2 in)	0			
A0399292	BLU-V3GPP1	19 mm (3/4 in)	1			
A0399293	BLU-V3GPP2	38 mm (1 1/2 in)	2			
A0399294	BLU-V3GPP3	64 mm (2 1/2 in)	3			
A0399275	BLU-H6290NXP00	 <p>Two-piece, medium preheat tip, for general hand or machine cutting.</p>		HARRIS 6290-NXP		
A0399274	BLU-H6290NXP0				16 mm (5/8 in)	0
A0399276	BLU-H6290NXP1				25 mm (1 in)	1
A0399277	BLU-H6290NXP2				50 mm (2 in)	2
A0399278	BLU-H6290NXP3				75 mm (3 in)	3
A0399279	BLU-H6290NXP4				150 mm (6 in)	4

### PROPANE / NATURAL GAS TIPS

A NUMBER	MFG	DESCRIPTION AND APPLICATION	PREHEAT	STYLE	MATERIAL THICKNESS	SIZE
A0399178	BLU-VGPN00	 <p>Two-piece, medium preheat, for general hand or machine torch cutting.</p>		VICTOR GPN	6 mm (1/4 in)	00
A0399177	BLU-VGPN0				13 mm (1/2 in)	0
A0399179	BLU-VGPN1				19 mm (3/4 in)	1
A0399180	BLU-VGPN2				38 mm (1 1/2 in)	2
A0399181	BLU-VGPN3				64 mm (2 1/2 in)	3
A0399182	BLU-VGPN4				75 mm (3 in)	4
A0399183	BLU-VGPN5				125 mm (5 in)	5

## THE BLUESHIELD™ ADVANTAGE



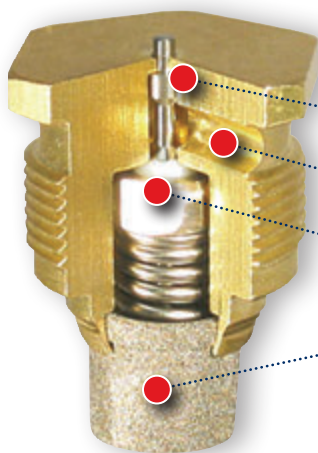
### STAINLESS STEEL DIAPHRAGM

- Accurate, long lasting service
- Retains properties in cold temperatures and harsh environments
- Designed for Canada 
- Less fragile than NÉOPRÈNE® in cold weather

### CAPTIVE ADJUSTING KNOB

- Colour coded for gas service
- Dual lock nuts allow tamper-proof setting, or pre-adjustment of maximum delivery pressure

## CAPSULE SEAT ASSEMBLY



### SINGLE MODULAR COMPONENT FOR EASY MAINTENANCE.

- Positive seat stop eliminates seat deformation under repetitive, high-cycle use
- Lateral flow passages reduce the effects of gas surge on the diaphragm, preventing "hum"
- High density PTFE Teflon® or PCTFE Kel-F® seat retains sealing properties over a wide temperature range
- Large surface area 40 micron bronze filter captures debris and prevents seat failure, allowing maximum flow performance over a long service life

### SELECTION GUIDE

**BLU-xxx###xx###**

**1 REGULATOR SERIES:** 104/114 • 65 • 56 • 48

**2 CGA INLET CONNECTION\***

**3 INLET PRESSURE:**

LPR: 400 psi max.  
HPR: 3,000 psi max.  
XPR: 5,500 psi max.

**OR** TSR: two-stage  
PSR: pipeline station

**4 REGULATOR DELIVERY TYPE:**

A: max. delivery pressure 15 psi  
B: max. delivery pressure 40 psi  
C: max. delivery pressure 100 psi  
D: max. delivery pressure 300 psi  
E: max. delivery pressure 500 psi

FG: flowgauge type  
FM: flowmeter type  
FM2: dual flowmeter type

\* **CAUTION:** DO NOT modify or change regulator inlet connections to install regulators on containers that are filled with a different gas or are pressurized to a higher internal pressure than the maximum inlet pressure listed.



# BLUESHIELD™ SINGLE-STAGE CYLINDER REGULATORS

HEAVY-DUTY

## 104/114 SERIES



### DESIGN FEATURES

#### CAPSULE SEAT ASSEMBLY

- PTFE Teflon® seat
- 4.8 mm orifice for high flow capacity
- 40 micron bronze filter protects seat from contamination, minimizes failures, and simplifies maintenance

#### FORGED BRASS BODY AND CHROME PLATED BONNET

- Rugged body construction
- Reduced weight due to bonnet material

#### STAINLESS STEEL DIAPHRAGM

- 64 mm (2.5") diameter convoluted diaphragm
- High leak integrity
- Sensitive over wide temperature range

#### 64 MM (2.5") BRASS CASE GAUGES

- Excellent readability
- Colour coded for safety
- Dual scales in kPa and psi

#### CAPTIVE ADJUSTING KNOB

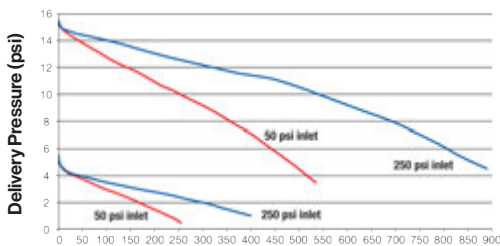
- Colour coding: red for gases fuels and green for oxygen

#### SELF-RESEATING RELIEF VALVE ON OXYGEN MODEL\*

A NUMBER	MFG	GAS SERVICE	GAUGE SCALE				MAXIMUM INLET PRESSURE		MAX. DELIVERY PRESSURE		CGA CONNECTION	
			LOW PRESSURE		HIGH PRESSURE		KPA	PSIG	KPA	PSIG	INLET	OUTLET
			KPA	PSIG	KPA	PSIG						
A0358913	BLU-LPR114A410	Acetylene	200	30	2,800	400	2,755	400	100	15	410	023
A0358914	BLU-LPR114A510	Acetylene	200	30	2,800	400	2,755	400	100	15	510	023
A0359172	BLU-HPR104C540	Oxygen	1,400	200	28,000	4,000	20,685	3,000	830	120	540	022

#### LPR114 SERIES

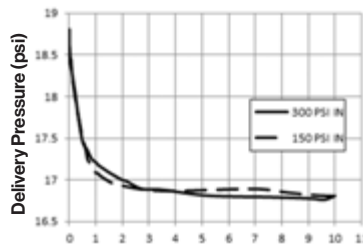
Flow Regulation Curves



Flow Rate (CFHN<sub>2</sub>)

#### LPR114A SERIES

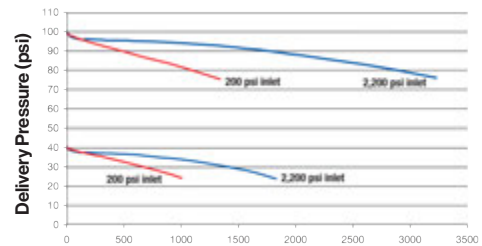
Flow Regulation Curves



Flow Rate (CFHN<sub>2</sub>)

#### HPR104 SERIES

Flow Regulation Curves



Flow Rate (CFHN<sub>2</sub>)

\* CAUTION: Relief valves are not intended to protect downstream apparatus. Provide a separate, flow-rated relief device if downstream system cannot support full cylinder pressure.

# BLUESHIELD™ SINGLE-STAGE CYLINDER REGULATORS

## 56 SERIES



### DESIGN FEATURES

#### CAPSULE SEAT ASSEMBLY

- PTFE Teflon® seat on LPR and HPR models
- PCTFE Kel-F® seat on XPR models
- 3.2 mm orifice for excellent flow capacity
- 40 micron bronze filter protects seat from contamination, minimizes failures, and simplifies maintenance

#### BAR STOCK BRASS BODY AND CHROME PLATED BONNET

- Solid body construction
- Reduced weight due to bonnet material

#### STAINLESS STEEL DIAPHRAGM

- 45 mm (1.75") diameter convoluted diaphragm
- High leak integrity
- Sensitive over wide temperature range

#### 51 MM (2") BRASS CASE GAUGES

- Good readability
- Oxygen and Acetylene models colour coded for safety
- Dual scales in kPa and psi

#### SELF-RESEATING RELIEF VALVE ON HPR AND XPR MODELS\*

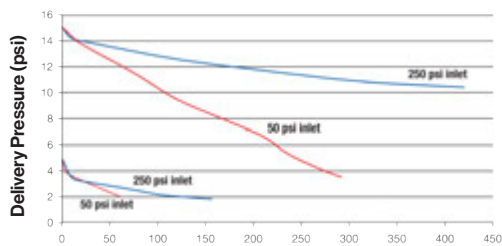
- Vents excess pressure and re-seals

#### CAPTIVE ADJUSTING KNOB

- Colour coded for gas service

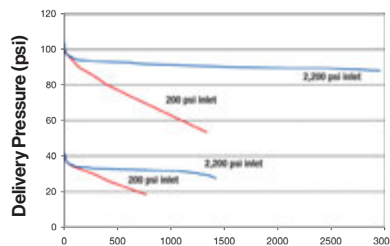
**LPR56 SERIES**

Flow Regulation Curves


 Flow Rate (CFH N<sub>2</sub>)

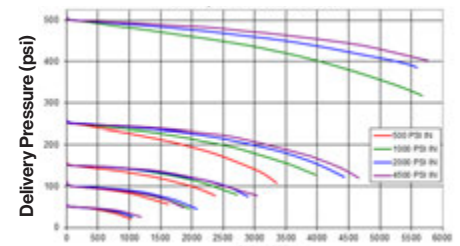
**HPR56 SERIES**

Flow Regulation Curves


 Flow Rate (CFH N<sub>2</sub>)

**XPR56 SERIES**

Flow Regulation Curves


 Flow Rate (CFH N<sub>2</sub>)

\* **CAUTION:** Relief valves are not intended to protect downstream apparatus. Provide separate, flow-rated relief device if downstream system cannot support full cylinder pressure.



# BLUESHIELD™ SINGLE-STAGE CYLINDER REGULATORS

## 56 SERIES

A NUMBER	MFG	GAS SERVICE	GAUGES SCALES				MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
			LOW PRESSURE		HIGH PRESSURE		KPA	PSIG	KPA	PSIG	INLET	OUTLET
			KPA	PSIG	KPA	PSIG						
A0358915	BLU-LPR56A410	Acetylene	200	30	2,800	400	2,755	400	100	15	410	023
A0358916	BLU-LPR56A510	Acetylene	200	30	2,800	400	2,755	400	100	15	510	023
A0358978	BLU-HPR56C320	Carbon Dioxide	1,400	200	28,000	4,000	20,685	3,000	690	100	320'	032
A0358982	BLU-HPR56C346	Compressed Air	1,400	200	28,000	4,000	20,685	3,000	690	100	346	033
A0359100	BLU-HPR56B350	Hydrogen	700	100	28,000	4,000	20,685	3,000	345	50	350	023
A0359173	BLU-HPR56C540	Oxygen	1,400	200	28,000	4,000	20,685	3,000	690	100	540	022
A0358966	BLU-HPR56B580	Inert Gases	700	100	28,000	4,000	20,685	3,000	345	50	580	032
A0358967	BLU-HPR56C580	Inert Gases	1,400	200	28,000	4,000	20,685	3,000	690	100	580	032
A0358968	BLU-HPR56D580	Inert Gases	2,800	400	28,000	4,000	20,685	3,000	2,100	300	580	1/4" SAE Flare
A0359104	BLU-HPR56E580	Nitrogen	7,000	1,000	28,000	4,000	20,685	3,000	3,450	500	580	1/4" SAE Flare
A0359105	BLU-XPR56C680	Inert Gases	1,400	200	40,000	6,000	37,920	5,500	690	100	680	032
A0359106	BLU-XPR56D680	Inert Gases	2,800	400	40,000	6,000	37,920	5,500	2,100	300	680	1/4" SAE Flare
A0359107	BLU-XPR56E680	Nitrogen	7,000	1,000	40,000	6,000	37,920	5,500	3,450	500	680	1/4" SAE Flare
A0359012	BLU-XPR56FG680	Inert Gases	7,000	1,000	40,000	6,000	37,920	5,500	N/A	N/A	680	032
A0359030	BLU-XPR56FM680	Inert Gases	7,000	1,000	40,000	6,000	37,920	5,500	N/A	N/A	680	032
A0359003	BLU-XPR56FM2680	Inert Gases	7,000	1,000	40,000	6,000	37,920	5,500	N/A	N/A	680	032

<sup>1</sup>CGA 320 connection requires a sealing washer to effect a leak-tight joint.

### HEAVY-DUTY

## FLAMAL™ 29 & LP-GASES

### DESIGN FEATURES

#### CAPSULE SEAT ASSEMBLY

- PTFE Teflon® seat
- 4.8 mm orifice for high flow capacity
- 40 micron bronze filter protects seat from contamination, minimizes failures, and simplifies maintenance

#### FORGED BRASS BODY AND CHROME PLATED BONNET

- Rugged body construction
- Reduced weight due to bonnet material

#### NEOPRENE® RUBBER DIAPHRAGM

- 64 mm (2.5") diameter diaphragm
- Superior flexibility for sensitive pressure control

#### 64 MM (2.5") BRASS CASE GAUGE

- Excellent readability
- Dual scales in kPa and psi

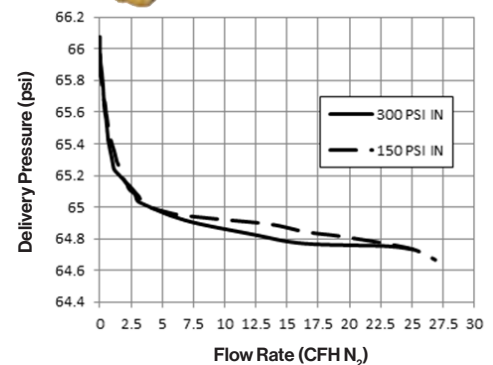
#### CAPTIVE ADJUSTING KNOB

- Colour coded red for fuel gas service



### LPR65 SERIES

Flow Regulation Curves



A NUMBER	MFG	GAS SERVICE	GAUGES SCALES		MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
			HIGH PRESSURE		KPA	PSIG	KPA	PSIG	INLET	OUTLET
			KPA	PSIG						
A0359005	BLU-LPR65B510	FLAMAL™ 29 and LP-Gases <sup>1</sup>	700	100	2,800	400	413	60	510	023

<sup>1</sup>Propane, Propylene

\* **CAUTION:** Not for use with acetylene due to high delivery pressure capability.



## BLUESHIELD™ TWO-STAGE CYLINDER REGULATORS

HEAVY-DUTY

### TSR SERIES

These regulators reduce gas pressure in two steps, allowing a constant delivery pressure to be maintained, regardless of the remaining cylinder pressure<sup>1</sup>. This feature makes two-stage regulators well suited to applications where accuracy and consistency are a must. All two stage models feature modular seat assembly capsules in both stages to allow for quick and simple maintenance and repair.

#### DESIGN FEATURES

- 65 mm (2.5") pressure gauges
- 40 micron bronze filters protect seats from foreign material
- Sensitive rubber diaphragms
- Captive adjusting knobs
- Self-seating relief valves\* (except on acetylene models)



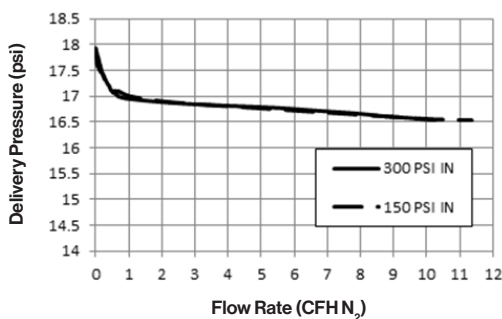
A NUMBER	MFG	GAS SERVICE	GAUGES SCALES				MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
			LOW PRESSURE		HIGH PRESSURE		KPA	PSIG	KPA	PSIG	INLET	OUTLET
			KPA	PSIG	KPA	PSIG						
A0358918	BLU-TSR65A410	Acetylene	200	30	2,800	400	2,755	400	100	15	410	023
A0359193	BLU-TSR65A510	Acetylene	200	30	2,800	400	2,755	400	100	15	510	023
A0359174	BLU-TSR65C540	Oxygen	1,400	200	28,000	4,000	20,685	3,000	930	135	540	022
A0359103	BLU-TSR65C580	Inert Gases	1,400	200	28,000	4,000	20,685	3,000	930	135	580	032
A0358983	BLU-TSR65C346	Compressed Air	1,400	200	28,000	4,000	20,685	3,000	930	135	346	033
A0359102	BLU-TSR65C590	Compressed Air	1,400	200	28,000	4,000	20,685	3,000	930	135	590	033
A0358979	BLU-TSR65C320	Carbon Dioxide	1,400	200	28,000	4,000	20,685	3,000	930	135	320 <sup>2</sup>	032

<sup>1</sup>Within certain limits.

<sup>2</sup>CGA 320 connection requires a sealing washer to effect a leak-tight joint.

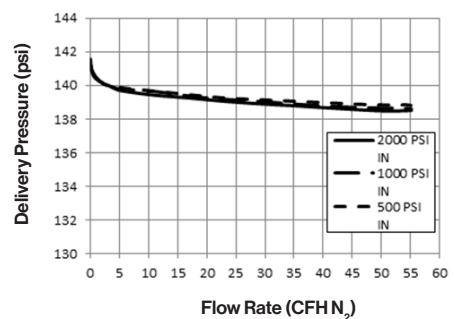
#### TSR65A SERIES

Flow Regulation Curves



#### TSR65C SERIES

Flow Regulation Curves



\* **CAUTION:** Relief valves are not intended to protect downstream apparatus. Provide a separate, flow-rated relief device if downstream system cannot support full cylinder pressure.





# BLUESHIELD™ SINGLE-STAGE FLOWGAUGE FLOWMETER REGULATORS AND HOSE KITS

## MEDIUM-DUTY

### 48 SERIES

Choice of flowgauge or flowmeter model regulators for GMAW/GTAW/FCAW shielding gas applications. Available as individual units or in kits that include 2.4 m (8 ft) of gas hose.

#### DESIGN FEATURES

- 51 mm (2") pressure gauges
- Sensitive rubber diaphragms
- Self-reseating relief valve\*
- Solid, bar-stock brass bodies
- Chrome plated bonnets



A NUMBER	MFG	GAS SERVICE	GAUGES SCALES				MAXIMUM INLET PRESSURE		FLOW RANGE @ 21°C (70°F)		CGA CONNECTIONS	
			LOW PRESSURE		HIGH PRESSURE		KPA	PSIG	L/MIN	SCFH	INLET	OUTLET
			KPA	PSIG	KPA	PSIG						
A0359009	BLU-HPR48FG320	Carbon Dioxide	Flowgauge	Flowgauge	28,000	4,000	20,685	3,000	9-24	20-50	320 <sup>2</sup>	032 <sup>3</sup>
A0359006	BLU-HPR48FG580	Argon	Flowgauge	Flowgauge	28,000	4,000	20,685	3,000	9-28	20-60	580	032 <sup>3</sup>
A0359022	BLU-HPR48FM320	Carbon Dioxide	Flowmeter	Flowmeter	28,000	4,000	20,685	3,000	0.5-26	10-55	320 <sup>2</sup>	032
A0359018	BLU-HPR48FM580ARHE	Argon / Helium	Flowmeter	Flowmeter	28,000	4,000	20,685	3,000	0.5-28 Ar 14-94 He	10-60 Ar 30-200 He	580	032
A0335375	BLU-FG320KIT <sup>1</sup>	Carbon Dioxide	Flowgauge	Flowgauge	28,000	4,000	20,685	3,000	9-24	20-50	320 <sup>2</sup>	032 <sup>3</sup>
A0335374	BLU-FG580KIT <sup>1</sup>	Argon	Flowgauge	Flowgauge	28,000	4,000	20,685	3,000	9-28	2060	580	032 <sup>3</sup>
A0335377	BLU-FM320KIT <sup>1</sup>	Carbon Dioxide	Flowmeter	Flowmeter	28,000	4,000	20,685	3,000	0.5-26	20-50	320 <sup>2</sup>	032
A0335376	BLU-FM580KIT <sup>1</sup>	Argon / Helium	Flowmeter	Flowmeter	28,000	4,000	20,685	3,000	0.5-28 Ar 14-94 He	10-60 Ar 30-200 He	580	032

<sup>1</sup> Kits include 2.4 m (8 ft) of 4.8 mm (3/16") dia. inert gas hose.

<sup>2</sup> CGA connection 320 requires a sealing washer to effect a leak-tight joint.

<sup>3</sup> Do not remove outlet connection or replace with one of different orifice diameter. Calibration of flowgauge scale requires specific metering orifice diameter.

\* **CAUTION:** Relief valves are not intended to protect downstream apparatus. Provide a separate, flow-rated relief device if downstream system cannot support full cylinder pressure.

# BLUESHIELD™ PIPELINE STATION REGULATORS

**HEAVY-DUTY**
**PRS SERIES**
**DESIGN FEATURES**

- Capsule seat assembly
- 4.8 mm seat diameter for high flow capacity
- 40 micron bronze filter protects seat from foreign material
- Large-area rubber diaphragm provides sensitive adjustment
- 64 mm (2.5") delivery pressure gauge for easy reading of pressure setting
- Rugged, forged brass body and chrome plated bonnet for long service life
- Captive adjusting knob
- Single and twin flowmeter models available for shielding gas applications



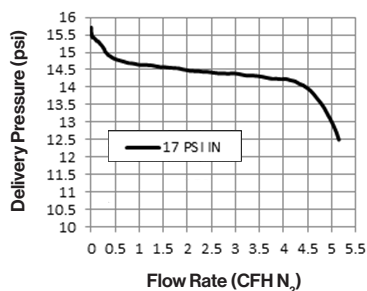
A NUMBER	MFG	GASSERVICE	GAUGE SCALES		MAXIMUM INLET PRESSURE		MAXIMUM DELIVERY PRESSURE		CGA CONNECTIONS	
			KPA	PSIG	KPA	PSIG	KPA	PSIG	INLET	OUTLET
A0359954	BLU-PSR65C024B	Oxygen	1,400	200	1,380	200	930	135	024	022
A0359955	BLU-PSR65C024C	Oxygen	1,400	200	1,380	200	930	135	024	024
A0359945	BLU-PSR65A025B	Acetylene	200	30	100	15	100	15	025	023
A0358917	BLU-PSR65A025C	Acetylene	200	30	100	15	100	15	025	025
A0359949	BLU-PSR65B025	Fuel Gases <sup>1</sup>	700	100	1,380	200	480	70	025	023
A0359953	BLU-PSR65C034	Inert Gases <sup>2</sup>	1,400	200	1,380	200	930	135	034	032
A0168723	BLU-PSR65FM034	Argon / CO <sub>2</sub> Flowmeter	N/A	N/A	1,380	200	28 Ar / 26 CO <sub>2</sub> (L / min)	60 Ar / 55 CO <sub>2</sub> (scfh)	034	032
A0359948	BLU-PSR65FM2034	Argon / CO <sub>2</sub> Twin Flowmeter	N/A	N/A	1,380	200	28 Ar / 26 CO <sub>2</sub> (L / min)	60 Ar / 55 CO <sub>2</sub> (scfh)	034	032

<sup>1</sup>FLAMAL™ 29, Propane, Natural Gas, Propylene, Hydrogen

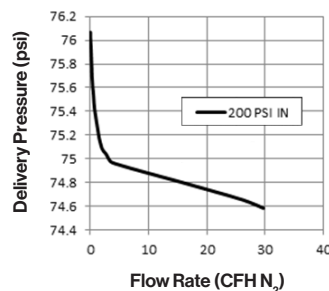
<sup>2</sup>Argon, Nitrogen, Helium, Carbon Dioxide, Compressed Air

**PSR65A B/C SERIES**

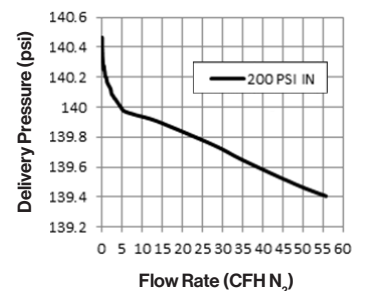
Flow Regulation Curves


**PSR65B SERIES**

Flow Regulation Curves


**PSR65C SERIES**

Flow Regulation Curves





# HIGH PRESSURE REGULATORS AND STATION DROP KITS

## 1400 SERIES

### FEATURES

- Positive Seat Stop
- High cycle life
- Installation flexibility
- PTFE Piston O-Ring Seals
- Accurate pressure control

### MATERIAL

- Brass Bar Stock Body
  - PTFE, Arlon and PCTFE Seats\*
  - 25 Micron Bronze Capsule® Filter
- \* Seat material depends on model's PSI range.

A0358594



### SPECIFICATIONS

- 3,000 / 5,500 / 6,000 PSI Max Inlets
- Temperature Range -40° to 140°F (-40° to 60°C)

A NUMBER	MFG	GAS SERVICE	DELIVERY PRESSURE GAUGE	MAX. INLET PRESSURE/GAUGE INLET	INLET
A0358599	CON-8061413011	Oxygen	0-750 PSIG / 1,500 PSIG	3,000 PSIG / 4,000 PSIG	CGA 540
A0358600	CON-8061436011	Inerts	0-2,500 PSIG / 4,000 PSIG	3,000 PSIG / 4,000 PSIG	CGA 540
A0358590	CON-8061414011	Inerts	0-750 PSIG / 1,500 PSIG	3,000 PSIG / 4,000 PSIG	CGA 580
A0358591	CON-8061415011	Inerts	0-1,500 PSIG / 4,000 PSIG	3,000 PSIG / 4,000 PSIG	CGA 580
A0358592	CON-8061424011	Inerts	0-750 PSIG / 1,500 PSIG	5,500 PSIG / 6,000 PSIG	CGA 680
A0358593	CON-8061425011	Inerts	0-1,500 PSIG / 4,000 PSIG	5,500 PSIG / 6,000 PSIG	CGA 680
A0358594	CON-8061435011	Inerts	0-2,500 PSIG / 4,000 PSIG	3,000 PSIG / 4,000 PSIG	CGA 580
A0358595	CON-8061445011	Inerts	0-4,500 PSIG / 6,000 PSIG	5,500 PSIG / 6,000 PSIG	CGA 680
A0358596	CON-8061455011	Inerts	0-2,500 PSIG / 4,000 PSIG	5,500 PSIG / 6,000 PSIG	CGA 680
A0358597	CON-8061465011	Inerts	0-4,500 PSIG / 6,000 PSIG	6,000 PSIG / 10,000 PSIG	CGA 677
A0359194	CON-8061418011	Air	0-1,500 PSIG / 4,000 PSIG	3,000 PSIG / 4,000 PSIG	CGA 346
A0358598	CON-8061431011	Hydrogen or Methane	0-2,500 PSIG / 4,000 PSIG	3,000 PSIG / 4,000 PSIG	CGA 350

## ORIFICE METERS

### FLOW METERING ORIFICE BUSHINGS

### FEATURES

Many production jobs call for an unvarying flow of shielding gas day after day. Use of the proper orifice bushing to accurately meter the gas is the economical answer to this situation.

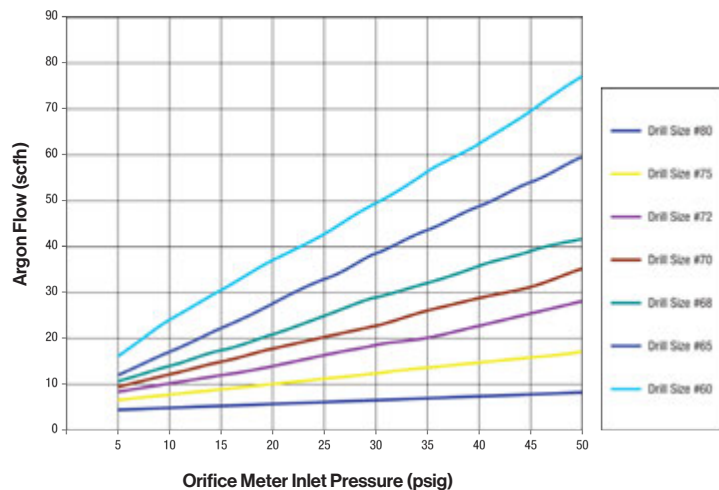
- When a change of gas flow is required, simply replace the orifice meter with one that suits the new condition.



A0209152

### ORIFICE METER CALIBRATION CURVES

(for CO<sub>2</sub> multiply flow value by 0.95)



A NUMBER	MFG	ORIFICE DIAMETER		ORIFICES
		MM	IN	DRILL SIZE
A0209152	CON-8301978	0.34	0.0135	N°80
A0209153	CON-8301973	0.64	0.025	N°72
A0209154	CON-8301985	0.71	0.028	N°70
A0209155	CON-8301974	0.79	0.031	N°68
A0209156	CON-8301976	1.02	0.04	N°60



## SAFETY DEVICES FOR OXY-FUEL GAS SYSTEMS

### TORCH INLET MODELS



**MODEL DG91UA**  
Heavy-duty model for high flow applications.

**MODEL GG**  
General purpose model for medium-duty applications.

#### DESCRIPTION

- Combination reverse-flow check valve and flashback arrestor
- Attach to the inlet connections of torches
- For use in conformance with CSA W117.2, Safety in Welding, Cutting, and Allied Processes

#### FEATURES

- Torch-mounted location ensures maximum protection for operator from hazards of flashback
- Reusable after a flashback occurs<sup>1</sup>
- Conform to ISO 5175 Class I (Heavy Class)<sup>2</sup>
- UL Listed

#### FUNCTIONS

- Reverse-flow check valve reduces the possibility of mixed gases in hose due to improper pressure adjustment, dirty or plugged tips, or leaking torch valves
- Sintered stainless steel flame barrier effectively stops flashback flame and prevents explosions in hose
- 100 micron inlet filter helps keep out dirt that could hinder safe operation

A NUMBER	MFG	MODEL	GAS SERVICE	WEIGHT		LENGTH		MAXIMUM PRESSURE		AIR FLOW (TYPICAL)				CGA CONNECTION
				G	ON	MM	IN	KPA	PSIG	KPA	PSIG	L/MIN	SCFH	
A0281636	IBE-61622602070	GG Twin-Pack GG Fuel GG Oxy	Oxygen + Fuel Fuel Gases <sup>3</sup> Oxygen	111	3.9	59	2.3	345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	93	197	023 (B' L-H)
A0281632	IBE-07012064							986	143	500	72.5	438	929	022 (B' R-H)
A0281634	IBE-07012070	DG91UA Fuel DG91UA Oxy	Fuel Gases <sup>3</sup> Oxygen	349	12.3	127	5	345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	219	465	023 (B' L-H)
A0281617	IBE-07013021							986	143	500	72.5	912	1933	022 (B' R-H)
A0281618	IBE-07013022													

<sup>1</sup> Subject to passing a safety leak test.

<sup>2</sup> International standard ISO 5175 – "Safety devices for fuel gases and oxygen or compressed air – General specifications, requirements and test."

<sup>3</sup> Acetylene hydrogen, natural gas, and LP gases (propylene, propane, butane, etc.).

<sup>4</sup> DO NOT use acetylene at pressures over 103 kPa (15 psig).



# SAFETY DEVICES FOR OXY-FUEL GAS SYSTEMS

## REGULATOR OUTLET MODELS



**MODEL DG91N**  
Heavy-duty model for high flow applications.



**MODEL DGN**  
General purpose model for medium-duty applications.

### DESCRIPTION

- Combination reverse-flow check valve and flashback arrestor with built-in thermal cut-off valve
- Attach to the outlet connections of regulators
- For use in conformance with CSA W117.2, Safety in Welding, Cutting, and Allied Processes

### FEATURES

- Regulator-mounted location protects the high-pressure components of the system and does not interfere with ease of torch manipulation
- Reusable after a flashback occurs<sup>1</sup>
- Conform to ISO 5175 Class I (Heavy Class)<sup>2</sup>
- UL Listed

### FUNCTIONS

- Check valve prevents reverse flow of a dangerous gas mixture from entering the regulator and cylinder
- Sintered stainless steel flame barrier stops a flashback flame before it reaches the regulator and cylinder
- Thermal cut-off valve closes permanently to stop dangerous gas flow when a fire or flashback heats the device above 165°C
- 100 micron inlet filter helps keep out dirt that could hinder safe operation

A NUMBER	MFG	MODEL	GAS SERVICE	WEIGHT		LENGTH		MAXIMUM PRESSURE		AIR FLOW (TYPICAL)				CGA CONNECTION
				G	ON	MM	IN	KPA	PSIG	KPA	PSIG	L/MIN	SCFH	
A0281623	IBE-61622604099	DGN Twin-Pack DGN Fuel DGN Oxy	Oxygen + Fuel Fuel Gases <sup>3</sup> Oxygen	144	5.0	85	3.3	345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	83	268	023 (B' L-H)
A0281619	IBE-07014123													
A0281621	IBE-07014128													
A0281615	IBE-07011123	DG91N Fuel DG91N Oxy	Fuel Gases <sup>3</sup> Oxygen	352	12.4	108	4.3	345 <sup>4</sup>	50 <sup>4</sup>	100	14.5	219	465	023 (B' L-H)
A0281616	IBE-07011129													

<sup>1</sup>Subject to passing a safety leak test. / <sup>2</sup>International standard ISO 5175 – "Safety devices for fuel gases and oxygen or compressed air. General specifications, requirements and test."

<sup>3</sup>Acetylene, hydrogen, natural gas, and LP gases (propylene, propane, butane, etc.) / <sup>4</sup>DO NOT use acetylene at pressures over 103 kPa (15 psig).



# SAFETY DEVICES FOR OXY-FUEL GAS SYSTEMS

## REVERSE FLOW CHECK VALVES

A NUMBER	MFG	GAS SERVICE	MODEL	CONNECTIONS	
				INLET	OUTLET
<b>A0246219</b>	IBE-61622606630	(1) Fuel (LH) and (1) Oxygen (RH)	Check Valve (B size torch)	0.56" UNF <sup>1</sup> M	0.56" UNF <sup>1</sup> F
<b>A0246218</b>	IBE-61622606652	(1) Fuel (LH) and (1) Oxygen (RH)	Check Valve (B size reg)	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> M

<sup>1</sup>CGA Class "B" Connection.

## QUICK CONNECTORS

A NUMBER	MFG	GAS SERVICE	MODEL	CONNECTIONS	
				INLET	OUTLET
<b>A0353890</b>	IBE-61622604992	(1) Fuel (LH) and (1) Oxygen (RH)	Twin-Pack DKG/D1	0.56" UNF <sup>1</sup> M	0.56" UNF <sup>1</sup> F
<b>A0353889</b>	IBE-61622604993	(1) Fuel (LH) and (1) Oxygen (RH)	Twin-Pack DKD/D4	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> M

<sup>1</sup>CGA Class "B" Connection.

## RESETTABLE FLASHBACK ARRESTERS

Top of the line models **DS-1000** and **DS-2000** flashback arresters easily mount on most regulators or supply points and have a resettable pressure control valve that cuts off gas supply in the event of flashback or reverse gas flow. Resetting is easy – just pull up on the pressure control knob – no disassembly or special tools are required. The DS-2000 features high gas flow capacity, built in 100 micron inlet screen, reverse flow check valve, flame barrier and thermal cut off.



A0281638

A0915934

A NUMBER	MFG	GAS SERVICE	CONNECTION		AIRFLOW TABLE	
			INLET	OUTLET	INLET PRESSURE PSIG	AIRFLOW FT <sup>3</sup> /H
<b>DS-100</b>						
<b>A0281638</b>	IBE-07013600	Fuel Gas (LH)	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> F	7.3**	126
<b>A0281639</b>	IBE-07013601	Oxygen (RH)			14.5**	223
					21.8**	311
					36.3**	491
					72.7**	1,000
<b>DS-200</b>						
<b>A0915934</b>	IBE-07013905	Fuel Gas (LH)	0.56" UNF <sup>1</sup> F	0.56" UNF <sup>1</sup> F	7.3**	231
<b>A0281630</b>	IBE-07013907	Oxygen (RH)			14.5**	465
					21.8**	725
					36.3**	1,041
					72.7**	1,933

<sup>1</sup>CGA Class "B" Connection.

\*\*PSIG= pounds per square inch gauge

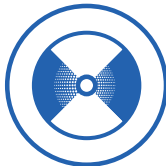


QUALITY  
GREAT VALUE  
RELIABILITY

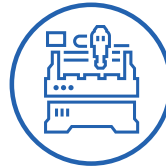
GASES



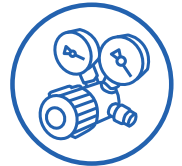
ABRASIVES



AUTOMATION



WELDING GAS EQUIPMENT



FILLER METALS



TOOLS & WELDING ACCESSORIES



SAFETY PRODUCTS



CONSUMABLES





# FILLER METALS

## SECTION V

BLUESHIELD™ ELECTRODES | BLUESHIELD™ MNR | BLUESHIELD™ SOLID WIRES | BLUESHIELD™ METAL-CORED WIRES | BLUESHIELD™ FLUX-CORED WIRES | BRAZE WELDING | BRAZING | FLUX | GMAW AND GTAW  
BLUESHIELD™ ALUMINUM | BLUESHIELD™ SMAW, GTAW, GMAW AND FCAW STAINLESS STEEL CONSUMABLES





## BLUESHIELD™ MILD-STEEL ELECTRODES

For companies looking to make their mark, BLUESHIELD™ electrodes provide the best possible weld quality. We have a complete line of mild-steel, low-hydrogen and low-alloy electrodes available. Leader in the Canadian market, the BLUESHIELD™ line meets high-quality standards.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
LA 6010	A0274534	BLU-30971106	E6010	E4310	All	Cellulosic DC+	Forceful and penetrating arc for structural steel, pipe, boiler and pressure vessels.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274536	BLU-30971108						3.2	1/8	4 x 5	4 x 11
	A0274537	BLU-30971110						4.0	5/32		
LA ULTRA 11	A0274571	BLU-30970116	E6011	E4311	All	Cellulosic AC/DC+	Maintenance and repair work on dirty or rusty material. Ship and farm repair.	6.0	1/4	4 x 5	4 x 11
	A0274565	BLU-30970106						2.5	3/32	4 x 2.5	4 x 5.5
	A0274567	BLU-30970108						3.2	1/8	4 x 5	4 x 11
	A0274569	BLU-30970110						4.0	5/32		
	A0274570	BLU-30970112						5.0	3/16		
LA 6013	A0274540	BLU-30971306	E6013	E4313	All	Rutile AC/DC-/+	General purpose. Thinner gauge materials vertically down. Fast freezing, used to bridge gaps.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274543	BLU-30971308						3.2	1/8	4 x 5	4 x 11
	A0274546	BLU-30971310						4.0	5/32		
LA 7014	A0274550	BLU-30971406	E7014	E4914	All	Rutile AC/DC-/+	General purpose, high-speed, iron powder electrodes. Ornamental iron sheet metal "farmer's rod".	2.5	3/32	4 x 2.5	4 x 5.5
	A0274553	BLU-30971408						3.2	1/8	4 x 5	4 x 11
	A0274556	BLU-30971410						4.0	5/32		
LA 7024	A0274558	BLU-30972406	E7024	E4924	Flat and horizontal	Rutile AC/DC-	General-purpose, high-speed, heavily-coated iron powder electrodes. Storage tank. Sheet plate and structural-metal work.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274559	BLU-30972408						3.2	1/8	4 x 5	4 x 11
	A0274561	BLU-30972410						4.0	5/32	4 x 4.5	4 x 10
	A0274560	BLU-30972411						5.0	3/16		
	A0274563	BLU-30972412						6.0	1/4		
	A0274564	BLU-30972416									

Mild-steel electrode length:  
 2.5 mm = 300 mm (12 in)  
 3.2 mm, 4.0 mm, 5.0 mm = 350 mm (14 in)  
 6.0 mm = 450 mm (18 in)

**NOTE:** BLUESHIELD™ electrodes may meet code requirements other than those listed. Please consult a representative for a complete listing of the code requirements for our electrodes.





# BLUESHIELD™ LOW-HYDROGEN ELECTRODES

Our high-quality products enable us to stake our claim as a market leader that delivers premium-grade electrodes. During welding and radiographic tests, the superior performance of BLUESHIELD™ electrodes is outstanding and sets the benchmark in the Canadian industry.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
LA EXCELARC 18	A0274407	BLU-32972306	E7018-H8	-	All	Basic AC/DC+	Extremely user-friendly general-purpose AC/DC low-hydrogen electrode. Can be used with low OCV AC welders.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274409	BLU-32972308						3.2	1/8	4 x 5	4 x 11
	A0274411	BLU-32972310						4.0	5/32		
LA 7018	A0274397	BLU-32971706	E7018-1-H4	E4918-1-H4	All	Basic AC/DC+	LA 7018 is an industry standard Code quality 7018-1 with impact values down to -45°C (-50°F). Structural steels, boilers and pressure vessels.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274398	BLU-32971708						3.2	1/8	4 x 5	4 x 11
	A0274399	BLU-32971710						4.0	5/32		
	A0274401	BLU-32971711						5.0	3/16		
	A0274402	BLU-32971712						6.0	1/4		
	A0274403	BLU-32971716									
LA 18 PLUS COMPLETE	A0274378	BLU-32971906	E7018-1-H4R	E4918-1-H4	All	Basic AC/DC+ Low moisture pickup	Premium low hydrogen all position electrode meets impact requirement -45°C (-50°F).	2.5 x 300	3/32 x 12	4 x 2.5	4 x 5.5
	A0274379	BLU-32971907						2.5 x 350	3/32 x 14	4 x 4.5	4 x 9.9
	A0274382	BLU-32971908						3.2 x 350	1/8 x 14	4 x 5	4 x 11
	A0274380	BLU-32971909						3.2 x 450	1/8 x 18	4 x 4	4 x 8.8
	A0274383	BLU-32971910						4.0 x 350	5/32 x 14	4 x 5	4 x 11
	A0274384	BLU-32971911						4.0 x 450			
	A0274386	BLU-32971912						5.0 x 450	3/16 x 18		
	A0274387	BLU-32971916						6.0 x 450	1/4 x 18		
LA 18 PLUS	A0274392	BLU-32972106	E7018-1-H4	E4918-1-H4	All	Basic AC/DC+	Typical applications include equipment for arctic service, boiler and pressure vessel, piping, low temperature structural work and bridges.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274393	BLU-32972108						3.2	1/8	4 x 5	4 x 11
	A0274394	BLU-32972110						4.0	5/32		
	A0274395	BLU-32972112						5.0	3/16		
	A0274396	BLU-32972116						6.0	1/4		
LA 18 LMP	A0274374	BLU-32972706	E7018-1-H4	E4918-1-H4	All	Basic AC/DC+ Low moisture pickup	Low Moisture Absorption (LMP) version of the LA 7018 electrode; application with rigorous control of the hydrogen content of the weld.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274375	BLU-32972708						3.2	1/8	4 x 5	4 x 11
	A0274376	BLU-32972710						4.0	5/32		
	A0274377	BLU-32972712						5.0	3/16		
NUCLEARC 7018	A0274412	BLU-32979006	E7018-1-H4	E4918-1-H4	All	Basic AC/DC+	Certified for welding nuclear power plant. ASME Section III Nuclear power plant component.	2.5	3/32	4 x 2.5	4 x 5.5
	A0274413	BLU-32979008						3.2	1/8	4 x 5	4 x 11
	A0274414	BLU-32979010						4.0	5/32		
	A0274415	BLU-32979012						5.0	3/16		
LA 7028	A0274404	BLU-32972808	E7028-H8	E4928-H8	Flat / Horizontal	Basic AC/DC+	High-deposition and high-speed, low-hydrogen electrodes with good mechanical values.	3.2	1/8	4 x 5	4 x 11
	A0274405	BLU-32972810						4.0	5/32	4 x 4.5	4 x 10
	A0274406	BLU-32972812						5.0	3/16		

Low-hydrogen electrode length:  
 2.5 mm = 300 mm (12 in)  
 3.2 mm, 4.0 mm = 350 mm (14 in)  
 5.0 mm, 6.0 mm = 450 mm (18 in)

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# BLUESHIELD™ LOW-ALLOY ELECTRODES

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
LA 7018-A1	A0274198	BLU-32973006	E7018-A1-H4	-	All	Basic AC/DC+	1/2% molybdenum electrodes. Boilers and pressure vessel work, low-alloy with stress relief requirement.	2.5	3/32	4 x 2.5	5.5
	A0274199	BLU-32973008						3.2	1/8		
	A0274200	BLU-32973010						4.0	5/32	4 x 5	11
	A0274201	BLU-32973012						5.0	3/16		
LA 8018-C1	A0274207	BLU-32973906	E8018-C1-H8	E5518-C1-H8	All	Basic AC/DC+	2 1/2% nickel electrodes. Weld metal toughness down to -60°C (-76°F).	2.5	3/32	4 x 2.5	5.5
	A0274208	BLU-32973908						3.2	1/8		
	A0274209	BLU-32973910						4.0	5/32	4 x 5	11
	A0274210	BLU-32973912						5.0	3/16		
LA 8018-C2	A0274211	BLU-32974006	E8018-C2-H4	-	All	Basic AC/DC+	2-4% nickel electrodes. Weld metal toughness down to -75°C (-100°F).	2.5	3/32	4 x 2.5	5.5
	A0274212	BLU-32974008						3.2	1/8		
	A0274213	BLU-32974010						4.0	5/32	4 x 5	11
	A0274214	BLU-32974012						5.0	3/16		
LA 8018-C3	A0274215	BLU-32973806	E8018-C3-H8	E5518-C3-H8	All	Basic AC/DC+	1% nickel electrodes. Weld metal toughness down to -40°C (-40°F).	2.5	3/32	4 x 2.5	5.5
	A0274216	BLU-32973808						3.2	1/8		
	A0274217	BLU-32973810						4.0	5/32	4 x 5	11
	A0274218	BLU-32973812						5.0	3/16		
	A0274219	BLU-32973816						6.0	1/4		
LA 8018-B2	A0274203	BLU-32975006	E8018-B2-H4	E5518-B2-H4	All	Basic CA/CC+	Electrodes 11/4% Cr - 1/2% Mo for welding boilers and pipes and pressure vessels (ASTM A387, Grade P11, P12).	2.5	3/32	4 x 2.5	5.5
	A0274204	BLU-32975008						3.2	1/8		
	A0274205	BLU-32975010						4.0	5/32	4 x 5	11
	A0274206	BLU-32975012						5.0	3/16		
LA 9018-B3	A0274222	BLU-32976006	E9018-B3	-	All	Basic CC+/CA	2 1/4Cr-1Mo electrodes for boilers, pressure piping and vessels.	2.5	3/32	4 x 2.5	5.5
	A0274223	BLU-32976008						3.2	1/8		
	A0274224	BLU-32976010						4.0	5/32	4 x 5	11
	A0274225	BLU-32976012						5.0	3/16		
LA 9018-M	A0274226	BLU-32975508	E9018-M	E6218-M	All	Basic CA/CC+	High-tensile strengths steels. Quenched and tempered steel.	3.2	1/8	4 x 5	11
	A0274227	BLU-32975510						4.0	5/32		
	A0274228	BLU-32975512						5.0	3/16		
LA 10018-M	A0274185	BLU-32977508	E10018-M	-	All	Basic CA/CC+	Welding steel with 710 MPa (100 ksi) tensile strength.	3.2	1/8	4 x 5	11
	A0274186	BLU-32977510						4.0	5/32		
LA 10018-D2	A0274181	BLU-32977006	E10018-D2-H4	-	All	Basic CA/CC+	High-tensile strength steels. Manganese-moly castings. Armour plates.	2.5	3/32	4 x 2.5	5.5
	A0274182	BLU-32977008						3.2	1/8		
	A0274183	BLU-32977010						4.0	5/32	4 x 5	11
	A0274184	BLU-32977012						5.0	3/16		
LA 11018-M	A0274189	BLU-32971006	E11018-M-H4	E7618-M	All	Basic CA/CC+	Welding steel with 760 MPa (110 ksi) tensile strength (T1 steel).	2.5	3/32	4 x 2.5	5.5
	A0274190	BLU-32971008						3.2	1/8		
	A0274192	BLU-32971010						4.0	5/32	4 x 5	11
	A0274193	BLU-32971012						5.0	3/16		
	A0274188	BLU-32971016						6.0	1/4		
LA 12018-M	A0274194	BLU-32978008	E12018-M	-	All	Basic CA/CC+	Welding steel with 830 MPa (120 ksi) tensile strength.	3.2	1/8	4 x 5	11
	A0274195	BLU-32978010						4.0	5/32		
	A0274196	BLU-32978012						5.0	3/16		
	A0274197	BLU-32978016						6.0	1/4		

Low-alloy electrode length: 2.5 mm = 300 mm (12 in)  
 3.2 mm, 4.0 mm, 5.0 mm = 350 mm (14 in)  
 6.0 mm = 450 mm (18 in)

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# BLUESHIELD™ MNR

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NAME	A NUMBER	MFG	BLUESHIELD™ MNR	APPLICATION	POSITION	POLARITY	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
MILD STEEL	A0274523	BLU-5311025	4 x 4	Mild steel electrode for general maintenance and adverse conditions. Easily welds galvanized, painted, rusted or contaminated steels in service. For maximum penetration and digging action on ornamental iron, steel furniture, heavy and farm machinery parts.	All	DC+/-, AC, CC+/-, CA	2.5	3/32	0.5	1	Tube
	A0274525	BLU-5311032					3.2	1/8			
	A0274524	BLU-5311525					2.5	3/32	5	11	Heavy plastic box
	A0274526	BLU-5311532					3.2	1/8			
	A0274527	BLU-5311540					4.0	5/32			
	A0274528	BLU-53113016	Universal	High speed welding on thin gauge, clean or new steel components. Universal is a versatile, general-purpose electrode for maintenance and fabrication. Welds all positions: flat, vertical up and down, and overhead at same amperage setting.			1.6	0.062	0.5	1	Tube
	A0274529	BLU-53113025					2.5	3/32			
	A0274531	BLU-53113032					3.2	1/8			
	A0274530	BLU-53113525					2.5	3/32	5	11	Heavy plastic box
	A0274532	BLU-53113532					3.2	1/8			
A0274533	BLU-53113540	4.0			5/32						
LOW-ALLOY STEEL	A0274173	BLU-53116525	Chinook	Perfect for all position welding of fine-grained structural and construction steels. Excellent mechanical properties and perfect for X-Ray work. Unique, stable spray-type arc. Excellent on root passes and positional welding.	All	DC+/AC, CC+/CA	2.5	3/32	5	11	Heavy plastic box
	A0274174	BLU-53116532					3.2	1/8			
	A0274175	BLU-53116540					4.0	5/32			
	A0274176	BLU-53118025	Striker	Extra low hydrogen and moisture resistant "18" type electrode. Never miss a weld start or tack! Welding minimum 70,000 psi tensile steel such as boiler, pipe, shipbuilding, construction, structural and cast steels. Great choice for welder appeal and weldability.			2.5	3/32	0.5	1	Tube
	A0274178	BLU-53118032					3.2	1/8			
	A0274177	BLU-53118525					2.5	3/32	5	11	Heavy plastic box
	A0274179	BLU-53118532					3.2	1/8			
	A0274180	BLU-53118540					4.0	5/32			
HIGH ALLOY STEEL	A0274085	BLU-53207525	Rebel	High manganese stainless for "difficult to weld", high-strength, dissimilar steels. Good resistance to corrosion and cavitation damage (hydro turbines and pumps). Use as build up buffer layers for maximum impact resistance prior to hardfacing. Welds 14% manganese steels, alloyed, structural and heat treatable steels.	All	DC+/AC, CC+/CA	2.5	3/32	5	11	Heavy plastic box
	A0274086	BLU-53207532					3.2	1/8			
	A0274087	BLU-53207540					4.0	5/32			
	A0274088	BLU-53212016	Xtreme	High manganese stainless for "difficult to weld", high-strength, dissimilar steels. Good resistance to corrosion and cavitation damage (hydro turbines and pumps). Use as build up buffer layers for maximum impact resistance prior to hardfacing. Welds 14% manganese steels, alloyed, structural and heat treatable steels.			1.6	0.062	0.5	1	Tube
	A0274089	BLU-53212025					2.5	3/32			
	A0274091	BLU-53212032					3.2	1/8			
	A0274090	BLU-53212525					2.5	3/32	5	11	Heavy plastic box
	A0274092	BLU-53212532					3.2	1/8			
	A0274093	BLU-53212540					4.0	5/32			
CUTTING AND GOUGING	A0273804	BLU-53262325	Eraser	Gouge, bevel or cut all metals including stainless steels, aluminums and copper. Eraser uses the power of the electrical arc and a special coating to remove and "erase" metal.	All	DC-/AC, CC-/CA	2.5	3/32	2.5	5	Heavy plastic box
	A0273805	BLU-53262332					3.2	1/8			
	A0273806	BLU-53262340					4.0	5/32			
	A0273807	BLU-53262350					5.0	3/16			



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NAME	A NUMBER	MFG	BLUESHIELD™ MNR	APPLICATION	POSITION	POLARITY	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
Cast Iron	A0273683	BLU-53455525	Cast 55	A 55% nickel cast iron but with actual nickel content increased to 60%. Cast 55 is "barium free" for joining dirty and contaminated cast irons. Welds a wide variety of ductile, nodular and malleable cast irons. Extra nickel offers crack resistance and maximum machinability. Strong arc penetrates surface contaminants.	All	DC+/AC, CC+/CA	2.5	3/32	5	11	Heavy plastic box
	A0273684	BLU-53455532					3.2	1/8			
	A0273685	BLU-53455540					4.0	5/32			
	A0273689	BLU-53460025	Tri-Cast	Copperclad "tri-metal" cast iron nickel-based electrode. Iron-nickel-copper chemistry. Proprietary deposit chemistry yields a unique combination of softness, ductility and tensile strength. Higher welding speed creates extremely small heat affected zone and low heat input.	All	DC+/AC, CC+/CA	2.5	3/32	0.5	1	Tube
	A0273691	BLU-53460032					3.2	1/8			
	A0273690	BLU-53460525					2.5	3/32	5	11	Heavy plastic box
	A0273692	BLU-53460532					3.2	1/8			
	A0273693	BLU-53460540					4.0	5/32			
	A0273686	BLU-53499525	Cast 99	99% nickel cast iron electrode with 100% non-conductive flux coating. Very soft machinable welds, porosity free and excellent weldability. Cast 99 is especially suited for welding in deep recesses or close access due to the non-conductive flux coating.	All	DC+/AC, CC+/CA	2.5	3/32	5	11	Heavy plastic box
A0273687	BLU-53499532	3.2					1/8				
A0273688	BLU-53499540	4.0					5/32				
Aluminum	A0273608	BLU-53543025	Lite	Coated aluminum electrode for arc welding and brazing of aluminum alloys. 5% silicon aluminum electrode. Welds aluminums alloyed with copper, silicon and magnesium. Excellent for joining dissimilar grades of aluminum.	Flat, Horizontal	DC+/CC+	2.5	3/32	0.5	1	Tube
	A0273610	BLU-53543032					3.2	1/8			
	A0273609	BLU-53543325					2.5	3/32	2.5	5.5	Heavy plastic box "Vacuum pack"
	A0273611	BLU-53543332					3.2	1/8			
Silver Brazing	A0362409	BLU-53545016	Silver 45	Silver-based flux-coated rod for low temperature brazing. Super active flux-coated "cadmium free" silver brazing alloy with 45% silver. Joins many types of metals and dissimilar materials. Special "fast flow" coating for maximum de-oxidation and protection of the weld.	—	Flame	1.6	0,062	0.5	1	Tube
	A0362410	BLU-53545025					2.5	3/32			
Hardfacing Impact and Heavy Impact Build Up	A0274044	BLU-53738532	Builder 38	38 Rockwell "C" electrode for impact resistant build-up on steels or prior to hardfacing. Offers superior toughness, compression and impact resistance. For tractor shoes, links, rollers, sprocket and idlers, crane and mine wheels and brake drums, shafts, gears, drive sprocket, track pads, mill hammer parts, buckets, etc.	All	DC +/-, AC, CC +/-, CA	3.2	1/8	5	11	Heavy plastic box
	A0274045	BLU-53738540					4.0	5/32			
	A0274046	BLU-53738550					5.0	3/16			
	A0274047	BLU-53748532	Builder MN	Manganese (Mn) alloyed electrode for heavy impact resistant or build-up prior to hardfacing. Builder MN offers outstanding toughness, compression and impact resistance. Deposit hardens under impact loading from 2-5 times the initial hardness. Joining and surfacing of wear plates and parts subjected to impact wear. For crushing rolls, jaws and concaves; rail equipment, switches, railways couplers, crossing and frogs; construction equipment, manganese steel, shovel buckets, impact hammer, bucket, milling hammer, crusher jaws, dredge pump shells, armor plating, etc.	All	DC+/AC, CC+/CA	3.2	1/8	5	11	Heavy plastic box
	A0274048	BLU-53748540					4.0	5/32			
	A0274049	BLU-53748550					5.0	3/16			



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NAME	A NUMBER	MFG	BLUESHIELD™ MNR	APPLICATION	POSITION	POLARITY	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING	
Hardfacing Abrasion + Impact and Metal-Metal	A0274050	BLU-53758032	Hard 58	58 Rockwell "C" general hardfacing electrode for combined abrasion and moderate impact. Can be used as under layer. Hardfacing of mining, rock and earth moving equipment, shovels, buckets, crawler shoes, bulldozer and scraper blades, crusher rolls, bucket teeth and lips, mixer blade, mill hammer, cutting edge, gyratory crusher, bucket liner, jaws, plowing implements; dipper lips, dredge pump, pump casing, etc.	Flat, Horizontal	DC+/-AC, CC+/-CA	3.2	1/8	0.5	1	Tube	
	A0274052	BLU-53758040					4.0	5/32				
	A0274051	BLU-53758532					3.2	1/8	5	11	Heavy plastic box	
	A0274053	BLU-53758540					4.0	5/32				
	A0274054	BLU-53758550					5.0	3/16				
	A0274055	BLU-53760532	Hard 60	60 Rockwell "C" hardfacing electrode for moderate impact and moderate abrasion offering high deposition rate. Especially suited for metal to metal wear applications involving steel, manganese steel and cast iron. Hardfacing of mining equipment, shovels, buckets, crawler shoes, plowing implements, bulldozer blades, crawler tractor shoes, links, rollers and idlers, crane and mine car wheels, shafts, gears, drive sprocket, tracks, etc.	Flat, Horizontal	DC +/-, AC, CC +/-, CA	3.2	1/8	5	11	Heavy plastic box	
	A0274056	BLU-53760540					4.0	5/32				
	Hardfacing Maximum Abrasion and Abrasion Temperature	A0274057	BLU-53762525	Krome 62	62 Rockwell "C" contains large amounts of chromium carbide. Surfacing against severe abrasive wear and moderate impact. Krome 62 offers smooth overlays and excellent weldability. Hardfacing of wear plates, shovel teeth, mechanized shovel buckets, bulldozer blades, mining equipment, road-building machinery, agricultural tools, earth moving equipment in abrasive soil, conveyer screw and chains, mixer, pipeline elbows, send chute, bucket lips and teeth, crushing hammer, roll crusher, steel mill guides, punch rolls, valves, pump casing and impellers, etc.	Flat, Horizontal	DC+/-AC, CC+/-CA	2.5	3/32	5	11	Heavy plastic box
		A0274058	BLU-53762532					3.2	1/8			
		A0274059	BLU-53762540					4.0	5/32			
A0274060		BLU-53762550	5.0					3/16				
A0274061		BLU-53768532	Krome 68	Maximum hardness 68 Rockwell "C" deposits enriched with Niobium (Nb) and Chromium (Cr) carbides. Ultimate combination of abrasion resistance and high temperature hardness retention. Hardfacing of wear plates, shovel teeth, buckets, bulldozer blades, iron and steel making industry, ash plows, coke crusher, screw conveyer, rake teeth in furnaces, mineral crushers; screens, production of construction materials and various minerals; quarries, cement plants, agriculture grain threshers, valves, exhaust fan, agitator finger, mill guides, mixes blades, bucket lips, asphalt mixer, crusher hammer, etc.	Flat, Horizontal	DC +/-, AC, DC +/-, CA	3.2	1/8	5	11	Heavy plastic box	
A0274062		BLU-53768540					4.0	5/32				
A0274063		BLU-53768550					5.0	3/16				



## BLUESHIELD™ SOLID WIRES

Whether you are a production MIG welder or home hobbyist, we have MIG wire packages to cover your welding needs. We have invested countless hours in research, development and testing to ensure you get the arc performance, consistent feedability and productivity that the industry has come to expect.



NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
LA S-6 Small Packaging	A0418514	BLU-38978323	ER70S-6	B-G 49A 3 C1 S6	All-position welding using short- circuit or pulse-spray arc transfer	Lightly copper- coated	Welding of low-carbon steel plates, tubing, piping, structural members, steel castings, pressure vessels, etc. Also commonly used to weld dirty or rusty materials with minimal pre-cleaning.	0.6	0.023	1	2.2	Spool
	A0418518	BLU-38978330						0.8	0.030			
	A0418520	BLU-38978335						0.9	0.035			
	A0418530	BLU-38978345						1.2	0.045	5	11	
	A0418515	BLU-38977823						0.6	0.023			
	A0418516	BLU-38977830						0.8	0.030			
	A0418523	BLU-38977835						0.9	0.035			
	A0418532	BLU-38977845						1.2	0.045			
	A0418456	BLU-38978431						0.8	0.030			
LA S-6	A0418521	BLU-38978435	ER70S-6	B-G 49A 5 C1 S6 (B-G 49A 5 C G6), B-G 49A 5 Z S6 (B-G 49A 5 M G6)	All-position welding using short- circuit or pulse-spray arc transfer	Lightly copper- coated	Welding of low-carbon steel plates, tubing, piping, structural members, steel castings, pressure vessels, etc. Also commonly used to weld dirty or rusty materials with minimal pre-cleaning.	0.9	0.035	20	44	Spool
	A0418526	BLU-38978440						1.0	0.040			
	A0418528	BLU-38978445						1.14	0.045			
	A0418535	BLU-38978452						1.3	0.052			
	A0418536	BLU-38978462						1.6	0.062			
LA S-3	A0418505	BLU-38978135	ER70S-3	B-G 49A 2 C1 S3 (B-G 49A 2 C G3)	All-position welding using short- circuit or pulse-spray arc transfer	Lightly copper- coated	Welding of low-carbon steel plates commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands are required.	0.9	0.035	20	44	Spool
	A0418506**	BLU-38978140						1.0	0.040			
	A0418509	BLU-38978145						1.14	0.045			

\*\* Available on request.



**BLUESHIELD™:**  
**THE QUALITY YOU WANT  
FOR YOUR WELDING WORK.**



# BLUESHIELD™ SOLID WIRES

If enhanced productivity is your aim, we have a variety of bulk packaging options from which to choose. Whether your preference is large spools or drums, we have the right product to suit your welding needs. Our state-of-the-art bulk-wire packaging system provides a “tangle-free” weld, and is relied on by some of the largest automotive welding wire users in North America. This packaging system enhances productivity through superior weld quality.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING					
LA S-3	A0418493**	BLU-38979635AR	ER70S-3	B-G 49A 2 C1S3 (B-G 49A 2 C G3)	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands is required.	0.9	0.035	750	1,653.4	Reel					
	A0418510**	BLU-38979645AR						114	0.045								
	A0927541	BLU-38979652AR						1.3	0.052								
	A0418496**	BLU-38979662AR						ER70S-3	B-G 49A 2 C1S3 (B-G 49A 2 C G3)	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands is required.	1.6	0.062	907.2	2,000	Reel
	A0418508**	BLU-38979640AR											1.0	0.040			
	A0418497**	BLU-38979662XL											1.6	0.062			
	A0418495	BLU-38979652XL											1.3	0.052			
	A0418494	BLU-38979635XL											0.9	0.035			
A0418511**	BLU-38979645XL	114	0.045														
A0418524	BLU-38971035AR	ER70S-6	B-G 49A 5 C1S6 (B-G 49A 5 C G6), B-G 49A 5 Z S6 (B-G 49A 5 M G6)	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands is required.	0.9						0.035	750	1,653.4	Reel	
A0948500**	BLU-38971040AR						1.0	0.040									
A0418533	BLU-38971045AR						114	0.045									
A0418499**	BLU-38971052AR						ER70S-6	B-G 49A 5 C1S6 (B-G 49A 5 C G6), B-G 49A 5 Z S6 (B-G 49A 5 M G6)	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands is required.	1.3	0.052	907.2	2,000		
A0418498**	BLU-38971040XL											1.0	0.040				
A0418501**	BLU-38971062XL											1.6	0.062				
A0418534	BLU-38971045XL											114	0.045				
A0418500**	BLU-38971052XL											1.3	0.052				
A0418525	BLU-38971035XL	0.9	0.035														
Straight Weld LA S-3	A0418540	BLU-38977135	ER70S-3	B-G 49A 2 C1S3 (B-G 49A 2 C G3)	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated						Welding of low-carbon steel plate commonly found in the automotive, piping and structural steel market segments. Also used where a weld deposit with little or no silicate islands is required.	0.9	0.035	250	551	Drum
	A1071604**	BLU-38977135AD					1.0	0.040	350	772	Recyclable Drum						
	A0418537**	BLU-38977140							250	551	Drum						
	A0931549**	BLU-38977140AD					1.14	0.045	350	772	Recyclable Drum						
	A0418538	BLU-38977145							250	551	Drum						
	A0971505**	BLU-38977145AD							350	772	Recyclable Drum						
	A0418539**	BLU-38977152					1.3	0.052	250	551	Drum						
Straight Weld LA S-6	A0418544	BLU-38977435	ER70S-6	B-G 49A 5 C1S6 (B-G 49A 5 C G6), B-G 49A 5 Z S6 (B-G 49A 5 M G6)	All-position welding using short-circuit or pulse-spray arc transfer	Lightly copper-coated	Welding of low-carbon steel plate, tubing, piping, structural members, steel castings, pressure vessels, etc. Also commonly used to weld dirty or rusty materials with minimal pre-cleaning.	0.9	0.035	250	551	Drum					
	A0931550	BLU-38977435AD						1.0	0.040	350	772	Recyclable Drum					
	A0418545	BLU-38977440								250	551	Drum					
	A0418527**	BLU-38977440AD						1.14	0.045	350	772	Recyclable Drum					
	A0418541	BLU-38977445								250	551	Drum					
	A0418502**	BLU-38977445AD								350	772	Recyclable Drum					
	A0418542	BLU-38977452						1.3	0.052	250	551	Drum					

\*\* Available on request.





## BLUESHIELD™ CARBON STEEL METAL-CORED WIRES

BLUESHIELD™ metal-cored wires offer outstanding performance, weld quality and value for those extremely demanding, high-speed, semi-automatic or robotic welding applications. Whether it's a code-quality job or you simply require the versatility a metal-cored wire has to offer, we have the product to meet your welding needs.



NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING	
LAC-6	A0417885	BLU-37960412	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	A good, high-speed, general-purpose single- and multi-pass semi-automatic and automatic mild-steel welding wire. Weld metal mechanical properties are similar to those of LA S-6 MIG wire.	CO <sub>2</sub> ARCAL™ M23 (BLUESHIELD™ 23) ARCAL™ 211 ARCAL™ M14 (ARCAL™ 14) ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8	0.9	0.035	11.3	25	Spool	
	A0417889	BLU-37960433							1.2	0.045				
	A0417893	BLU-37960434							1.3	0.052	27.2	60	Coil	
	A0417896	BLU-37960435							1.6	1/16				
	A0954130	BLU-37960436	E70C-6M-H4	-	Flat / horizontal, all-position welding	Metal-cored	A good, high-speed, general-purpose single- and multi-pass semi-automatic and automatic mild-steel welding wire. Weld metal mechanical properties are similar to those of LA S-6 MIG wire.	-	2.0	5/64	27.2	60	Coil	
	A0417901	BLU-37960437							2.4	3/32				27.2
	LAC-6CR	A0417887	BLU-37960463	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	A good, high-speed, general-purpose single- and multi-pass semi-automatic and automatic mild-steel welding wire. Weld metal mechanical properties are similar to those of LA S-6 MIG wire.	CO <sub>2</sub> ARCAL™ M23 (BLUESHIELD™ 23) ARCAL™ 211 ARCAL™ M14 (ARCAL™ 14) ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8	1.2	0.045	20.4	45	Spool
		A0417891	BLU-37960464							1.3	0.052			
		A0417895	BLU-37960465							1.6	1/16			
	LAC-6CT	A0417975	BLU-37965563	E70C-6M-H4	-	Flat / horizontal, all-position welding	Metal-cored	For welding over rust, mill scale and other contaminants typically found in harsh environments, such as structural steel fabrication, maintenance and repair.	-	1.2	0.045	20.4	45	Spool
A0417976		BLU-37965564	1.3							0.052				
A0417977		BLU-37965565	1.6							1/16				
LAC-6CT	A0417979	BLU-37965763	E70C-6MJ-H4	E491C-6MJ-H4	Flat / horizontal, all-position welding	Metal-cored	Similar welding applications as LA C-6, offering lower temperature mechanical properties down to -40°C (-40°F).	ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8 ARCAL™ 211	1.2	0.045	20.4	45	Spool	
	A0417980	BLU-37965764							1.4	0.052				
	A0417982	BLU-37965765							1.6	1/16				
LAC-6LF	A0417866	BLU-37965033	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	An excellent low-fume, high-speed semi-automatic and automatic mild-steel welding wire. Weld mechanical properties are similar to those of LA S-6 MIG wire. Applications include car and truck frames, structural steel and trailers.	BLUESHIELD™ 8 ARCAL™ SPEED (ARCAL™ 21) ARCAL™ M14 (ARCAL™ 14) ARCAL™ 211	1.2	0.045	27.2	60	Coil	
	A0417869	BLU-37965034							1.3	0.052				
	A0417872	BLU-37965035							1.6	1/16				
	A0417864	BLU-37965063							1.2	0.045	20.4	45	Spool	
	A0417867	BLU-37965064							1.3	0.052				
	A0417870	BLU-37965065							1.6	1/16				
LAC-6LMN	A1126307	BLU-37965363	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	A superior quality, low fume, low manganese general-purpose, single- or multi-pass metal-cored wire designed to weld carbon steel and certain low-alloy steels. Typical applications include thin-walled tanks, sheet metal, thin plate pipe, structural steel fabrication and earthmoving equipment.	ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8 ARCAL™ M14 (ARCAL™ 14) ARCAL™ 211	1.2	0.045	20.4	45	Spool	
	A1141292	BLU-37965364							1.3	0.052				
	A1141293	BLU-37965365							1.6	1/16				



# BLUESHIELD™ CARBON STEEL METAL-CORED WIRES

BLUESHIELD™ metal-cored wires offer outstanding performance, weld quality and value for those extremely demanding, high-speed, semi-automatic or robotic welding applications. Whether it's a code-quality job or you simply require the versatility a metal-cored wire has to offer, we have the product to meet your welding needs.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING				
LA 80 C-Ni1	A0417827	BLU-37963763	E80C-Ni1-H4	E55C-Ni1-H4	Flat / horizontal	Metal-cored, low-alloy steels, 1% nickel	For welding high-strength steels requiring weld metal toughness properties down to -40°C (-40°F).	BLUESHIELD™ 7 BLUESHIELD™ 8 ARCAL™ 211	1.2	0.045	20.4	45	Spool				
	A0417834	BLU-37963764							1.3	0.052							
	A0417835	BLU-37963765							1.6	1/16							
	A0417836	BLU-37963755							226.8	500				Drum			
	A0417829	BLU-37963753													1.2	0.045	
	A0417832	BLU-37963753HEX													362.8	800	Hex Drum
LA C-6CT	A0966382	BLU-37965753HEX	E70C-6MJ-H4	E491C-6MJ-H4	Flat / horizontal, all-position welding	Metal-cored	An excellent low-fume, high-speed semi-automatic and automatic mild-steel welding wire. Weld mechanical properties are similar to those of LA S-6 MIG wire. Applications include car and truck frames, structural steel and trailers.	ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8 ARCAL™ 211	1.2	0.045	362.8	800	Hex Drum				
	A0954126	BLU-37965754							1.3	0.052	226.8	500	Drum				
	A0954128	BLU-37965755							1.6	1/16	362.8	800	Hex Drum				
	A0954129	BLU-37965755HEX															
LA C-6LS	A0417873	BLU-37965233	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	General purpose single or multipass flat/horizontal position, metal cored wire designed to weld carbon and some low-alloy steel.	ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8 ARCAL™ M14 (ARCAL™ 14) ARCAL™ 211	1.2	0.045	27.2	60	Coil				
	A0417876	BLU-37965253	E70C-6M-H4	E491C-6M-H4					1.2	0.045	226.8	500	Drum				
	A0417875	BLU-37965263	E70C-6M-H4	E491C-6M-H4					1.2	0.045	20.4	45	Spool				
	A0417884	BLU-37965235							1.6	1/16	27.2	60	Coil				
	A0417879	BLU-37965234							1.3	0.052							
	A0417883	BLU-37965265	E70C-6M-H4	E491C-6M-H4					1.6	1/16	20.4	45	Spool				
	A0417877	BLU-37965264	E70C-6M-H4	E491C-6M-H4					1.3	0.052	20.4	45	Spool				
	A0417880	BLU-37965254HEX							1.2	0.045	362.8	800	Hex Drum				
	A0417874	BLU-37965253HEX															
	A0417881	BLU-37965255												1.6	1/16	226.8	500
	A0417882	BLU-37965255HEX	E70C-6M-H4	E491C-6M-H4					1.6	1/16	362.8	800	Hex Drum				
	A0417878	BLU-37965254	E70C-6M-H4	E491C-6M-H4					1.3	0.052	226.8	500	Drum				
	A0232816	BLU-37965256HEX	E70C-6M-H4	-					-	-	An excellent low-fume, high-speed semi-automatic and automatic mild-steel welding wire. Weld mechanical properties are similar to those of LA S-6 MIG wire. Applications include car and truck frames, structural steel and trailers.	-	2.0	5/64	362.8	800	Hex Drum



## BLUESHIELD™ LOW-ALLOY STEEL METAL-CORED WIRES

All BLUESHIELD™ low-alloy steel metal-cored wires come conveniently packaged in 20.4 kg (45 lbs) spools.

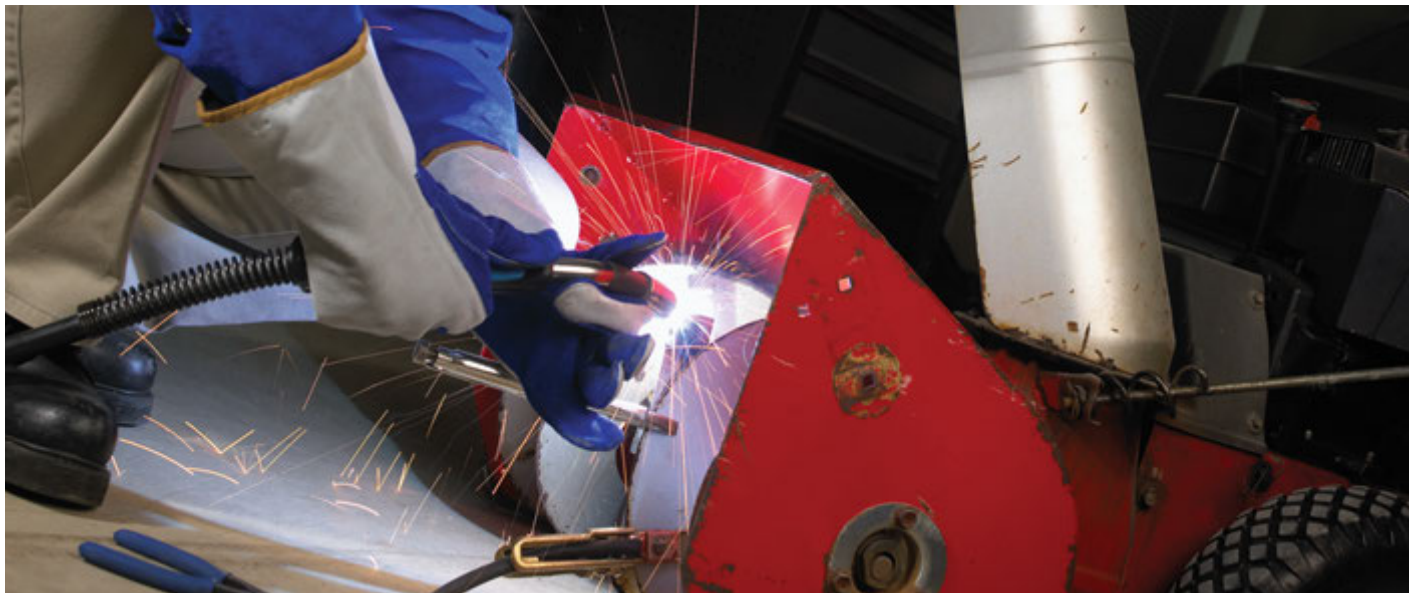
NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING			
LA 80C-NiH-LS	A1141295	BLU-37963864	E80C-NiH-H4	E55C-NiH-H4	Flat / horizontal	Metal-cored, low-alloy steels, 1% nickel	For welding high-strength steels requiring weld metal toughness properties down to -45°C (-50°F).	BLUESHIELD™ 7 ARCAL™ SPEED (ARCAL™ 21)	1.3	0.052	20.4	45	Spool			
	A1141294	BLU-37963863							1.2	0.045						
	A1141296	BLU-37963865							1.6	1/16						
LA 80C-Ni2	A0417972	BLU-37964463	E80C-Ni2-H8	-	Flat / horizontal	Metal-cored, low-alloy steels, 2% nickel	For welding high-strength micro-alloy steels requiring weld metal toughness properties down to -60°C (-80°F).	-	1.2	0.045	20.4	45	Spool			
	A0914233	BLU-37964464							1.3	0.052						
	A0417973	BLU-37964465							1.6	1/16						
LA 80C-W	A0417837	BLU-37962163	E80C-G-H8	-	Flat / horizontal	Metal-cored, low-alloy steels	Used to weld weathering grade steels, for example "Cor-ten", ASTM A242 and A588.	-	1.2	0.045	20.4	45	Spool			
LA 90C-B3	A0417838	BLU-37962063	E90C-B3-H16	-	Flat / horizontal	Metal-cored, low-alloy steels, 2 1/4 Cr / 1% Mo	Used to weld Cr/Mo steels in high-temperature and high-pressure piping applications.	-	1.2	0.045	20.4	45	Spool			
	A0417839	BLU-37962064							1.3	0.052						
	A0417840	BLU-37962065							1.6	1/16						
LA 100C-MG	A0417970	BLU-37961063	E100C-G-H4	E69C-G-H4	Flat / horizontal	Metal-cored, low-alloy steels	For welding high-strength steels with a minimum tensile strength of 690 MPa (100 ksi).	BLUESHIELD™ 7	1.2	0.045	20.4	45	Spool			
	A0958100	BLU-37961064							1.3	0.052						
	A0417820	BLU-37961065							1.6	1/16						
	A0417818	BLU-37961066							1.2	0.045				226.8	500	Drum
LA 110C-MG	A0417824	BLU-37961263	E110C-K4-H4	E76C-K4-H4	Flat / horizontal	Metal-cored, low-alloy steels	For welding high-strength low-alloy steels such as ASTM, A514.	BLUESHIELD™ 8 ARCAL™ SPEED (ARCAL™ 21)	1.2	0.045	20.4	45	Spool			
	A0417825	BLU-37961264							1.3	0.052						
	A0899038	BLU-37961265							1.6	1/16						
	A0417826	BLU-37961254							1.3	0.052				362.8	800	Hex Drum
	A0949113	BLU-37961254HE							-	-				-	-	-
LA C-6	A0417886	BLU-37960452	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	A good, high-speed, general-purpose single- and multi-pass semi-automatic and automatic mild-steel welding wire. Weld metal mechanical properties are similar to those of LA S-6 MIG wire.	CO <sub>2</sub> ARCAL™ M23 (BLUESHIELD™ 23) ARCAL™ 211 ARCAL™ M14 (ARCAL™ 14) ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8	0.9	0.035	226.8	500	Drum			
	A0417888	BLU-37960453							1.2	0.045				362.8	800	Hex Drum
	A0417890	BLU-37960453HEX							1.3	0.052				226.8	500	Drum
	A0417892	BLU-37960454							1.6	1/16				362.8	800	Hex Drum
	A0417894	BLU-37960454HEX							1.2	0.045				226.8	500	Drum
	A0417899	BLU-37960455							-	-				-	-	-
	A0417898	BLU-37960455HEX							2.0	5/64				362.8	800	Hex Drum
	A0417900	BLU-37960456HEX							-	-				-	-	-
	A0417984	BLU-37960457							2.4	3/32				226.8	500	Drum
	-	-							-	-				-	-	-
LA C-6CT	A0417978	BLU-37965733	E70C-6MJ-H4	E491C-6MJ-H4	Flat / horizontal, all-position welding	Metal-cored	Similar welding applications as LA C-6, offering lower temperature mechanical properties down to -40°C (-40°F).	ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8 ARCAL™ 211	1.2	0.045	27.2	60	Coil			
	A0417981	BLU-37965734							1.3	0.052						
	A0417983	BLU-37965735							1.6	1/16						
LAC-6LF	A0417865	BLU-37965053	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	An excellent low-fume, high-speed semi-automatic and automatic mild-steel welding wire. Weld mechanical properties are similar to those of LA S-6 MIG wire. Applications include car and truck frames, structural steel and trailers.	BLUESHIELD™ 8 ARCAL™ SPEED (ARCAL™ 21) ARCAL™ M14 (ARCAL™ 14) ARCAL™ 211	1.2	0.045	226.8	500	Drum			
	A0417868	BLU-37965054							1.3	0.052						
	A0417871	BLU-37965055							1.6	1/16				An excellent, low-fume, high-speed, semi-automatic and automatic mild-steel welding wire. Includes car and truck frames, structural steel and trailers.		
LAC-6LMN	A1172823	BLU-37965354	E70C-6M-H4	E491C-6M-H4	Flat / horizontal, all-position welding	Metal-cored	A superior quality, low fume, low manganese general-purpose, single- or multi-pass metal-cored wire designed to weld carbon steel and certain low-alloy steels. Typical applications include thin-walled tanks, sheet metal, thin plate pipe, structural steel fabrication and earthmoving equipment.	ARCAL™ SPEED (ARCAL™ 21) BLUESHIELD™ 8 ARCAL™ M14 (ARCAL™ 14) ARCAL™ 211	1.3	0.052	226.8	500	Drum			
	A1172820	BLU-37965353							1.2	0.045						
	A1172827	BLU-37965355HEX							1.6	1/16				362.8	800	Hex Drum
	A1172826	BLU-37965355							1.6	1/16				226.8	500	Drum
	A1172821	BLU-37965353HEX							1.2	0.045				362.8	800	Hex Drum
	A1172824	BLU-37965354HEX							1.3	0.052				-	-	-



## BLUESHIELD™ CARBON STEEL FLUX-CORED WIRES

Our North American roots in FCAW wire manufacturing reach back for more than 40 years. During this period, we have continually strived to achieve the highest standard in product quality, consistency and value. This is evident through the extensive product line and packaging options available today. With BLUESHIELD™ FCAW wires, you have a variety of products to choose from, such as self-shielded, low-fume, hydrogen-controlled, low-temperature service and high-strength wires designed to meet the most demanding industrial welding applications on the market.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
LAUNISHIELD	A0417233	BLU-37971506	E70T-4-H16	E492T-4-H16	Flat / Horizontal	Gasless	A good single- or multi-pass, general-purpose wire for light gauge steel plate fabrication and structural steel fabrication where there is no requirement for notch toughness properties.	2.4	3/32	24.95	55	Coil
	A0417681	BLU-37964728						3.0	0.120	22.68	50	
LAT-11	A0417468	BLU-37961702	E71T-11-H8	E491T-11-H8	All	Gasless	A good general-purpose wire for maintenance and repair applications in material thickness from 16 gauge through 12.7 mm (1/2").	0.9	0.035	4.54	10	Spool
	A0417467	BLU-37961712						1.2	0.045	11.34	25	
	A0417466	BLU-37961713										
	A0417469	BLU-37961715										
LAT-14	A0417185	BLU-37960181	E71T-14-H16	E491T-14-H16	All	Gasless	An excellent single-pass wire for welding thin-gauge (22 gauge to 4.8 mm (3/16") galvanized or aluminumized carbon steel materials typically found in automotive sheet-metal repair and duct-work welding.	0.8	0.030	0.9	2	Spool
	A0417188	BLU-37960182						0.9	0.035			
	A0417187	BLU-37960101						0.8	0.030	4.54	10	
	A0417190	BLU-37960102						0.9	0.035			
	A0417186	BLU-37960111						0.8	0.030			
	A0417189	BLU-37960112						0.9	0.035	11.34	25	
	A0417191	BLU-37960113						1.2	0.045			
	A0959856	BLU-37960115						1.6	1/16			
LAT-8	A1071646	BLU-379627538V	E71T-8-H8	E491T-8-H8	All	Gasless	A self-shielded all position flux-cored wire requiring no external shielding gas that is designed to weld carbon and certain low-alloy steels with excellent low temperature toughness down to -30°C (-20°F).	1.8	0.072	11.34	25	Spool - Vac-Pack
	A1071647	BLU-379627536V						2.0	5/64			
	A1071645	BLU-379627535V						1.6	1/16			





# BLUESHIELD™ CARBON STEEL FLUX-CORED WIRES

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
LAT-9	A0417413	BLU-37960823	E70T-9C-H8/ E70T-9M-H8	E492T-9-H8 E492T-9M-H8	Flat / horizontal	Rutile- based slag system	A general-purpose, single- or multi-pass wire for welding mild- to medium-carbon steels, such as structural members, pressure vessels, rolling stocks and earth-moving equipment. Steel grades include ASTM, A285, A515 Gr. 70 and A516 Gr. 70.	BLUESHIELD™ 8 CO <sub>2</sub> ARCAL™ 211	1.2	0.045	15	33	Spool
	A0417417	BLU-37960855							1.6	1/16	226.8	500	Drum
	A0417421	BLU-37960857							2.4	3/32			
	A0417419	BLU-37971401							2.0	5/64	279.42	616	Reel
	A0417422	BLU-37971403							2.4	3/32			
	A0417416	BLU-37971409							1.6	1/16	15	33	Spool
	A0417414	BLU-37971415							27.2	60	Coil		
	A0417415	BLU-37971434										2.0	5/64
	A0417420	BLU-37971435							2.4	3/32	362.88	800	Hex Drum
	A0417424	BLU-37971436							2.0	5/64	226.8	500	Drum
	A0417397	BLU-37960857HEX											
A0417396	BLU-37960856												
LAT-9LF	A0417406	BLU-37962635	E70T-9C-H8	E492T-9-H8	Flat / horizontal	Rutile- based slag system	An excellent general-purpose, single- or multi-pass wire used with CO <sub>2</sub> shielding gas for welding mild- to medium-carbon steels, particularly when less fume or smoke is desired, e.g., when welding indoors or in confined areas. Applications include structural steel and general shop fabrication.	CO <sub>2</sub>	1.6	1/16	27.2	60	Coil
	A0417409	BLU-37962637							2.4	3/32			
	A0917713	BLU-37962657							2.4	3/32	226.8	500	Drum
	A0417405	BLU-37962673							1.2	0.045	15	33	Spool
	A0417407	BLU-37962675							1.6	1/16			
LAT-9PLUS	A0417411	BLU-37963355	E70T-9C-H8/ E70T-9M-H8	E492T-9-H8 E492T-9M-H8	Flat / horizontal	Rutile- based slag system	A highly efficient single- or multi-pass wire for welding mild- to medium-carbon steels, such as structural members, pressure vessels, rolling stocks and earth-moving equipment. Also suitable for single-pass, high-speed fillet weld applications with excellent slag removal.	CO <sub>2</sub> BLUESHIELD™ 8	1.6	1/16	226.8	500	Drum
	A0417412	BLU-37963357							2.4	3/32			
	A0417410	BLU-37963373							1.2	0.045	15	33	Spool
	A0417395	BLU-37972003							2.4	3/32	279.42	616	Reel
	A0417392	BLU-37972008							2.0	5/64			
	A0417389	BLU-37972009							1.6	1/16	15	33	Spool
	A0417386	BLU-37972015							27.2	60	Coil		
	A0417388	BLU-37972034										2.0	5/64
	A0417391	BLU-37972035							2.4	3/32			
	A0417394	BLU-37972036							1.3	0.052			
A0417385	BLU-37972033												
LAT-91	A0417184	BLU-37960253	E71T-9C-H8/ E71T-9M-H8	E491T-9-H8/ E491T-9M-H8	All	Rutile- based slag system	An excellent general-purpose, all-position wire for welding mild- to medium-carbon steels typically found in structural field fabrication, steel beam manufacturing and construction. Steel grades include A36, A53, A106, A108 and A109.	CO <sub>2</sub> BLUESHIELD™ 7 BLUESHIELD™ 8 ARCAL™ 211	1.2	0.045	226.8	500	Drum
	A0417443	BLU-37971605							1.6	1/16			
	A0417439	BLU-37971606							1.2	0.045	15	33	Spool
	A0417442	BLU-37971609							1.6	1/16	279.42	616	Reel
	A0417441	BLU-37971634							27.2	60	Coil		
	A0417440	BLU-37971637							1.2	0.045			
LAT-91PLUS	A0417435	BLU-37963555	E71T-9C-H8/ E71T-9M-H8	E491T-9-H8/ E491T-9M-H8	All	Rutile- based slag system	A highly-efficient, all-position wire for welding mild- to medium-carbon steels, such as structural members, rolling stock and earth-moving equipment using CO <sub>2</sub> shielding gas.	CO <sub>2</sub> BLUESHIELD™ 8	1.6	1/16	226.8	500	Drum
	A0417436	BLU-37972105							1.2	0.045			
	A0417433	BLU-37972106							1.6	1/16	279.42	616	Reel
	A0417438	BLU-37972109							1.2	0.045	27.2	60	Coil
	A0417434	BLU-37972133							1.6	1/16			
	A0417437	BLU-37972135											



# BLUESHIELD™ CARBON STEEL FLUX-CORED WIRES

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
LA 91-T12M	A0417398	BLU-37980112	E71T-12CJ-H4, E71T-12MJ-H4	E491T-12J-H4/ E491T-12MJ-H4	All	Rutile-based slag system	A premium-quality, all-position wire intended for applications requiring weld metal toughness similar to E7018, E7018-1 low hydrogen electrodes. Typically found in heavy equipment, offshore fabrication, oil components and petrochemical environments.	CO <sub>2</sub> BLUESHIELD™ <sup>8</sup> ARCAL™ <sup>211</sup>	1.2	0.045	15	33	Spool
	A0417400	BLU-37980114							1.3	0.052			
	A0417403	BLU-37980116							1.6	1/16			
	A0417399	BLU-37980212							1.2	0.045	4.54	10	
	A0417401	BLU-37980214							1.3	0.052			
	A0417402	BLU-37980216							1.6	1/16			
	A1072761	BLU-37980136V							27.2	60	Coil - Vac-Pack		
	A1072765	BLU-37980126							113.4	250	Drum		
	A1072763	BLU-37980122							27.2	60	Coil - Vac-Pack		
	A1072762	BLU-37980134V										1.2	0.045
	A1072755	BLU-37980132V										1.3	0.052
	A1072764	BLU-37980124							113.4	250	Drum		
LA T-91 LF	A0417427	BLU-37963133	E71T-9C-H4/ E71T-9M-H4	E491T-9-H4/ E491T-9M-H4	All	Rutile-based slag system	A superior quality, all-position wire, used with CO <sub>2</sub> , Ar/CO <sub>2</sub> and Arcal™ 211 shielding gas mixes; for welding mild- to medium-carbon steels, particularly when less fume or smoke is desired, e.g., when welding indoors or in confined areas. Applications include structural steel and general shop fabrication.	CO <sub>2</sub> ARCAL™ <sup>211</sup> BLUESHIELD™ <sup>7</sup> BLUESHIELD™ <sup>8</sup>	1.2	0.045	27.2	60	Coil
	A0417429	BLU-37963134							1.3	0.052			
	A0417431	BLU-37963135							1.6	1/16			
	A0417426	BLU-37963153							1.2	0.045	226.8	500	Drum
	A0917715	BLU-37963154							1.3	0.052			
	A0417444	BLU-37963155							1.6	1/16			
	A0417447	BLU-37963172							0.9	0.035	15	33	Spool
	A0417425	BLU-37963173							1.2	0.045			
	A0417428	BLU-37963174							1.3	0.052			
	A0417430	BLU-37963175							1.6	1/16			
	A0899034	BLU-37963176							2.0	5/64	22.68	50	
	A0968904	BLU-37963185							1.6	1/16			
	A0968903	BLU-37963183							1.2	0.045			
	A0899035	BLU-37963136							2.0	5/64	27.2	60	Coil
LA T-91LMN	A1091255	BLU-37965175	E71T-9M-H8/ E71T-1M-H8	E491T-9M-H8	All	Rutile-based slag system	A premium quality, low fume, low manganese single- or multi-pass all position flux-cored wire. Typical applications include structural steel fabrication, agricultural implement manufacturing and general welding applications.	ARCAL™ <sup>211</sup> BLUESHIELD™ <sup>8</sup>	1.6	1/16	15	33	Spool
	A1091254	BLU-37965173							1.2	0.045			
	A1186649	BLU-37965174							1.3	0.052			
LA T-91LMN-C	A1126306	BLU-37966175	E71T-9C-H8	E491T-9-H8	All	Rutile-based slag system	A premium quality, low fume, low manganese single- or multi-pass all position flux-cored wire designed to weld carbon steels, 100% CO <sub>2</sub> shielding gas. Typical applications, structural steel fabrication, agricultural implement manufacturing and general welding applications.	CO <sub>2</sub>	1.6	1/16	15	33	Spool
	A1126305	BLU-37966173							1.2	0.045			
	A1166064	BLU-37966153							226.8	500	Drum		
	A1190482	BLU-37966174							1.3	0.052	15	33	Spool



# BLUESHIELD™ LOW-ALLOY STEEL FLUX-CORED WIRES

All BLUESHIELD™ low-alloy steel flux-cored wires come conveniently packaged in 15 kg (33 lbs) spools or 27.2 kg (60 lbs) coils.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
LA 81T-A1	A0417315	BLU-37961573	E81T-1-A1C-H8/ E81T-1-A1M-H8	—	All	Rutile-based slag system, low-alloy steels 1/2% Mo	Used for the fabrication and erection of boilers, pressure pipes, tubing and pressure vessel applications. Steel grade include ASTM, A161, A204 and A302 gr. A. The weld metal analysis is similar to LA 7018-A1 low-hydrogen electrodes.	—	1.2	0.045	15	33	Spool
	A0417316	BLU-37961575							1.6	1/16			
LA 81T-B2	A0417317	BLU-37960773	E81T-1-B2C-H8/ E81T-1-B2M-H8	—	All	Rutile-based slag system, low-alloy steels 1 1/4% Cr/ 1/2% Mo	Single- or multi-pass, all-position welding of certain Cr/ Mo-bearing steels commonly found in the fabrication of boilers and pressure vessels using a CO <sub>2</sub> shielding gas medium. The weld metal analysis is similar to LA 8018-B2 low-hydrogen electrodes.	—	1.2	0.045	15	33	Spool
	A0417318	BLU-37960775							1.6	1/16			
LA 81T-Ni2	A0417319	BLU-37961673	E81T-1-Ni2C-H8/ E81T-1-Ni2M-H8	E551T-1-Ni2C-H8/ E551T-1-Ni2M-H8	All	Rutile-based slag system, low-alloy steels 2% Ni	A versatile wire used for welding ASTM steel grades, A572, A575 and A573 using CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gas mixtures. Applications include shipbuilding, earth-moving and mining equipment.	CO <sub>2</sub> BLUESHIELD™ 8	1.2	0.045	15	33	Spool
	A0417320	BLU-37961675							1.6	1/16			
	A0893648	BLU-37961674							1.3	0.052			
LA 81T-W2	A0417695	BLU-37966673	E81T-1-W2C-H8/ E81T-1-W2M-H8	E551T-1-W2C-H8/ E551T-1-W2M-H8	All	Rutile-based slag system, low-alloy steels Cu/Ni	Used to weld weathering grade steels, for example "Cor-ten", ASTM A242 and A588 with CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gas mixtures.	CO <sub>2</sub> BLUESHIELD™ 8	1.2	0.045	15	33	Spool
	A0417697	BLU-37966675							1.6	1/16			
	A0417696	BLU-37966674							1.3	0.052			
LA 91T-H3	A0417698	BLU-37961473	E91T-1-B3C-H16/ E91T-1-B3M-H16	—	All	Rutile-based slag system, low-alloy steels 2 1/4% Cr/ 1% Mo	Used for all-position welding of ASTM steel grades, A387 gr. 22 and A335 P22 pipes involved in high-temperature service applications requiring good corrosion and creep resistance.	—	1.2	0.045	15	33	Spool
LA T-91C60 NiTi	A0417329	BLU-37978104	E81T-1-Ni1C-H4/ E81T-1-Ni1M-H4	E551T-1-Ni1C-JH4/ E551T-1-Ni1M-JH4	All	Rutile-based slag system, low-alloy steels 1% Ni	Used to weld a wide range of low and medium-carbon steels requiring impact properties down to -40°C (-40°F) when using CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gases. Applications include bridge construction, offshore platforms and heavy equipment. Also suitable for single-pass, high-speed fillet weld applications with excellent slag removal.	CO <sub>2</sub> BLUESHIELD™ 8	1.6	1/16	27.2	60	Coil
	A0417324	BLU-37978105							15	33	Spool		
	A0417321	BLU-37978106							1.2	0.045	27.2	60	Coil
	A0417322	BLU-37978107	E81T-1-Ni1C-H4/ E81T-1-Ni1M-H4						1.6	1/16	15	33	Spool - Vac-Pack
	A0417323	BLU-37978105V							27.2	60	Coil - Vac-Pack		
	A0417325	BLU-37978104V							1.2	0.045	226.8	500	Drum
	A0902325	BLU-37978116	1.3						0.052	27.2	60	Coil	
	A0893650	BLU-37978102	1.6						1/16	226.8	500	Drum	
	A0902324	BLU-37978115											

Manufactured upon request.



# BLUESHIELD™ LOW-ALLOY STEEL FLUX-CORED WIRES

All BLUESHIELD™ low-alloy steel flux-cored wires come conveniently packaged in 15 kg (33 lbs) spools or 27.2 kg (60 lbs) coils.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	CSA/CWB APPROVED SHIELDING GASES	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
LA 111T-K3C	A0417300	BLU-37961973	E111T-1-K3C-H8	—	All	Rutile-based slag system, low-alloy steels	Used for all-position welding of high-strength steels requiring a minimum of 760 MPa (110 ksi) with CO <sub>2</sub> shielding gas.	—	1.2	0.045	15	33	Spool
	A0417302	BLU-37961975							1.6	1/16			
	A0417301	BLU-37961933							1.2	0.045	27.2	60	Coil
	A0417303	BLU-37961935							1.6	1/16			
LA 111T-K3M	A0417304	BLU-37961873	E111T-1-K3MJ-H4	E761T1-K3M-JH4	All	Rutile-based slag system, low-alloy steels	Specifically designed for use with Ar/CO <sub>2</sub> shielding gas mixtures when all-position welding high-strength steels, such as ASTM, A514, HY100 and T-1. Weld deposit similar to E11018-M low-hydrogen electrodes.	BLUESHIELD™ 8	1.2	0.045	15	33	Spool
	A0417307	BLU-37961875							1.6	1/16			
	A0417308	BLU-37961835							1.2	0.045	27.2	60	Coil
	A0417305	BLU-37961833							1.6	1/16			
LA 115T5-K3	A0417309	BLU-37962573	E110T-5-K3C	—	Flat / horizontal	Rutile-based slag system, low-alloy steels	For welding high-strength steel grades such as ASTM, A514, HY100 and T-1 when low-temperature impact properties are a primary concern.	—	1.2	0.045	15	33	Spool
	A0417310	BLU-37962575							1.6	1/16			
	A0417312	BLU-37962577							2.4	3/32	27.2	60	Coil
	A0417311	BLU-37962557							—	—			
LA 120T5-K4	A0417313	BLU-37962973	E120T5-K4C	—	Flat / horizontal	Rutile-based slag system, low-alloy steels	For single- or multi-pass welding of high-strength steel grades using CO <sub>2</sub> shielding gas. Steel grades include T-1, HY80, HY90, Naxtra 90, 100 and 110 series.	—	1.2	0.045	15	33	Spool
	A0917714	BLU-37962975							1.6	1/16			
LA-T-91K2	A0417326	BLU-37979006	E91T1-K2C-H8/ E91T1-K2M-H8	E621T1-K2-H8/ E621T1-K2M-H8	All	Rutile-based slag system, low-alloy steels	Used for all-position welding of high-strength, low-alloy steels requiring good low-temperature toughness properties using CO <sub>2</sub> or Ar/CO <sub>2</sub> shielding gas mixtures. Steel grades include: HY80, ASTM A710, A514 and A517.	CO <sub>2</sub> , BLUESHIELD™ 7 BLUESHIELD™ 8	1.2	0.045	15	33	Spool
	A0417327	BLU-37979005							1.6	1/16			

Manufactured upon request.



**WITH BLUESHIELD™ GASES, YOU HAVE THE RIGHT MIXTURE FOR ANY LOW-ALLOY GAS-SHIELDED FCAW WIRES.**





Brazing is universally used in the industry because it's economical, easy to do, and produces strong welds and leak-tight joints.

Brazing is a joining process whereby a non-ferrous filler metal or alloy is heated to a melting temperature (above 450°C/800°F) and distributed between two or more close-fitting parts by capillary action.

**IF A SILVER ALLOY IS USED, THE PROCESS IS REFERRED TO AS “SILVER BRAZING”.**

In another similar usage, brazing is the use of a bronze or brass filler rod coated with flux, together with an oxy-acetylene torch, to join pieces of steel. The American Welding Society prefers to use the term “Braze Welding” for this process, as capillary attraction is not involved (unlike the prior silver brazing example).

**BASIC BRAZING PROCEDURE:**

1. Determine joint spacing
2. Choose the right brazing alloy
3. Eliminate grease and contaminants using cleaner and stainless steel brush
4. Add flux
5. Position parts carefully
6. Turn on the heat
7. Clean joints





## BRAZE WELDING

### BLUESHIELD™ MILD STEEL GAS BRAZE WELDING RODS

BLUESHIELD™ mild steel, copper-coated, oxy-acetylene gas welding rods are made of high-quality carbon steel of uniform and tightly controlled analysis. These rods produce quality welds of up to 70 ksi tensile strength. Ideal general-purpose rods for welding all low-carbon steels.

NAME	A NUMBER	MFG	AWS CLASS	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
HERCULES IRON	A0362328	BLU-46851004	R45	Oxy-fuel welding deoxidized rod	General oxy-fuel welding structural steel, plates. Minimum strength 310 MPa (45 ksi).	1.6	1/16	4.54	10
	A0362329	BLU-46851006				2.4	3/32		
	A0362330	BLU-46851008				3.2	1/8		
	A0362331	BLU-46851012				5.0	3/16		
SUPERWELD	A0362332	BLU-46661004	R60	Oxy-fuel welding deoxidized rod	Oxy-fuel welding steels up to 0.30% carbon piping, pressure vessels, structural steels. Minimum strength 410 MPa (60 ksi).	1.6	1/16	4.54	10
	A0362333	BLU-46661006				2.4	3/32		
	A0362334	BLU-46661008				3.2	1/8		
HI-TENSILE	A0362341	BLU-46601304	R65 et ER70S-3	GTAW and oxy-fuel welding, highly-deoxidized rod	GTAW and oxy-fuel welding on carbon and high-tensile steels. Piping, tubing, pressure vessels. Minimum strength 480 MPa (70 ksi).	1.6	1/16	4.54	10
	A0362342	BLU-46601306				2.4	3/32		
	A0362343	BLU-46601308				3.2	1/8		
ER70S-2	A0362337	BLU-46307204	ER70S-2	GTAW welding, triple-deoxidized rod (Al, Ti, Zr)	GTAW and oxy-fuel welding on carbon and high-tensile steels, piping, tubing, pressure vessels. This triple deoxidized rod (aluminum, titanium, zirconium) can be used for welding over rust, dirty surface and mill scale. Minimum strength 480 MPa (70 ksi).	1.6	1/16	4.54	10
	A0362338	BLU-46307206				2.4	3/32		
	A0362339	BLU-46307208				3.2	1/8		
	A0362340	BLU-46307210				4.0	5/32		

**NOTE:** Rod length = 914 mm (36") / 5 tubes of 4.54 kg (10 lbs) or 5 tubes of 2.27 kg (5 lbs) in 22.68 kg (50 lbs) package.

### BLUESHIELD™ BRONZE AND SILICON BRONZE GAS BRAZE WELDING RODS

Low-fume bronze and silicon bronze gas welding rods are made from copper/tin alloy to produce a rod that flows easily, joins a variety of metals including cast and malleable iron, galvanized steel, bronze, copper and steel.

NAME	A NUMBER	MFG	AWS CLASS	TYPE	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
Everdur 656	A0362396	BLU-42175004	ERCuSi-A	Silicon bronze is copper alloyed with 1% to 3% silicon. Then about 1% iron, nickel, or manganese is added.	Very versatile welding alloy for steels, copper and copper alloys, galvanized steel and Everdur structure.	1.6	1/16	4.54	10
	A0362397	BLU-42175006				2.4	3/32		
	A0362398	BLU-42175008				3.2	1/8		
	A0418574	BLU-39973035	ERCuSi-A			0.9	0.035	0.9	2
	A0418575	BLU-39972035				12	0.045	13.61	30
	A0418577	BLU-39972045						0.9	2
A0418576	BLU-39973045								
FL Bronze	A0362270	BLU-42174006	RCuZn-C	Bare low-fumes brazing rod	High strength and ductility bronze for steel, cast iron, cast steel and brass, copper and bronze.	2.4	3/32	2.27	5
	A0362271	BLU-42174008				3.2	1/8		
	A0362272	BLU-42174012				5.0	3/16		
	A0362273	BLU-42174016	6.0			1/4	4.54	10	
	A0362269	BLU-42174004	RCuZn-C			1.6	1/16	2.27	5
Super Bronze	A0362291	BLU-42971006	RCuZn-C	Flux-coated low-fumes brazing rod Green coating	High strength and ductility bronze for steel, cast iron, cast steel and brass, copper and bronze.	2.4	3/32	2.27	5
	A0362292	BLU-42971008				3.2	1/8		
	A0362293	BLU-42971012				5.0	3/16		

**NOTE:** Rod length = 914 mm (36") / 5 tubes of 4.54 kg (10 lbs) or 5 tubes of 2.27 kg (5 lbs) in 22.68 kg (50 lbs) master box. **Bare bronze rods require flux.**



## BRAZING

### SIL-FOS BRAZING ALLOYS:

This group of alloys allows the joining of copper to copper without a flux and copper-based alloys (brass and bronze with a flux). Sil-Fos is the workhorse filler metal used in the refrigeration and air conditioning industries.

**FLUX SELECTION: THESE ALLOYS ARE SELF-FLUXING ON COPPER BUT HANDY FLUX IS NEEDED FOR BRASS.**

APPLICATION	NAME	A NUMBER	MFG	AWS CLASS	COMMENTS	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
To join copper or brass with copper or brass	Brazing Rod Sil-Fos 5	A0183372	32136	BCUP-3	Recommended for use where a close fit-up cannot be maintained.	2.4	3/32	11.34	25
		A0892181	30410	BCUP-5				11.34	25
	Brazing Rod Sil-Fos 15	A0905355	31897		BCUP-5	3.2	1/8	0.45	1.0
		A0362238	K84151	2.4		3/32	0.5	1.1	

## SILVER BRAZING

### HIGH SILVER BRAZING ALLOYS:

These high silver brazing alloys facilitate the joining of steel, brass, stainless steel, etc. They are used for refrigeration and other applications.

**FLUX SELECTION: HANDY FLUX**

APPLICATION	NAME	A NUMBER	MFG	AWS CLASS	COMMENTS	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
To join copper or brass with steel	Brazing Wire 401	A0911111	62197	-	Use on copper, brass, nickel-silver, bronze and other non-ferrous alloys as well as mild steel, stainless steel, nickel and Monel metal.	1.6	1/16	2	4.4
		A0417726	98010	BAG-36	General-purpose filler metal for joining ferrous, non-ferrous and dissimilar metals with large joint clearances.			0.03	0.066
	Brazing Wire 452	A0236331	32452W1501			BAG-36	General-purpose filler metal for joining ferrous, non-ferrous and dissimilar metals with large joint clearances.	2.4	3/32
		A0236328	32452W2501						
	Brazing Wire Braze 560	A0417144	32560W1502	BAG-7	Lowest temperature, Cadmium-free filler metal.	1.6	1/16	2	4.4
	Brazing Wire Easy-Flo 45	A0417158	98298	BAG-1	Joining ferrous, non-ferrous and dissimilar metals with close joint clearances. Contains Cadmium.			0.16	0.011
	Brazing Wire Silvaloy 560	A0417143	62163		BAG-1			Lowest temperature, Cadmium-free filler metal.	1
		A0374222	62161	BAG-1				Joining ferrous, non-ferrous and dissimilar metals with close joint clearances. Contains Cadmium.	0.03
	Silver Solder Easy-Flo 45	A0168788	31450W1525		BAG-1				
		A0417156	98296	BAG-1					

Joining ferrous, non-ferrous and dissimilar metals with close joint clearances. Contains Cadmium.

General-purpose filler metal for joining ferrous, non-ferrous and dissimilar metals with large joint clearances.

Lowest temperature, Cadmium-free filler metal.

Use on copper, brass, nickel-silver, bronze and other non-ferrous alloys as well as mild steel, stainless steel, nickel and Monel metal.

Joining ferrous, non-ferrous and dissimilar metals with close joint clearances. Contains Cadmium.

## SOLDERING

### FLUX SELECTION: HANDY FLUX TYPE B-1

APPLICATION	NAME	A NUMBER	MFG	AWS CLASS	COMMENTS	DIA. MM	DIA. IN	PACK. KG	PACK. LBS
To join copper, brass or steel to stainless steel	Brazing Wire 505	A0417122	HAN-82525	BAG-24	For 300 series stainless steel food handling equipment with close joint tolerances.	1.6	1/16	0.25	0.6

For 300 series stainless steel food handling equipment with close joint tolerances.



## FLUX

### HANDY FLUX:

is an all-purpose flux for use in brazing both ferrous and non-ferrous metals and alloys.

#### FLUX SELECTION: HANDY FLUX TYPE A-1 AND HANDY FLUX TYPE B-1

NAME	A NUMBER	MFG	APPLICATION	PACK. KG	PACK. LBS
Handy Brazing Flux	A0282822	73103	All purpose, low temperature flux for use in brazing both ferrous and non-ferrous metals and alloys	2.27	5
Flux Brazing Flux	A0282819	3200	All purpose, low temperature flux for use in brazing both ferrous and non-ferrous metals and alloys	0.2	0.4
Handy Brazing Flux	A0916198	97032	All purpose, low temperature flux for use in brazing both ferrous and non-ferrous metals and alloys	0.454	1

All purpose, low temperature flux for use in brazing both ferrous and non-ferrous metals and alloys.

## BLUESHIELD™ ALUMINUM

BLUESHIELD™ Crystal aluminum wire and rods are manufactured to the highest quality standards and undergo unique testing methods in order to ensure maximum feedability and weld quality. Our BLUESHIELD™ Crystal is your best choice to achieve the best possible welds: every time, every spool.



### BLUESHIELD™ ALUMINUM WIRE FOR GMAW (MIG)

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
CRYSTAL 4043	A0418001	BLU-20443108W	ER4043	ER4043	Alloy 4043 is one of the most widely used general-purpose aluminum welding alloys containing silicon to lower the melting point and improve fluidity and wetting action. BLUESHIELD™ Crystal 4043 produces a bright weld with very good appearance and offers excellent resistance to weld cracking.	0.8	0.030	0.45	1	Spool
	A0418002	BLU-20443109W				0.9	0.035			
	A0418004	BLU-20443112W				1.2	3/64			
	A0418003	BLU-20443809W				0.9	0.035	7.26	16	
	A0418005	BLU-20443812W				1.2	3/64	9.07	20	
	A0418006	BLU-20443816W				1.6	1/16			
CRYSTAL 5356	A0418007	BLU-20456108W	ER5356	ER5356	Alloy 5356 is the most popular of the high-magnesium welding filler metal alloys and is typically chosen for its relatively high strength and good feedability characteristics. BLUESHIELD™ Crystal 5356 has high compatibility with many base metals and is suitable for many applications, but is not recommended for elevated temperature service above 65°C (150°F).	0.8	0.030	0.45	1	Spool
	A0418008	BLU-20456109W				0.9	0.035			
	A0418010	BLU-20456112W				1.2	3/64			
	A0418009	BLU-20456809W				0.9	0.035	7.26	16	
	A0418011	BLU-20456812W				1.2	3/64	9.07	20	
	A0418012	BLU-20456816W				1.6	1/16			

**NOTE:** 4043 and 5356 grades are CWB certified to CSA standards. BLUESHIELD™ aluminum may meet code requirements other than those listed. Please consult your local representative for a complete listing of the current code certifications of our electrodes.

### BLUESHIELD™ ALUMINUM ROD FOR GTAW (TIG)

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	APPLICATION	DIA. MM	DIA. IN	PACK. KG	PACK. LBS	PACKAGING
CRYSTAL 4043	A0362459	BLU-20343416T	ER4043	ER4043	Alloy 4043 is one of the most widely used general-purpose aluminum welding alloys containing silicon to lower the melting point and improve fluidity and wetting action. BLUESHIELD™ Crystal 4043 produces a bright weld with very good appearance and offers excellent resistance to weld cracking.	1.6	1/16	4.54	10	Box
	A0362460	BLU-20343424T				2.4	3/32			
	A0362461	BLU-20343432T				3.2	1/8			
CRYSTAL 5356	A0362462	BLU-20356416T	ER5356	ER5356	Alloy 5356 is the most popular of the high-magnesium welding filler metal alloys and is typically chosen for its relatively high strength and good feedability characteristics. BLUESHIELD™ Crystal 5356 has high compatibility with many base metals and is suitable for many applications, but is not recommended for elevated temperature service above 65°C (150°F).	1.6	1/16	4.54	10	Box
	A0362463	BLU-20356424T				2.4	3/32			
	A0362464	BLU-20356432T				3.2	1/8			

**NOTE:** 4043 and 5356 grades are CWB certified to CSA standards. BLUESHIELD™ aluminum may meet code requirements other than those listed. Please consult your local representative for a complete listing of the current code certifications of our electrodes.



## BLUESHIELD™ SMAW STAINLESS CONSUMABLES

BLUESHIELD™ 620, 622 and 624 stainless steel electrodes offer the same consistency in operator appeal, quality and performance the industry has come to expect. These electrodes are characterized by their distinctive smooth spray-type metal transfer, self-peeling slag, minimal spatter and superior weld bead profile for welding the most common grades of austenitic stainless steels.



NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. PO	PACK. KG	PACK. LBS
BLUESHIELD™ 620-308L	A0275327	BLU-10800825	E308L-17	E308L-17	All	Rutile-Acid	Used to weld common "18-8" type austenitic stainless steels. E.g., ASTM A 240 types 302, 304/304L.	2.5	3/32	3 x 3.63	3 x 8
	A0275328	BLU-10800832						3.2	1/8		
	A0275329	BLU-10800840						4.0	5/32		
	A0275330	BLU-10800850						5.0	3/16	3 x 4.54	3 x 10
BLUESHIELD™ 622-316L	A0275331	BLU-10801625	E316L-17	E316L-17	All	Rutile-Acid	For welding corresponding steel grades ASTM 316/316L.	2.5	3/32	3 x 3.63	3 x 8
	A0275332	BLU-10801632						3.2	1/8		
	A0275333	BLU-10801640						4.0	5/32		
	A0275334	BLU-10801650						5.0	3/16	3 x 4.54	3 x 10
BLUESHIELD™ 624-309L	A0275335	BLU-10800925	E309L-17	E309L-17	All	Rutile-Acid	Used to weld higher alloyed austenitic stainless steels or for dissimilar welding applications. E.g., carbon to stainless.	2.5	3/32	3 x 3.63	3 x 8
	A0275336	BLU-10800932						3.2	1/8		
	A0275337	BLU-10800940						4.0	5/32		
	A0275338	BLU-10800950						5.0	3/16	3 x 4.54	3 x 10

\* Some products are also naval-approved. Contact your local representative for more information.

## BLUESHIELD™ GTAW STAINLESS CONSUMABLES

All BLUESHIELD™ 630 series GTAW (TIG) stainless steel consumables are laser imprinted with positive AWS identification and heat numbers to provide full product traceability for those demanding code-quality jobs. The standard packaging is convenient 4.5 kg / 9.92 lbs tubes, with four tubes per master carton (18 kg / 39.68 lbs).



NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. PO	PACK. KG	PACK. LBS
BLUESHIELD™ 630-308L	A0362667	BLU-10340816	ER308L	ER308L	All	Solid	Used to weld common "18-8" type austenitic stainless steels.	1.6	1/16	4 x 4.5	4 x 10
	A0362668	BLU-10340824						2.4	3/32		
	A0362669	BLU-10340832						3.2	1/8		4 x 10
BLUESHIELD™ 630-316L	A0362673	BLU-10341616	ER316L	ER316L	All	Solid	For welding corresponding steel grades ASTM 316/316L.	1.6	1/16	4 x 4.5	4 x 10
	A0362674	BLU-10341624						2.4	3/32		
	A0362675	BLU-10341632						3.2	1/8		
BLUESHIELD™ 630-309L	A0362670	BLU-10340916	ER309L	ER309L	All	Solid	For welding higher alloyed austenitic stainless steels or dissimilar welding applications, e.g., carbon to stainless.	1.6	1/16	4 x 4.5	4 x 10
	A0362671	BLU-10340924						2.4	3/32		
	A0362672	BLU-10340932						3.2	1/8		



## BLUESHIELD™ GMAW STAINLESS CONSUMABLES

BLUESHIELD™ 640 series stainless steel wires are designed for those high-quality stainless welding jobs. All products are packaged on convenient plastic spools and Precision Level Wound (PLW) to provide the best feedability and weld quality possible.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. PO	PACK. KG	PACK. LBS
BLUESHIELD™ 640-308L	A0418262	BLU-10470809W	ER308L	ER308L	All	Solid	Ideal for welding types 304L, 321 and 347 stainless steels.	0.9	0.035	15	33
	A0418263	BLU-10470812W						1.14	0.045		
BLUESHIELD™ 640-308L HiSi	A0418257	BLU-10470808SIW	ER308LSi	ER308LSi	All	Solid	Used to weld equipment made with 304 and 304L stainless grades.	0.8	0.030	15	33
	A0418258	BLU-10470809SIW						0.9	0.035		
	A0418259	BLU-10470812SIW						1.14	0.045		
BLUESHIELD™ 640-309L	A0418271	BLU-10470909W	ER309L	ER309L	All	Solid	Preferred for cladding over carbon or low-alloy steels, as well as for dissimilar welding applications.	0.9	0.035	15	33
	A0418272	BLU-10470912W						1.14	0.045		
BLUESHIELD™ 640-309L HiSi	A0418265	BLU-10470908SIW	ER309LSi	ER309LSi	All	Solid	Similar chemical composition as 309L, with higher silicon content to improve bead appearance.	0.8	0.030	15	33
	A0418266	BLU-10470909SIW						0.9	0.035		
	A0418267	BLU-10470912SIW						1.14	0.045		
BLUESHIELD™ 640-316L	A0418279	BLU-10471609W	ER316L	ER316L	All	Solid	Primarily used for welding low carbon molybdenum-bearing austenitic alloys.	0.9	0.035	15	33
	A0418280	BLU-10471612W						1.14	0.045		
BLUESHIELD™ 640-316L HiSi	A0418274	BLU-10471608SIW	ER316LSi	ER316LSi	All	Solid	Similar chemical composition as 316L, with higher silicon content to improve bead appearance.	0.8	0.030	15	33
	A0418275	BLU-10471609SIW						0.9	0.035		
	A0418276	BLU-10471612SIW						1.14	0.045		

## BLUESHIELD™ FCAW STAINLESS CONSUMABLES

BLUESHIELD™ 650, 652 and 654 stainless steel wires offer the same consistency in operator appeal, quality and performance the industry has come to expect of our BLUESHIELD™ carbon steel FCAW wires. These wires offer a distinctive, smooth, spray-type metal transfer, self-peeling slag, minimal spatter and superior weld bead profile.

BLUESHIELD™ 650P, 652P and 654P stainless steel wires offer enhanced all-position welding characteristics, specifically designed for vertical-up and overhead welding. These wires are characterized by their fast-freezing slag, spray-type metal transfer, easy-slag removal, minimal spatter and a smooth flat bead profile when welding in the vertical-up and overhead positions.

NAME	A NUMBER	MFG	AWS CLASS	CSA/CWB CLASS	POSITION	TYPE	APPLICATION	DIA. MM	DIA. PO	PACK. KG	PACK. LBS
BLUESHIELD™ 650-308L	A0417621	BLU-10900812F	E308LT0-1 E308LT0-4	E308LT0-1 E308LT0-4	Flat	Rutile	Used to weld common "18-8" type austenitic stainless steels.	1.2	0.045	15	33
	A0975844	BLU-10900816F						1.6	0.062		
BLUESHIELD™ 650P-308L	A0417622	BLU-10900812P	E308LT1-1 E308LT1-4	E308LT1-1 E308LT1-4	All	Rutile	Vertical-up and overhead welding of grades 304 and 304L.	1.2	0.045	15	33
	A0168348	BLU-10900816P						1.6	0.062		
BLUESHIELD™ 652-316L	A0417623	BLU-10901612F	E316LT0-1 E316LT0-4	E316LT0-1 E316LT0-4	Flat	Rutile	For welding corresponding steel grades ASTM 316/316L.	1.2	0.045	15	33
	A0417624	BLU-10901616F						1.6	0.062		
BLUESHIELD™ 652P-316L	A0417626	BLU-10901612P	E316LT1-1 E316LT1-4	E316LT1-1 E316LT1-4	All	Rutile	Vertical-up and overhead welding of grades 316 and 316L.	1.2	0.045	15	33
	A0417627	BLU-10901616P						1.6	0.062		
BLUESHIELD™ 654-309L	A0417628	BLU-10900912F	E309LT0-1 E309LT0-4	E309LT0-1 E309LT0-4	Flat	Rutile	For welding higher alloyed austenitic stainless steels or dissimilar welding applications.	1.2	0.045	15	33
	A0417629	BLU-10900916F						1.6	0.062		
BLUESHIELD™ 654P-309L	A0417631	BLU-10900912P	E309LT1-1 E309LT1-4	E309LT1-1 E309LT1-4	All	Rutile	For welding higher alloyed austenitic stainless steels or dissimilar welding applications.	1.2	0.045	15	33
	A0417632	BLU-10900916P						1.6	0.062		

\* Some products are also naval-approved. Contact your local representative for more information.



## PACKAGING INFORMATION

FILLER METAL GROUP	PRODUCT TITLE	PALLET WEIGHT		UNIT PER PALLET	
		DIAMETER OR PACKAGE TYPE	PALLET WEIGHT		
SMAW	BLUESHIELD™ Mild-Steel Electrodes (All except LA 7024 5.0 and 6.0 mm)	2.5 mm	900 kg (1,980 lbs)	90 master box (4 small boxes of 2.5 kg / 5.5 lbs)	
		3.2, 4.0, 5.0 mm	1,000 kg (2,200 lbs)	50 master box (4 small boxes of 5 kg / 11 lbs)	
		6.0 mm	900 kg (1,980 lbs)	50 master box (4 small boxes of 4.5 kg / 10 lbs)	
	BLUESHIELD™ LA 7024	5.0, 6.0 mm	900 kg (1,980 lbs)	50 master box (4 small boxes of 4.5 kg / 10 lbs)	
	BLUESHIELD™ Low-Hydrogen Electrodes and Low-Alloy Electrodes (All except LA 7028)	2.5 mm	900 kg (1,980 lbs)	90 master box (4 small boxes of 2.5 kg / 5.5 lbs)	
		3.2, 4.0, 5.0, 6.0 mm	1,000 kg (2,200 lbs)	50 master box (4 small boxes of 5 kg / 11 lbs)	
	BLUESHIELD™ LA 7028	3.2, 4.0 mm	900 kg (1,980 lbs)	50 master box (4 small boxes of 4.5 kg / 10 lbs)	
		5.0 mm	800 kg (1,760 lbs)	50 master box (4 small boxes of 4 kg / 8.8 lbs)	
	All SMAW Products	<b>PALLET SIZE</b>			
		300 mm (12") length: 864 x 1,067 mm (34" x 42")			
350 mm (14") length: 787 x 991 mm (31" x 39")					
450 mm (18") length: 864 x 1,067 mm (34" x 42")					
GMAW	LAS-3 / LAS-6	All 20 kg (44 lbs) spool	1,080 kg (2,380.9 lbs)	54 x 20 kg (44 lbs) spool	
FCAW / MCAW	All Products	15 kg (33 lbs) spool	810 kg (1,785.7 lbs)	54 x 15 kg (33 lbs) spool	
		20.4 kg (45 lbs) spool	1,101.6 kg (2,428.6 lbs)	54 x 20.4 kg (45 lbs) spool	
		27.2 kg (60 lbs) coil	761.6 kg (1,679 lbs)	28 x 27.2 kg (60 lbs) coil	
GTAW AND RODS	BLUESHIELD™ Gas-welding and GTAW Mild-Steel Rods	All	454 kg (1,000 lbs)	20 master box (5 small tubes of 4.5 kg / 10 lbs)	
	BLUESHIELD™ Brazing-Copper Based Rods	All (Except below)	454 kg (1,000 lbs)	20 master box (10 small tubes of 2.27 kg / 5 lbs)	
		FL Bronze (Bare) 6.0 mm	454 kg (1,000 lbs)	20 master box (5 small tubes of 4.54 kg / 10 lbs)	
ALUMINUM	BLUESHIELD™ Crystal 4043 and 5356	0.45 kg (1 lbs) spool	900 kg (2,000 lbs)	100 master box (20 spools of 0.45 kg / 1 lbs)	
		9.1 kg (20 lbs) spool	737 kg (1,620 lbs)	81 x 9.1 kg (20 lbs) spool	
		4.5 kg (10 lbs) tubes	720 kg (1,600 lbs)	160 x 4.5 kg (10 lbs) tubes	



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# TOOLS & WELDING ACCESSORIES

## SECTION VI

CARTS | REPLACEMENT WHEELS | MAGNETIC CYLINDER CARTS AND CYLINDER WALL BRACKETS | INDUSTRIAL AND PROPANE CYLINDER CAGES | BLUESHIELD™ WELDING CABLE AND CABLE CONNECTORS | CABLE LUGS | BLUESHIELD™ ELECTRODE HOLDERS AND GROUND CLAMPS | BLUESHIELD™ MIG PLIERS | GRADE HOSE | WRENCHES | BLUESHIELD™ SCRATCH BRUSHES | FILLET WELD GAUGES | BLUESHIELD™ GOUGING CARBON ELECTRODES | BLUESHIELD™ TUNGSTEN ELECTRODES





# CARTS

## CYLINDER CARTS



A0244062



A0244050



A0244031



A0244042



A0244010 /  
A0244011

A NUMBER	MFG	NAME	CYLINDER SIZE		FEATURES	HEIGHT		WIDTH		WEIGHT	
			OXYGEN	ACETYLENE		MM	IN	MM	IN	KG	LBS
A0244031	RV-8	"B" TANK CART	—	2	"B" tank cylinder cart.	635	25	178	7	2.27	5
A0244011	RV-ALTOP	ALTOP™ DUO	44	23	Cart for ALTOP™ cylinders. Special features: elevation for acetylene cylinders, safety belt, lockable toolbox.	1,219	48	737	29	16.8	37
A0244010	RV-ALTOPB1	ALTOP™ DUO	44	23	Cart for ALTOP™ cylinders. Special features: elevation for acetylene cylinders, safety belt, lockable toolbox and 3" wheel for better stability on B1 model.	1,219	48	737	29	25	55
A0244042	RV-DUO	OXY-FUEL DUO	16	14	Transport cylinders safely and easily with this cart keeping cylinders locked firmly in their place. For cylinders equipped with tulip caps. Special support position in the back of cart when it is in horizontal position. Lockable toolbox. Hooks on cart for oxy-acetylene hoses.	1,118	44	635	25	16.8	37
A0244050	RV-DUOJR	OXY-FUEL JUNIOR DUO	9	8	Easy transportation with special locking device keeping cylinders in place at top and bottom. For cylinders with tulip caps.	991	39	483	19.25	5.9	13
A0244062	RV-ALBEE	ALBEE™ DUO	11	14	Cart for 2 cylinders ALBEE™. Special features: lidless toolbox, safety belt.	965	38	660	26	11.34	25



## CARTS

### CYLINDER CARTS

Compressed gas cylinders can be hazardous. Precautions must be observed when storing, handling and moving compressed gas cylinders.

When moving a cylinder, all the valves should be closed, the regulator removed and the valve cap installed unless using ALTOP™ or ALBEE™ cylinders.

Air Liquide offers strong and compact carts with excellent balance and maneuverability. All models feature a cylinder hold-down chain and some are equipped with a toolbox.

The **A0244030** model handles large cylinders and is ideal for construction jobs or large shops. Designed with high-floor clearance to move easily over rough surfaces or cluttered areas, it is equipped with an extra-large tool box and a cylinder hold-down chain.



A NUMBER***	MFG	WHEEL DIAMETER AND TYPE	CYLINDER SIZE	HEIGHT		WIDTH		WEIGHT	
				MM	IN	MM	IN	KG	LBS
A0244053	RV-44-22R*	254 mm (10") Semi-pneumatic wheels	Oxy 44 and Ace 23	965.2	38	635	25	12.7	28
A0244051	RV-44-22BR*	254 mm (10") Semi-pneumatic wheels	Oxy 44 and Ace 23	978	38.5	444.5	17.5	11.8	26
A0244046	RV-69-44R*	355.6 mm (14") Semi-pneumatic wheels	Oxy 44 and Ace 69	1,066.8	42	838.2	33	18.6	41
A0244044 A0244045	RV-9-8* RV-9-8C*	152.4 mm (6") Semi-pneumatic wheels	Oxy 9 and Ace 8	991	39	482.6	19	5	11
A0244039	RV-44MRB2	254 mm (10"), Semi-pneumatic wheels with 3" back wheel and brake. Better safety: cart designed for better stability	Nitrogen 50 or 50 XPR	1,118	44	432	17	9.53	26
A0244030	RVJUMBOSECPL**	533 mm (21"), Pneumatic wheels with hub	Oxy 44 and Ace 69	1,397	55	1,016	40	68	150

\*Lidless toolbox

\*\*Lockable toolbox

\*\*\*Other models are available on request

## REPLACEMENT WHEELS

**THESE REPLACEMENT WHEELS ARE FOAM FILLED SO CART TIRES NEVER FLATTEN AND ALWAYS ROLL SMOOTHLY.**

A NUMBER	MFG	DESCRIPTION
A0415612	RV-15 F	254 mm (10") foam cylinder cart wheels (Polyurethane)
A0415613	RV-25 F	406 mm (16") foam cylinder cart wheels (Polyurethane)



A0415612

A0415613



## MAGNETIC CYLINDER CARTS

THE MAGNETIC CYLINDER CART IS AN INNOVATION EXCLUSIVE TO AIR LIQUIDE.

### APPLICATIONS

- Large metal fabrication shops
- Cylinder transportation (N2 for tires)
- Hospitals
- Hospitality Services

### FEATURES

- Lightweight aluminum construction
- Equipped with powerful magnets
- Single cylinder cart  
Boxed dimensions for shipping: 635 x 457 x 1,372 mm (25" x 18" x 54")  
Weight: 28 kg (62 lbs)
- Double cylinder cart  
Boxed dimensions for shipping: 635 x 635 x 1,372 mm (25" x 25" x 54")  
Weight: 44 kg (97 lbs)



A0244013



A0244014

### BENEFITS

- Greatly reduced handling time
- No chains needed to secure cylinders
- Helps reduce possible injuries when moving or handling gas cylinders
- Reduced likelihood of damage to the cylinder shut-off valves
- Maximum convenience and control to transport your cylinders

THE MAGNETIC CYLINDER CART ALLOWS CYLINDERS TO BE MOVED QUICKLY, EASILY AND SAFELY



## CYLINDER WALL BRACKETS

AIR LIQUIDE'S WALL-MOUNT CYLINDER BRACKETS ARE DESIGNED TO HOLD GAS CYLINDERS SAFELY IN PLACE.

- Contour structure enables cylinders to firmly fit along the support edge
- Recessed screw holes on the bracket sides allow easy wall mounting
- Sturdy chain or nylon strap is easily adjustable
- Suitable for cylinders up to 381 mm (15") diameter



A0264392



A0295373

A NUMBER	MFG	DESCRIPTION
A0295373	RV-1-15	Cylinder Wall Bracket, for one Size 15" max., with Nylon Strap
A0264392	RV-1-15C	Cylinder Wall Bracket, for two Size 15 max., with Chain
A0264397	RV-1-9	Cylinder Wall Bracket, for one Size 9 max., with Nylon Strap
A0264393	RV-1-9C	Cylinder Wall Bracket, for one Size 9 max., with Chain
A0295381	RV-2-9	Cylinder Wall Bracket, for two Size 9 max., with Nylon Strap
A0264396	RV-2-9C	Cylinder Wall Bracket, for two Size 9 max., with Chain



## INDUSTRIAL CYLINDER CAGES

AIR LIQUIDE OFFERS SECURE CYLINDER CAGES FOR INDUSTRIAL GASES AND PROPANE. THESE TOUGH CAGES PROVIDE STORAGE FOR GAS CYLINDERS WHILE PROTECTING THEM FROM DAMAGE, THEFT AND UNAUTHORIZED ACCESS.

### BENEFITS

- Lockable
- Expanded metal sides provide required ventilation
- Heavy-duty construction
  - Fully welded and shipped assembled
  - Ready-to-ship standard sizes
  - Custom sizes available: gas cylinder cages can be made to your specifications

A NUMBER	MFG	DESCRIPTION	CAGE HEIGHT
A0299951	RV-21-2C	Cage, Industrial Cylinder, 2 Cyl, 2' x 1' x 6'	1.83 m (6')
A0299954	RV-22-4C	Cage, Industrial Cylinder, 4 Cyl, 2' x 2' x 6'	1.83 m (6')
A0299956	RV-32-6C	Cage, Industrial Cylinder, 6 Cyl, 3' x 2' x 6'	1.83 m (6')
A0299957	RV-33-9C	Cage, Industrial Cylinder, 9 Cyl, 3' x 3' x 6'	1.83 m (6')
A0299949	RV-43-12C	Cage, Industrial Cylinder, 12 Cyl, 4' x 3' x 6'	1.83 m (6')
A0299950	RV-44-16C	Cage, Industrial Cylinder, 16 Cyl, 4' x 4' x 6'	1.83 m (6')
A0240277	RV-64-24C	Cage, Industrial Cylinder, 24 Cyl, 6' x 4' x 6'	1.98 m (78") front, 1.83 m (72") back
A0299953	RV-84-32C	Cage, Industrial Cylinder, 32 Cyl, 8' x 4' x 6'	1.98 m (78") front, 1.83 m (72") back
A0299955	RV-86-48C	Cage, Industrial Cylinder, 48 Cyl, 8' x 6' x 6'	1.98 m (78") front, 1.83 m (72") back
A0240284	RV-126-72C	Cage, Industrial Cylinder, 72 Cyl, 12' x 6' x 6'	1.98 m (78") front, 1.83 m (72") back

\* Item number meaning: RV-21-XC  
 21= Floor size, 2' x 1' in this case  
 X= Number of cylinders that fit in cage

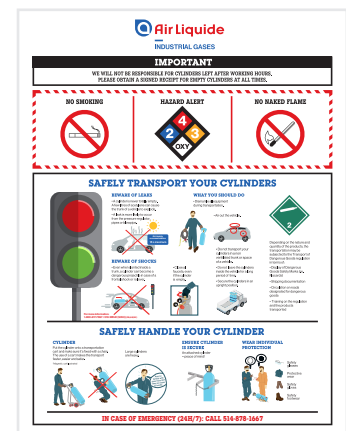


A0299951

## PROPANE CYLINDER CAGES

A NUMBER	MFG	DESCRIPTION
A0240273	RV-4C 33-1	Cage, Propane 15 kg (33 lbs) Cylinder, 4 Cyl (1 level)
A0240280	RV-12C 33	Cage, Propane 15 kg (33 lbs) Cylinder, 12 Cyl, (2 level)
A0299962	RV-6C 33-1	Cage, Propane 15 kg (33 lbs) Cylinder, 6 Cyl, (1 level)
A0240279	RV-2C 2001	Cage, Propane 9.1 kg (20 lbs) Cylinder, 2 Cyl
A0299958	RV-4C 2002	Cage, Propane 9.1 kg (20 lbs) Cylinder, 4 Cyl, (2 level)
A0299961	RV-24C 33	Cage, Propane 15 kg (33 lbs) Cylinder, 24 Cyl, (2 level)
A0299963	RV-8C 33	Cage, Propane 15 kg (33 lbs) Cylinder, 8 Cyl, (2 level)
A0240278	RV-24C 2003	Cage, Propane 9.1 kg (20 lbs) Cylinder, 24 Cyl, (3 level)
A0299960	RV-16C 33	Cage, Propane 15 kg (33 lbs) Cylinder, 16 Cyl, (2 level)

\* Item number meaning: RV-XC YY01  
 X= Number of cylinders that fit in cage  
 YY= Cylinder size



Safety Panel for Cylinder Cages

(can be ordered on request)



## BLUESHIELD™ WELDING CABLE

- Excellent flexibility (stays flexible at -50°C)
- Abrasion resistant
- Oil, solvent and chemical resistant
- Ozone and weather resistant
- 600 V rated

### CONSTRUCTION

#### Conductors:

Bare, annealed copper per ASTM B-172  
Class K (AWG 30) stranding

#### Separator:

A tape separator is applied between the conductor and insulation to facilitate stripping

#### Jacket:

CPE (Chlorinated poly-ethylene)

#### Insulation:

EPR (Ethylene propylene rubber)

#### Colour of jacket:

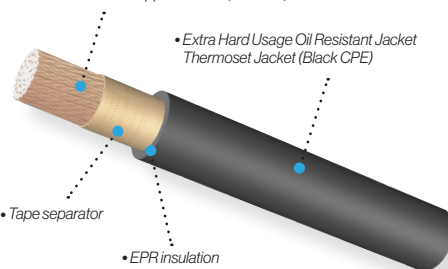
Black



### RECOMMENDED WELDING CABLE SIZE

AMP CAPACITY	15 M (50')	30 M (100')	45 M (150')	60 M (200')	75 M (250')	100 M (300')
100	4	2	2	2	2	1
150	2	2	2	1	1/0	2/0
200	1	1	1	1/0	2/0	3/0
250	1/0	1/0	1/0	2/0	3/0	4/0
300	2/0	2/0	2/0	3/0	4/0	4/0
350	3/0	3/0	3/0	4/0	4/0	—
400	3/0	3/0	3/0	4/0	—	—
500	4/0	4/0	4/0	—	—	—

• Flexible stranded bare copper class M (AWG 30)



• Extra Hard Usage Oil Resistant Jacket  
Thermoset Jacket (Black CPE)

• Tape separator

• EPR insulation

A NUMBER	MFG	SIZE AWG	CONDUCTOR STRAND NO. / AWG	MAX. DIRECT CURRENT RESISTANCE AT 20°C Ω / KM	NORMAL THICKNESS OF INSULATION		APPROX. WEIGHT		APPROX. OUTSIDE DIAMETER	
					MM	IN	LBS / 1000'	KG / KM	MM	IN
A0239726	BLU-28284001	1 AWG	798 / 30	0.436	2.0	0.080	294	445	12.7	0.500
A0239728	BLU-28284002	2 AWG	636 / 30	0.549	1.5	0.060	249	370	10.9	0.429
A0239731	BLU-28284004	4 AWG	403 / 30	0.865	1.5	0.060	168	250	9.3	0.366
A0239727	BLU-28284010	1/0 AWG	1,016 / 30	0.345	2.0	0.080	387	576	14.1	0.555
A0239729	BLU-28284020	2/0 AWG	1,261 / 30	0.276	2.0	0.080	470	699	15.1	0.598
A0239730	BLU-28284030	3/0 AWG	1,590 / 30	0.219	2.0	0.080	588	875	16.9	0.679
A0239732	BLU-28284040	4/0 AWG	2,007 / 30	0.173	2.0	0.080	722	1,075	18.1	0.716

Standard length cable packaging: 76.2 m (250 ft) reels. Other forms of packaging are available on request.

## BLUESHIELD™ CABLE CONNECTORS

**PROVEN AND RELIABLE, BLUESHIELD™ CABLE CONNECTORS ARE MADE FROM DURABLE ELASTOMER.**

- Interchangeable with popular brands
- Slip-proof insulators
- Flame retardant insulators
- Very good corrosion resistance
- Lightweight
- Molded covers resist heat and cold
- Brass body assembly slides easily



A NUMBER	MFG	CABLE SIZE	DESCRIPTION	AMP CAPACITY
A0258130	BLU-28800040	1/0 - 3/0	Connectors, Male / Female set	400
A0258128	BLU-28800044	1/0 - 3/0	Connector, Male	400
A0258126	BLU-28800042	1/0 - 3/0	Connector, Female	400
A0258129	BLU-28800200	4 - 1	Connectors, Male / Female set	300



## BLUESHIELD™ DUAL-LOCKING CABLE CONNECTORS

**THE DOUBLE-LOCKING SYSTEM PREVENTS DISENGAGEMENT OF THE CONNECTORS, WHICH HELPS SAVE TIME AND INCREASES PRODUCTIVITY**

- Double-locking connector (brass lock and insulator lock)
- Interchangeable with popular brands
- Slip-proof insulators
- Flame retardant insulators
- Very good corrosion resistance
- Lightweight
- Durable neoprene material cannot chip or dent
- Extreme resistance to physical abuse



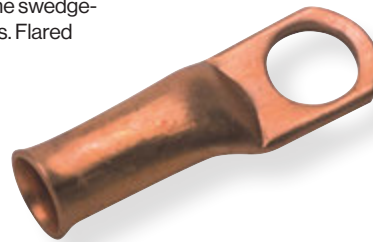
Double-locking system

A NUMBER	MFG	CABLE SIZE	DESCRIPTION	AMP CAPACITY
A0258125	BLU-28804000	1/0 - 3/0	Double-locking system, Male / Female set	400

## SOLDER-TYPE CABLE LUGS

BLUESHIELD™ solder-type cable lugs are precision made from copper tubing. They have an extra-long barrel for easy soldering or attaching using the swedge-on process\*. The stud holes are made especially for welding machines. Flared ends permit easy cable insertion into the lug.

- Precision made from copper tubing
- Extra-long barrel for easy soldering or attaching by crimping
- Made for best possible connection
- Easy-to-use with flared end for easy cable insertion



\*Swedge-on process  
The swedge-on tool provides an easy and convenient way to install BLUESHIELD™ cable lugs and cable splicers to welding cable. Insert bare cable strands into the lug barrel and impact with the swedge tool as shown in the illustration.

### SOLDER LUGS

A NUMBER	MFG	FOR CABLE SIZE	STUD HOLE	BARREL I.D.
A0314870	BLU-28800011	2 and 1 Cable	13.50 mm (17/32")	0.402"
A0314871	BLU-28800012	1/0 and 2/0 Cable	13.50 mm (17/32")	0.495"
A0314872	BLU-28800013	3/0 and 4/0 Cable	13.50 mm (17/32")	0.620"

## HAMMER-ON TYPE CABLE LUGS

BLUESHIELD™ hammer-on type cable lugs are also offered. Placed over the end of a welding cable and secured by hammering a notch.

- Easy and convenient to use – no special tools required
- Hammer blow makes a solid connection
- Excellent pull-out strength without soldering or bolting



### HAMMER-ON LUGS

A NUMBER	MFG	FOR CABLE SIZE	STUD HOLE	BARREL I.D.
A0314862	BLU-28800015	4 to 1 Cable	12.7 mm (0.500")	0.500"
A0314863	BLU-28800016	1/0 and 2/0 Cable	14.0 mm (0.550")	0.562"
A0314864	BLU-28800017	3/0 and 4/0 Cable	15.9 mm (0.625")	0.620"



## BLUESHIELD™ ELECTRODE HOLDERS

- Offered in the 3 most popular styles (Bernard, Tweco and Lenco)
- Non-flammable, heat resistant
- Insulated compression springs
- Current capacity from 200 to 400 A


**A0295501**

**A0295393**
**A0295389**


### BERNARD STYLE

THE "SHORTSTUB" SCREW-TYPE ELECTRODE HOLDER ALLOWS BENDING OF THE ELECTRODE IN ANY DIRECTION.

A NUMBER	MFG	AMP CAPACITY	ELECTRODE SIZE	LENGTH CM (IN)	CABLE SIZE
A0295501	BLU-28800005	400	Up to 5.0 mm (3/16")	22.9 (9)	2/0

### TWECO STYLE

THE GROOVED JAW ALLOWS BENDING OF THE ELECTRODE AND QUICK RELEASE.

A NUMBER	MFG	AMP CAPACITY	ELECTRODE SIZE	LENGTH CM (IN)	CABLE SIZE
A0295393	BLU-28800006	200	Up to 4.0 mm (5/32")	21.3 (8.4)	1
A0295394	BLU-28800007	250	Up to 5.0 mm (3/16")	22.9 (9)	1/0
A0295395	BLU-28800008	300	Up to 6.0 mm (1/4")	25.4 (10)	1/0

### LENCO STYLE

THE LOW PROFILE DESIGN PROVIDES MAXIMUM COMFORT TO THE WELDER AND QUICK RELEASE OF THE ELECTRODE.

A NUMBER	MFG	AMP CAPACITY	ELECTRODE SIZE	LENGTH CM (IN)	CABLE SIZE
A0295389	BLU-28800001	200	Up to 4.0 mm (5/32")	21.3 (8.4)	1
A0295390	BLU-28800002	250	Up to 5.0 mm (3/16")	21.3 (8.4)	2/0
A0295391	BLU-28800003	300	Up to 6.0 mm (1/4")	25.4 (10)	2/0
A0295392	BLU-28800004	350	Up to 6.0 mm (1/4")	26 (10.25)	2/0

## BLUESHIELD™ COPPER GROUND CLAMPS

- Manufactured from heavy-duty copper
- Forged conductors
- Heavy-duty spring provides positive jaw contact
- Includes Allen wrench


**A0248398**

### COPPER

A NUMBER	MFG	AMP CAPACITY	JAW OPENING MM (IN)	LENGTH CM (IN)	CABLE SIZE
A0248396	BLU-28800100	200	25.4 (1)	12.7 (5)	1
A0248398	BLU-28800102	500	38.1 (1.5)	20.3 (8)	4/0
A0248403	BLU-28800250	600	51.0 (2)	25.4 (10)	4/0





## BLUESHIELD™ STEEL GROUND CLAMPS

- Heavy duty, nickel-plated steel jaws
- Forged brass conductors and braided copper strap provide superior current carrying capacity
- High tension spring for positive clamping strength
- Built-in cable connector with oval-point set screw makes cable installation easy

### STEEL

A NUMBER	MFG	AMP CAPACITY	JAW OPENING MM (IN)	LENGTH CM (IN)	CABLE SIZE
A0248400	BLU-28800103	200	31.8 (1.25)	19.7 (7.75)	1
A0248401	BLU-28800104	300	44.5 (1.75)	20.3 (8)	2/0
A0248399	BLU-28800105	500	44.5 (1.75)	20.3 (8)	4/0



A0248401

## BLUESHIELD™ MIG PLIERS

- Designed for hammering, wire cutting, insulation bushing removal and installation, and drawing out wire
- Suited for the removal of spatter from inside and outside the nozzle
- Perfect for the removal and installation of contact tips and nozzles
- Spring loaded for easy opening and closing

A NUMBER	MFG	DESCRIPTION
A0344241	BLU-YS50	MIG Pliers



## GRADE T HOSE

**FOR ALL POPULAR FUEL GASES, INCLUDING ACETYLENE. TUBE AND COVER ARE OIL AND FLAME RESISTANT.**

Grade T is the best choice for industrial applications where hose is exposed to sparks, oil, grease and abrasion. Preferred by shops that use more than one fuel gas. Grade T hose is recommended for all heating applications. This hose is used with oxygen and all popular fuel gases, including acetylene. Both the inner tube and the outer cover are made of oil-resistant and flame-retardant rubber compounds.

A NUMBER	MFG	GRADE	DIA. MM	DIA. IN	FITTINGS	LENGTH M	LENGTH FT
SINGLE LINE GREEN BULK HOSE (OXYGEN)*							
A0296006	BLU-04130125	T	6.4	1/4	—	—	—
A0296008	BLU-04130127	T	9.5	3/8	—	—	—
SINGLE LINE RED BULK HOSE (FUEL GAS)*							
A0295994	BLU-04130126	T	6.4	1/4	—	—	—
A0295995	BLU-04130128	T	9.5	3/8	—	—	—
TWIN-LINE BULK HOSE (OXY-FUEL GAS)*							
A0296050	BLU-04211040	T	6.4	1/4	—	—	—
A0296053	BLU-04211050	T	9.5	3/8	—	—	—
TWIN-LINE HOSE ASSEMBLIES (OXY-FUEL GAS)							
A0296040	BLU-04513402	T	6.4	1/4	B-B	7.6	25
A0296038	BLU-04513404	T	6.4	1/4	B-B	15.2	50
A0296039	BLU-04513408	T	6.4	1/4	B-B	30.5	100
A0296045	BLU-04513602	T	9.5	3/8	B-B	7.6	25
A0296046	BLU-04513604	T	9.5	3/8	B-B	15.2	50
A0296044	BLU-04513608	T	9.5	3/8	B-B	30.5	100

\*Bulk hose is supplied on 600' (182.9 m) reels.



### BLUESHIELD™ GRANDE T WELDING HOSE

#### TUBE

Black neoprene

#### COVER

Green neoprene (oxygen)  
Red (fuel gas) neoprene

#### REINFORCEMENT

Multiple textile spirals

#### TEMP. RANGE

-40°F to +200°F





## GRADE R HOSE

**TUBE AND COVER ARE NOT FLAME OR OIL RESISTANT.**

Light-duty hose for applications using acetylene only. The inner tube and outer cover are made of rubber compound that is neither resistant to oil nor to flame.

A NUMBER	MFG	GRADE	DIA. MM	DIA. IN	FITTINGS	LENGTH M	LENGTH FT
TWIN-LINE BULK HOSE (OXY-ACETYLENE)							
A0296048	BLU-04211025	R	4.8	3/16	—	—	—
SINGLE-LINE RED HOSE ASSEMBLY (ACETYLENE)							
A0295993	BLU-04512000	R	4.8	3/16	A - A	3.8	12.5
TWIN-LINE HOSE ASSEMBLIES (OXY-ACETYLENE)							
A0296023	BLU-04513101	R	4.8	3/16	B - B	3.8	12.5
A0296025	BLU-04513102	R	4.8	3/16	B - B	7.6	25
A0296027	BLU-04513201	R	6.4	1/4	B - B	3.8	12.5
A0296029	BLU-04513202	R	6.4	1/4	B - B	7.6	25



### BLUESHIELD™ GRADE R WELDING HOSE

**TUBE**  
Black EPDM

**COVER**  
Green EPDM (oxygen), Red (acetylene) EPDM

**REINFORCEMENT**  
Multiple textile spirals

**TEMP. RANGE**  
-20°F to +200°F

## WRENCHES

A NUMBER	MFG	DESCRIPTION
A0419206	BLU-01450119	BLUESHIELD™ 9-way wrench



## BLUESHIELD™ SCRATCH BRUSHES

BLUESHIELD™ scratch brushes are ideal to prepare surfaces for painting, oxide removal and cosmetic finishing without having to use chemicals; coated or bonded abrasives. Made in Canada.

### APPLICATIONS

- Slag removal and cleaning
- Cleaning edge preparation for groove joints
- Adapted for pipeline and industrial machine applications
- Excellent for concrete structures

### WHICH WIRE TYPE SHOULD YOU USE?

#### HIGH CARBON

Hard drawn wire is used in applications involving medium stresses or static conditions. Oil-tempered wire is a general purpose wire with spring properties obtained by heat treatment.

#### STAINLESS STEEL

Used for stainless steel applications. Stainless steel brushes are highly corrosion resistant, and should be used where contamination or after-rust is a problem. Good with chemicals and solvents. Excellent bend recovery.

#### BRASS

A non-corrosive, flexible filament, which provides high degree of abrasion, but is softer. Much softer carbon or stainless steel. Perfect for cleaning surfaces without damaging them.



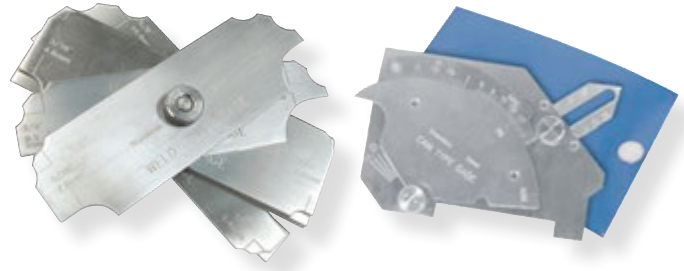
A NUMBER	MFG	DESCRIPTION	ROWS	BLOCK WIDTH	WIRE SIZE	TRIM LENGTH
A0237393	BLU-1777	Brush, Wire scratch, Curved handle	3x19	15/16"	0.014"	1-1/8"
A0237394	BLU-1777SS	Brush, Wire scratch, Curved handle, Stainless steel	3x19	15/16"	0.014"	1-1/8"
A0237395	BLU-1781	Brush, Wire scratch, Shoe handle	4x16	11/16"	0.014"	1-1/8"
A0237396	BLU-1781SS	Brush, Wire scratch, Shoe handle, Stainless steel	4x16	11/16"	0.014"	1-1/8"
A0237266	BLU-SB2088SS	Brush, Cleaning, Wire, Stainless steel, Wood handle, Small	3x7	7-3/4"	0.006"	1/2"



## FILLET WELD GAUGES

The fillet weld gauge is used for checking alignment, confirming dimensions before welding and verifying weld dimensions. The picture shows the use of a fillet weld gauge.

A NUMBER	MFG	DESCRIPTION
A0286303	BLU-01451120	BLUESHIELD™ fillet weld gauge set
A0286459	BLU-01451122	BLUESHIELD™ cam type weld gauge



A0286303

A0286459



1. CHECKING FILLET LEG SIZE



2. CHECKING FILLET WELD THROAT SIZE

## BLUESHIELD™ GOUGING CARBON ELECTRODES

BLUESHIELD™ gouging carbon electrodes are designed especially for the air carbon-arc metal removal process.

### BLUESHIELD™ GOUGING ELECTRODES OFFER:

- Long electrode life
- Excellent arc stability
- Superior metal removal rates
- Groove uniformity
- Numerous sizes

Use BLUESHIELD™ carbon gouging electrodes with any type of gouging torches connected to a DC power supply and compressed air source. BLUESHIELD™ carbon gouging electrodes contain a precisely formulated blend of carbon and graphite that produces very efficient metal removal performance.

### APPLICATIONS

- Edge preparation for groove joints (especially J- and U-grooves)
- Remove entire welds when structural repairs or modifications are necessary
- Remove discontinuities from weld deposits

### DC COPPERCLAD POINTED ELECTRODES

A standard all-purpose gouging electrode. Controlled copper coating improves conductivity providing more efficient, cooler, operation and helps maintain electrode diameter at the point of the arc. When using pointed gouging carbons, the user will have about three inches of stub loss.



A NUMBER	MFG	DESCRIPTION	QUANTITY	ELECTRODE SIZE	MIN. AMP	MAX. AMP	K2000 MODEL	K4000 MODEL
A0273866	BLU-28977512	DC Copperclad pointed electrode	50 / pkg	4.8 mm (3/16") x 305 mm (12")	200	250	X	X
A0273867	BLU-28977516	DC Copperclad pointed electrode	50 / pkg	6.4 mm (1/4") x 305 mm (12")	300	400	X	X
A0273868	BLU-28977520	DC Copperclad pointed electrode	50 / pkg	7.9 mm (5/16") x 305 mm (12")	350	450		X
A0273869	BLU-28977524	DC Copperclad pointed electrode	50 / pkg	9.5 mm (3/8") x 305 mm (12")	450	600		X



## BLUESHIELD™ TUNGSTEN ELECTRODES

Choosing the right tungsten electrodes and filler metal rods are crucial first steps in successful gas tungsten arc welding (GTAW).

### BLUESHIELD™ TUNGSTEN ELECTRODES FOR PRECISION TIG WELDING

- Are available in five tungsten types
- Come in a variety of industry standard diameters
- Offer the highest quality standard in the industry (composed of either pure tungsten or an alloy of tungsten and other elements and oxides)
- Are colour-coded to eliminate confusion over type
- BLUESHIELD™ tungsten electrodes are ground finished to provide maximum smoothness and consistency. Length of all tungsten electrodes is 178 mm (7"). Packages of 10 electrodes per box



NAME	AWS CLASS	COLOUR CODE	APPLICATION	DIA. MM	DIA. IN	A NUMBER	MFG
Pure	EWP	Green	Good arc stability in AC. Lowest current capacity and least expensive. Maintains a clean balled end for welding on AC. More prone to weld contamination than other types of tungsten electrodes.	1.0	0.040	A0403418	BLU-25751302
				1.6	1/16	A0403419	BLU-25751304
				2.4	3/32	A0403420	BLU-25751306
				3.2	1/8	A0403421	BLU-25751308
				4.0	5/32	A0403422	BLU-25751310
1.5% Lanthanum	EWLa-1.5	Gold	Can be a non-radioactive replacement for thoriated tungsten. Excellent arc starting, stability, long life and higher-current capacity. Operate at slightly different voltage than thoriated or ceriated tungsten.	1.0	0.040	A0403382	BLU-25751502
				1.6	1/16	A0403383	BLU-25751504
				2.4	3/32	A0403384	BLU-25751506
				3.2	1/8	A0403385	BLU-25751508
				4.0	5/32	A0403386	BLU-25751510
2% Ceriated	EWCe-2	Orange	Excellent arc starting, stability, long life and higher-current capacity than thoriated tungsten. Operate successfully with AC or DC current. Non-radioactive.	1.0	0.040	A0403387	BLU-25751702
				1.6	1/16	A0403388	BLU-25751704
				2.4	3/32	A0403389	BLU-25751706
				3.2	1/8	A0403390	BLU-25751708
				4.0	5/32	A0403391	BLU-25751710
2% Thoriated	EWTh-2	Red	Good current capacity, arc stability and easy arc start on DC current. High-resistance to weld pool contamination. Maintains sharpened tip configuration. Not normally used on AC current because it is difficult to maintain the balled end.	1.0	0.040	A0403395	BLU-25755302
				1.6	1/16	A0403396	BLU-25755304
				2.4	3/32	A0403397	BLU-25755306
				3.2	1/8	A0403398	BLU-25755308
				4.0	5/32	A0403399	BLU-25755310
E3	EWG	Purple	Suitable for AC or DC use. Long life, excellent arc. Stability. Non-radioactive. Suitable replacement for 2% thoriated.	1.0	0.040	A0403408	BLU-25756302
				1.6	1/16	A0403409	BLU-25756304
				2.4	3/32	A0403411	BLU-25756306
				3.2	1/8	A0403412	BLU-25756308
				4.0	5/32	A0403413	BLU-257563063
Zirconium	EWZr-1	Brown	Excellent for AC welding due to the higher arc stability. High-resistance to weld pool contamination. Excellent balled-end retention.	1.0	0.040	A0403414	BLU-257563083
				1.6	1/16	A0403415	BLU-25756310
				2.4	3/32	A0403435	BLU-25757302
				3.2	1/8	A0403436	BLU-25757304
				4.0	5/32	A0403437	BLU-25757306
						A0403438	BLU-25757308
						A0403439	BLU-25757310

### SAFETY NOTE

Thoria is a radioactive oxide. When welding is to be performed in confined spaces for prolonged periods or if electrode grinding dust might be ingested, special ventilation precautions should be considered. The user should consult appropriate safety personnel and take the appropriate steps to avoid contact with thoria.



# GTAW - GAS-TUNGSTEN ARC WELDING

## SUGGESTED TUNGSTEN PREPARATION

### 1. PREPARING TUNGSTEN FOR DC ELECTRODE NEGATIVE (DCEN) WELDING OR AC WELDING WITH INVERTER MACHINES

**1 GRINDING WHEEL**  
Grind end of tungsten on fine grit, hard abrasive wheel before welding. Do not use wheel for other jobs or tungsten can become contaminated causing lower weld quality.

**2 TUNGSTEN ELECTRODE**

**3 FLAT**  
Diameter of this flat determines amperage capacity.

**4 STRAIGHT GROUND**  
Grind lengthwise, not radial

**2-1/2 Times Electrode Diameter**

**IDEAL TUNGSTEN PREPARATION - STABLE ARC**

Radial Grinding Causes Wandering Arc

**WRONG TUNGSTEN PREPARATION**

### 2. PREPARING TUNGSTEN FOR AC SINE WAVE & CONVENTIONAL SQUAREWAVE

**1 TUNGSTEN ELECTRODE**

**2 BALLED END**  
Ball end of tungsten by applying AC amperage recommended for a given electrode diameter. Let ball on end of the tungsten take its own shape.

**1/2 Times Electrode Diameter**

## TYPICAL CURRENT RANGES FOR TUNGSTEN ELECTRODES\*

ELECTRODE DIAMETER MM (IN)	DIRECT CURRENT (A)		ALTERNATING CURRENT (A)			
	DC -	DC +	ADVANCED SQUAREWAVE		SQUAREWAVE	
			ALL TUNGSTEN EXCEPT PURE	PURE TUNGSTEN	ALL TUNGSTEN EXCEPT PURE	PURE TUNGSTEN
1.0 (0.040)	15 - 18	N/A	20 - 60	15 - 80	10 - 30	20 - 60
1.6 (0.060)	70 - 150	10 - 20	50 - 100	70 - 150	30 - 80	60 - 120
2.4 (0.093)	150 - 250	15 - 30	100 - 160	140 - 235	60 - 130	100 - 180
3.2 (1/8)	250 - 400	25 - 40	150 - 200	225 - 325	100 - 180	160 - 250
4.0 (5/32)	400 - 500	40 - 55	200 - 275	300 - 400	160 - 240	200 - 320
4.7 (3/16)	500 - 750	55 - 80	250 - 350	400 - 500	190 - 300	290 - 390

\*EWP: Pure tungsten  
 EWX-X: All other tungsten (except Pure)  
 Based on the use of Argon as a shielding gas.  
 Other current values may be employed depending on the shielding gas, type of equipment, and application



AIR LIQUIDE RECOMMENDS  
 THE USE OF ARGON AND  
 ALTIG SHIELDING GASES  
 FOR YOUR GTAW APPLICATIONS.

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# SAFETY PRODUCTS

SECTION VII

HEAD AND FACE PROTECTION | CLOTHING | HAND PROTECTION



## HEAD AND FACE PROTECTION

### AUTO DARKENING WELDING HELMETS

#### BLUE FUSION

- Digital
- Meets CSA Z94.3 standard
- 3 year warranty
- Fully adjustable Comfagear™ ratchet headgear



A NUMBER	MFG	ARC SENSORS	SHADES	VIEWING AREA	POWER SUPPLY	FILTER DIMENSIONS	WEIGHT	DELAY DARK TO LIGHT	RATING
A1166294	BLU-X81VX-BL	4 optical and 1 magnetic (XTIG)	Dark: variable 5-14 Light Shade: 3	3.98" x 3.15"	Solar Cell Backup power: Non-Replaceable Lithium Battery	5.25" x 4.5"	126 lbs	0.1 - 3.5 s	TIG 5 Amps +

#### BLAZE SHIELD

- Analog
- Meets CSA Z94.3 standard
- Grind Mode
- 3 year warranty
- Ratchet headgear



A NUMBER	MFG	ARCSENSORS	SHADES	VIEWING AREA	POWER SUPPLY	FILTER DIMENSIONS	WEIGHT	DELAY DARK TO LIGHT	RATING
A1166293	BLU-60V-BL	4 Independent arc sensors	Dark: variable 7-13 Light Shade: 4	3.86" x 2.36"	Solar Cell Backup power: 2 x CR2450 Batteries	5.25" x 4.5"	121 lbs	0.2 - 2.0 s	TIG 15 Amps +

#### BLUE SHELL

- Analog
- Meets CSA Z94.3 standard
- 3 year warranty
- Ratchet headgear



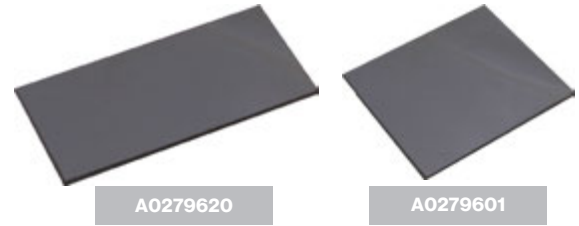
A NUMBER	MFG	ARCSENSORS	SHADES	VIEWING AREA	POWER SUPPLY	FILTER DIMENSIONS	WEIGHT	DELAY DARK TO LIGHT	RATING
A1166292	BLU-42V-BL	2 Independent arc sensors	Dark: variable 9-13 Light Shade: 4	3.62" x 1.65"	Solar Cell Backup power: Non-Replaceable Lithium Battery	4.33" x 3.54"	110 lbs	0.2 - 2.0 s	TIG 20 Amps +



# HEAD AND FACE PROTECTION

## GLASS FILTER PLATES

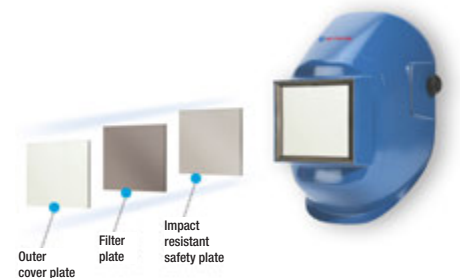
- Filter plates provide protection against excessive glare and harmful UV and IR light
- Hardened glass is heat-treated for strength
- Precision ground and pencil edged to eliminate stress flaws
- Meet or exceed ANSI Z87.1-2003 and CSA Z94.3-02 standards
- Caution: Shades 3-6 should never be used for electric arc welding



A NUMBER	MFG	DIMENSIONS	SHADE
A0279620	BLU-28852004	2"	4
A0279624	BLU-28852005	2"	5
A0279629	BLU-28852006	2"	6
A0279635	BLU-28852008	2"	8
A0279623	BLU-28857005	4-1/2" x 5-1/4"	5
A0279627	BLU-28857006	4-1/2" x 5-1/4"	6
A0279633	BLU-28857008	4-1/2" x 5-1/4"	8
A0279638	BLU-28857009	4-1/2" x 5-1/4"	9
A0279601	BLU-28857010	4-1/2" x 5-1/4"	10
A0279605	BLU-28857011	4-1/2" x 5-1/4"	11
A0279609	BLU-28857012	4-1/2" x 5-1/4"	12
A0279613	BLU-28857013	4-1/2" x 5-1/4"	13
A0279615	BLU-28857014	4-1/2" x 5-1/4"	14
A0279618	BLU-28859003	2" x 4-1/4"	3
A0279621	BLU-28859004	2" x 4-1/4"	4
A0279625	BLU-28859005	2" x 4-1/4"	5
A0279630	BLU-28859006	2" x 4-1/4"	6
A0279632	BLU-28859007	2" x 4-1/4"	7
A0279636	BLU-28859008	2" x 4-1/4"	8
A0279640	BLU-28859009	2" x 4-1/4"	9
A0279603	BLU-28859010	2" x 4-1/4"	10
A0279607	BLU-28859011	2" x 4-1/4"	11
A0279611	BLU-28859012	2" x 4-1/4"	12
A0279614	BLU-28859013	2" x 4-1/4"	13
A0279616	BLU-28859014	2" x 4-1/4"	14

## CLEAR COVER AND SAFETY PLATES

- Always use an outer cover plate to protect filter plates from damage by weld spatter, pitting and scratching
- Impact resistant safety plates should be installed in the inside frame of lift front helmets and goggles, next to the eyes, to protect against flying particles when the front is lifted

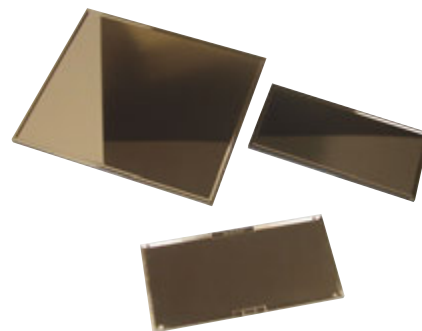


A NUMBER	MFG	DESCRIPTION	DIMENSIONS
A0260602	BLU-04801027	Polycarbonate Impact Resistant Cover Plate	2"
A0260601	BLU-04853853	Glass Standard Cover Plate	2"
A0260599	BLU-28409604	Glass Standard Cover Plate	4-1/2" x 5-1/4"
A0260604	BLU-28409606	Glass Standard Cover Plate	2" x 4-1/4"
A0260605	BLU-28853000	Polycarbonate Impact Resistant Cover Plate	2" x 4-1/4"
A0260603	BLU-28853001	Cr-39 Long Life Cover Plate	2" x 4-1/4"
A0260600	BLU-28854000	Polycarbonate Impact Resistant Cover Plate	4-1/2" x 5-1/4"
A0260598	BLU-28854001	Cr-39 Long Life Cover Plate	4-1/2" x 5-1/4"



## HEAD AND FACE PROTECTION GOLD-COATED LENSES

- This specially designed lens reflects heat and infrared rays
- The reduced glare allows welder to see work more clearly
- Reflects heat and harmful infrared rays
- Special hard-coated polycarbonate is abrasion and breakage resistant
- Meets or exceeds ANSI Z87.1-2003 and CSA Z94.3-02 standards



A NUMBER	MFG	DIMENSIONS	SHADE
A0279600	BLU-28856009	2" x 4-1/4"	9
A0279594	BLU-28856010	2" x 4-1/4"	10
A0279596	BLU-28856011	2" x 4-1/4"	11
A0279598	BLU-28856012	2" x 4-1/4"	12
A0279599	BLU-28858009	4-1/2" x 5-1/4"	9
A0279593	BLU-28858010	4-1/2" x 5-1/4"	10
A0279595	BLU-28858011	4-1/2" x 5-1/4"	11
A0279597	BLU-28858012	4-1/2" x 5-1/4"	12

## MAGNIFYING LENSES

- Magnifying lenses help optically correct vision - reduce red eye fatigue and irritation
- Lightweight, 1/3 the weight of glass
- Hard-coated polycarbonate is shatterproof and abrasion resistant

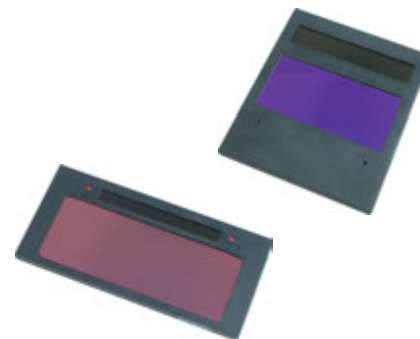


A NUMBER	MFG	MATERIAL	DIMENSIONS	DIOPTR
A0317345	BLU-MAG075G24	Glass	2" x 4-1/4"	0.75
A0317347	BLU-MAG100G24	Glass	2" x 4-1/4"	1
A0317349	BLU-MAG125G24	Glass	2" x 4-1/4"	1.25
A0317351	BLU-MAG150G24	Glass	2" x 4-1/4"	1.5
A0317353	BLU-MAG175G24	Glass	2" x 4-1/4"	1.75
A0317355	BLU-MAG200G24	Glass	2" x 4-1/4"	2
A0317357	BLU-MAG225G24	Glass	2" x 4-1/4"	2.25
A0317359	BLU-MAG250G24	Glass	2" x 4-1/4"	2.5
A0317361	BLU-MAG300G24	Glass	2" x 4-1/4"	3

A NUMBER	MFG	MATERIAL	DIMENSIONS	DIOPTR
A0317346	BLU-MAG075P24	Polycarbonate	2" x 4-1/4"	0.75
A0317348	BLU-MAG100P24	Polycarbonate	2" x 4-1/4"	1
A0317350	BLU-MAG125P24	Polycarbonate	2" x 4-1/4"	1.25
A0317352	BLU-MAG150P24	Polycarbonate	2" x 4-1/4"	1.5
A0317354	BLU-MAG175P24	Polycarbonate	2" x 4-1/4"	1.75
A0317356	BLU-MAG200P24	Polycarbonate	2" x 4-1/4"	2
A0317358	BLU-MAG225P24	Polycarbonate	2" x 4-1/4"	2.25
A0317360	BLU-MAG250P24	Polycarbonate	2" x 4-1/4"	2.5
A0317362	BLU-MAG350G24	Glass	2" x 4-1/4"	3.5

## SOLAR-POWERED AUTODARKENING

- Solar powered. Changes from shade 3 to shade 11 in 0.5 millisecond
- Provides IR/UV protection of shade 16 in light or dark state
- Can be used for stick, MIG, TIG welding and plasma cutting/welding
- Lightweight
- Fits standard welding helmets
- Shade 3-11



A NUMBER	MFG	DIMENSIONS
A0279717	BLU-28859024	2" x 4-1/4"
A0279718	BLU-28859045	4-1/2" x 5-1/4"





# CLOTHING

## BEANIES

- Beanies offer the protection, style and comfort that workers are looking for



A NUMBER	MFG	DESCRIPTION
<b>A0230793</b>	BLU-BEANIES	Spark Resistant
<b>A0230783</b>	BLU-BIKERBEANIE	Biker Style
<b>A0230784</b>	BLU-FRBEANIES	3 Panel Flame Resistant

## WELDERS SLEEVES

- Sleeves are ideal where arm protection is required



A NUMBER	MFG	COLOUR	DIMENSIONS
<b>A0375629*</b>	BLU-04739025	Blue and black	20" Long
<b>A0375630</b>	BLU-04739020	Blue	23" Long

\* Sold by the pair.

## WELDERS CAPE SLEEVES

- Cape sleeves are ideal where spatter is heavy on shoulders, neck, arms
- Snap fasteners permit easy bib attachment



A NUMBER	MFG	SIZE	COLOUR
<b>A0241191</b>	BLU-04732005	M	Blue
<b>A0241190</b>	BLU-04732010	L	Blue
<b>A0241189</b>	BLU-04732015	XL	Blue
<b>A0241188</b>	BLU-04732020	2XL	Blue

## WELDERS BIB

- Bibs are ideal where spatter is heavy on front of body
- Snap fasteners permit easy attachment to cape sleeves



A NUMBER	MFG	COLOUR	DIMENSIONS
<b>A0231619</b>	BLU-04731080	Blue	23" Long
<b>A0231620</b>	BLU-04731090	Blue	28" Long



## CLOTHING

### WELDING JACKET

- Welding jackets offer state of the art comfort and are great for overhead welding
- Finest grade leathers are treated to ensure the best quality available on the market
- Double-lock stitched seams with high-strength 5-ply Tex 90 Dupont Kevlar thread
- Flame retardant lined cotton collar and adjustable neck, cuff and waist
- Premium grade side split for maximum durability
- Raglan-style shoulders for comfort and mobility
- Inside pocket, riveted stress points
- Meets EN 470-1



A NUMBER	MFG	SIZE	COLOUR
A0303501	BLU-04736010	M	Blue
A0303499	BLU-04736020	L	Blue
A0303500	BLU-04736030	XL	Blue
A0303495	BLU-04736055	L	Black
A0303496	BLU-04736056	XL	Black

### FLAME RETARDANT WELDING JACKET

- The line of protective clothing offer complete protection, maximum freedom of movement and all-day comfort
- Washable flame retardant cotton sateen jackets are specially designed with under-arm sport cut and hemmed collar
- Meets EN 470-1



A NUMBER	MFG	SIZE	COLOUR
A0303493	BLU-04736040	M	Blue
A0303491	BLU-04736042	L	Blue
A0303492	BLU-04736044	XL	Blue
A0303494	BLU-04736046	2XL	Blue

### WELDERS APRON

- High quality aprons are made to last
- Heavy-duty shoulder and waist straps ensure complete comfort
- Come with front pockets



A NUMBER	MFG	DESCRIPTION	COLOUR	DIMENSIONS
A0214114	BLU-04731020	Waist Apron	Blue	24" x 24"
A0214089	BLU-04731040	Bib Apron	Blue	24" x 36"
A0214109	BLU-04731060	Split Leg Apron	Blue	24" x 36"
A0214110	BLU-04731065	Split Leg Apron	Blue	24" x 42"

### WELDERS PANTS

- Leather seams are double-locked stitched with high strength 5-ply Tex 90 Kevlar thread
- Rivets are electrically insulated
- 42" length
- Meet EN 470-1 standards



A NUMBER	MFG	SIZE	COLOUR
A0340265	BLU-04738055	M	Blue
A0340264	BLU-04738060	L	Blue
A0340263	BLU-04738065	XL	Blue
A0340262	BLU-04738070	2XL	Blue

# HAND PROTECTION

## STANDARD GRADE GLOVES

### SPLIT LEATHER GLOVES

- Outer shell is made from high quality split leather cowhide
- Full palm design
- Size: Large
- Sold by the pair



A NUMBER	MFG
A0288407	BLU-04734025

## MEDIUM GRADE GLOVES

### SPLIT LEATHER GLOVES

- Outer shell is made from split leather cowhide
- Full cotton lining increases user comfort
- Wing thumb design
- Size: Large
- Sold by the pair



A NUMBER	MFG
A0288436	WLA-2215L

## MECHANICS WORK GLOVES

- Soft pliable, oil and weather resistant mechanics gloves
- Pigskin full grain construction
- Sold by the pair



A NUMBER	MFG	SIZE
A0288181	BLU-102660L	L
A0288187	BLU-102660XL	XL

## BLUE CUSHION

### PREMIUM SPLIT COWHIDE WELDING GLOVES

- Blue cushion split cowhide top grade glove
- Outer shell is made from premium side split cowhide leather
- Sweat-absorbing full lining provides the ultimate in comfort
- Durable, full-weltd seams, reinforced palm patch and wing thumb
- Features "Wide Body" sizing pattern
- 13 1/2" length
- 5-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	DESCRIPTION	SIZE
A0288337	BLU-04734040	5-Finger Glove	L
A0323405	BLU-04737040	1-Finger Mitt	L



## HAND PROTECTION

### PREMIUM PIPELINERS GLOVES

#### DEERSKIN GLOVES

- Premium deerskin pipeliner glove
- Outer shell is made from premium grain deerskin
- The left palm is constructed with a piece of cowhide leather to reinforce durability
- 12 3/4" length
- 4-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	SIZE
A0288451	BLU-04732700	S
A0288334	BLU-04732701	M
A0288450	BLU-04732702	L
A0288333	BLU-04732703	XL
A0288449	BLU-04732704	XXL

### PIPELINERS GLOVES

#### COWHIDE LEATHER GLOVES

- Pipeliners double leather side on left hand
- Outer shell is made from premium cowhide grain leather
- The left or right palm is constructed with a piece of cowhide leather to reinforce durability
- 12 3/4" length
- 4-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	DOUBLE LEATHER	SIZE
A0288340	BLU-04732705	Left Hand	S
A0288446	BLU-04732706	Left Hand	M
A0288445	BLU-04732707	Left Hand	L
A0288444	BLU-04732708	Left Hand	XL
A0288443	BLU-04732709	Left Hand	XXL
A0288448	BLU-04732711	Right Hand	M
A0288447	BLU-04732712	Right Hand	L

### PREMIUM SPLIT COWHIDE

#### WELDING GLOVES

- Split cowhide welding glove
- Outer shell is made from premium side split cowhide leather
- Sweat-absorbing full lining provides the ultimate in comfort
- 13 3/4" length
- 4-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	DESCRIPTION	SIZE
A0288453	BLU-04734020	5-Finger Glove	L
A0323406	BLU-04737020	1-Finger Mitt	L

### BLUE CLAD WELDING GLOVES

- Blue clad split cowhide welding glove
- Outer shell is made from split leather cowhide
- Full cotton lining increases user comfort
- Wing thumb design
- 13 3/4" length
- 3-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	STYLE	SIZE
A0323404	BLU-04736001	1-Finger Mitt	L
A0288336	BLU-04736005	5-Finger Glove	L



# HAND PROTECTION

## STANDARD-DUTY WELDING GLOVES

- Standard-duty welding glove
- Outer shell is made from split leather cowhide
- Full cotton lining increases user comfort
- Wing thumb design
- 13 1/4" length
- Size: Large
- Sold by the pair



A NUMBER	MFG
A0288403	WLA-2114L

## SUPER BLUE

### DEERSKIN GLOVES

- Outer shell is made from thick reverse grain deerskin and side split cowhide leather
- Sweat-absorbing full lining provides the ultimate in comfort
- 13 3/4" length
- 4-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	DESCRIPTION	SIZE
A0288364	BLU-04734035	5-finger glove	L
A0323407	BLU-04737035	1-finger mitt	L

## TECHMATES

### COWHIDE GRAIN GLOVES

- Outer shell is made from grain cowhide leather
- 13 3/4" length
- Fully 3-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	SIZE
A0288344	BLU-04735049	S
A0288343	BLU-04735050	M
A0288342	BLU-04735055	L
A0288341	BLU-04735056	XL
A0288335	BLU-04735057	XXL

## BLUE COWHIDE GRAIN

### TIG WELDERS GLOVES

- Outer shell is made from grain cowhide leather
- 13 3/4" length
- Fully 3-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	SIZE
A0288339	BLU-04735070	M
A0288338	BLU-04735075	L

## CALFSKIN

### LEATHER GLOVES

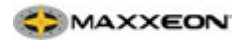
- Outer shell is made from premium black grain cowhide leather and blue side split cowhide
- Thin fleecy, flame retardant lining at the back of the hand
- Air cushioned palm patch and special plam design
- Seamless index finger
- 13 1/2" length in size Large
- Fully 4-ply Kevlar stitched
- Sold by the pair



A NUMBER	MFG	SIZE
A0288287	BLU-04735085	L
A0288288	BLU-04735086	XL



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# CONSUMABLES

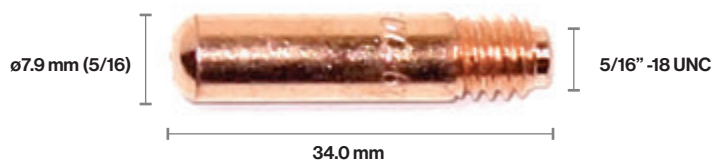
## SECTION VIII

TREGASKISS STYLE | MILLER STYLE | BERNARD STYLE | TWECO STYLE



## TREGASKISS STYLE

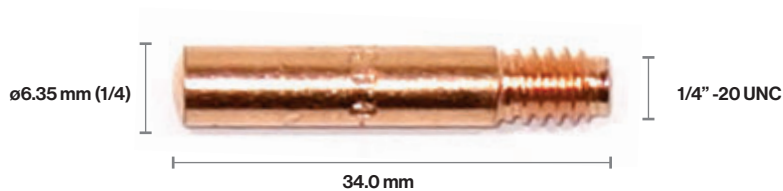
### CONTACT TIPS



### TRG

### 300A / 400A / 500A

A NUMBER	MFG	PART NUMBER	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A0398330	BLU-MIGT403116R	P403-1-116	1.6	0.0625	25
A0400001	BLU-MIGT403118R	P403-1-1.8	1.8	0.07	25
A0398333	BLU-MIGT403130R	P403-1-30	0.8	0.03	25
A0398335	BLU-MIGT4031332R	P403-1-332	2.4	0.094	25
A0398337	BLU-MIGT403135R	P403-1-35	0.9	0.035	25
A0398340	BLU-MIGT403140R	P403-1-40	1	0.04	25
A0398343	BLU-MIGT403145R	P403-1-45	1.2	0.045	25
A0398345	BLU-MIGT403152R	P403-1-52	1.4	0.052	25
A0398347	BLU-MIGT4031564R	P403-1-564	2	0.078	25



### TRG

### 200A / 300A / 400A / 500A

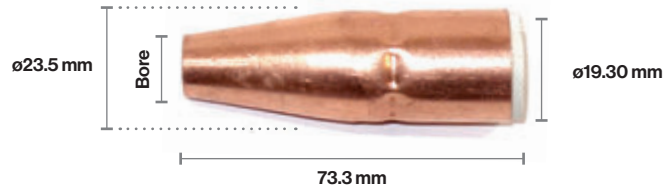
A NUMBER	MFG	PART NUMBER	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A0398363	BLU-MIGT40330R	P403-30	0.8	0.03	25
A0398354	BLU-MIGT403330R	P403-3-30	0.8	0.03	25
A0398356	BLU-MIGT403335R	P403-3-35	0.9	0.035	25
A0398358	BLU-MIGT403340R	P403-3-40	1	0.04	25
A0398361	BLU-MIGT403345R	P403-3-45	1.2	0.045	25
A0398365	BLU-MIGT40345R	P403-45	1.2	0.045	25





## TREGASKISS STYLE

### NOZZLES



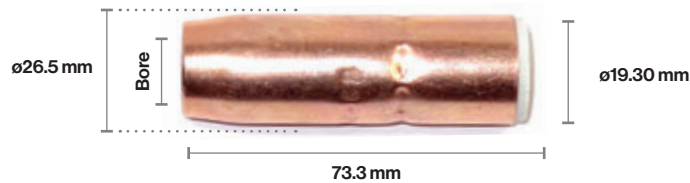
#### TRG

**200A / 300A / 400A / 500A**

A NUMBER	MFG	PART NUMBER	BORE (MM)	WALL (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332330	BLU-MIGT401438	P401-4-38	9.5	2.25	1/8" RECESS TIP 3/8" Bore Nozzle	5
A0332331	BLU-MIGT401450	P401-4-50	12.7	2.25	1/8" RECESS TIP 1/2" Bore Nozzle	5
A0332332	BLU-MIGT401462	P401-4-62	16	2.25	1/8" RECESS TIP 3/8" Bore Nozzle	5



A NUMBER	MFG	PART NUMBER	BORE (MM)	WALL (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332334	BLU-MIGT401562	P401-5-62	16	2.4	1/4" RECESS TIP 5/8" Bore Nozzle	5
A0332335	BLU-MIGT401575	P401-5-75	19	2.4	1/4" RECESS TIP 3/4" Bore Nozzle	5



A NUMBER	MFG	PART NUMBER	BORE (MM)	WALL (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332336	BLU-MIGT401650	P401-6-50	12.7	2.4	1/8" RECESS TIP 1/2" Bore Nozzle	10
A0332337	BLU-MIGT401662	P401-6-62	16	2.4	1/8" RECESS TIP 5/8" Bore Nozzle	10
A0332338	BLU-MIGT401675	P401-6-75	19	2.4	1/8" RECESS TIP 3/4" Bore Nozzle	10

## TREGASKISS STYLE

### LINERS

#### TRG

**200A / 300A / 400A / 500A**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	LENGTH M	NIPPLE	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A1185671	BLU-MIGT4153515	P415-35-15	Steel liner x 15FT	4.9	Brass Nipple	0.9-1.2	0.035-0.045	5

#### TRG

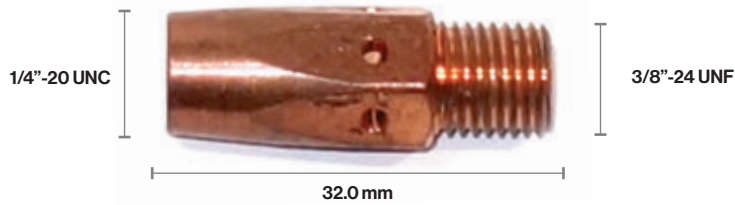
**400A / 500A**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	LENGTH M	NIPPLE	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A1185672	BLU-MIGT41511615	P415-116-15	Steel liner x 15FT	4.9	Brass Nipple	1.2-1.6	0.045-0.0625	5



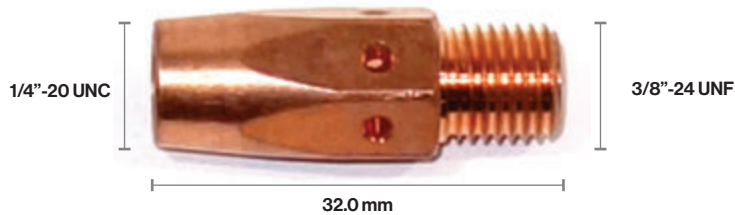
## TREGASKISS STYLE

### DIFFUSERS



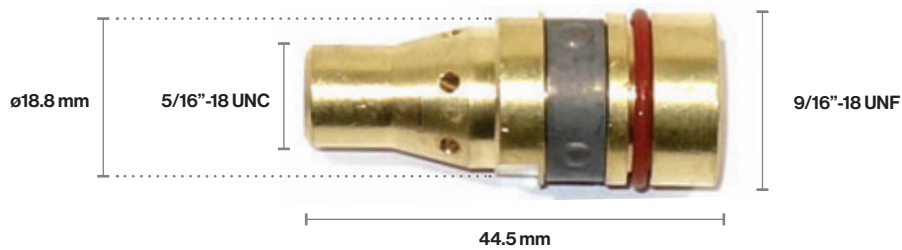
### TRG 200A / 300A / 400A / 500A

A NUMBER	MFG	PART NUMBER	DESCRIPTION	PACKAGE QUANTITY
A0267421	BLU-MIGT404	P404	Gas Diffuser For Std Tip	5



### TRG 200A / 300A / 400A / 500A

A NUMBER	MFG	PART NUMBER	DESCRIPTION	PACKAGE QUANTITY
A0267422	BLU-MIGT4041	P404-1	Gas Diffuser For H.D Tip	5



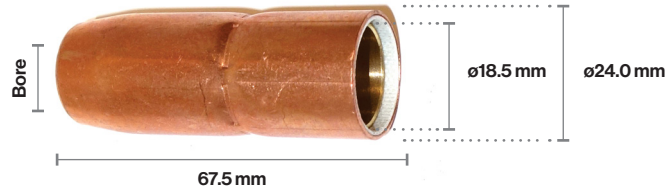
### TRG 300A/400A/500A

A NUMBER	MFG	PART NUMBER	DESCRIPTION	PACKAGE QUANTITY
A0267423 / A0267525	BLU-MIGT4043/BLU-MIGT4043PLC	P404-3	Retaining Head Assembly	25



## MILLER STYLE

### NOZZLES



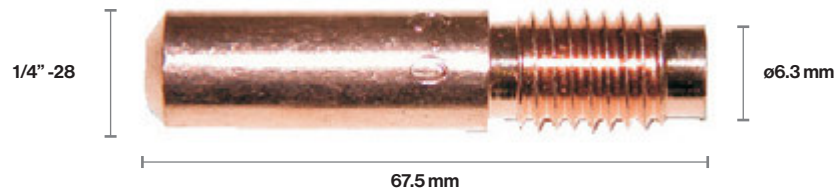
#### PST-ML

**250A**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	BORE (MM)	WALL (MM)	PACKAGE QUANTITY
A0331815	BLU-MIGM169725	M169-725	Conical Nozzle	16	2.75	5

## MILLER STYLE

### CONTACT TIPS



#### PST-ML

**150A / 250A**

A NUMBER	MFG	PART NUMBER	PACKAGE QUANTITY
A0398246	BLU-MIGM000067R	M000-067	25
A0398247	BLU-MIGM000068R	M000-068	100
A0398248	BLU-MIGM000069R	M000-069	25



## BERNARD STYLE

### CONTACT TIPS



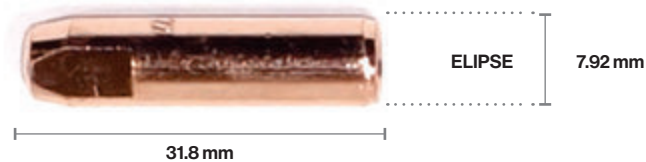
### BND/BN'Q'

### 200E / 300E / 350E / 200A / 350A

A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0398060	BLU-MIGBER1589R	P1589	0.035	0.9	25
A0398063	BLU-MIGBER1590R	P1590	0.045	1.2	25
A0398066	BLU-MIGBER1591R	P1591	0.0625	1.6	25



A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0398077	BLU-MIGBER4280R	P4280	0.063	1.6	1
A0398079	BLU-MIGBER4281R	P4281	0.035	0.9	25
A0398082	BLU-MIGBER4282R	P4282	0.045	1.2	25
A0398085	BLU-MIGBER4283R	P4283	0.055	1.4	1



A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0398111	BLU-MIGBER7488R	P7488	0.03	0.8	25
A0398093	BLU-MIGBER7489R	P7489	0.035	0.9	100
A0398096	BLU-MIGBER7490R	P7490	0.045	1.2	200
A0398099	BLU-MIGBER7491R	P7491	0.0625	1.6	25
A0398106	BLU-MIGBER7496R	P7496	0.04	1	1
A0398109	BLU-MIGBER7498R	P7498	0.052	1.3	100



## BERNARD STYLE

### NOZZLES

#### BND/BN'Q'

**200E / 300E / 350E / 200A / 350A**

A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332212	BLU-MIGBER4391	P4391	2.85	16	Conical Nozzle	10
A0332215	BLU-MIGBER4392	P4392	2.85	12.7	Tapered Nozzle	30



A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332931	BLU-MIGBER4393	P4393	2.95	14	HD Conical Nozzle	5



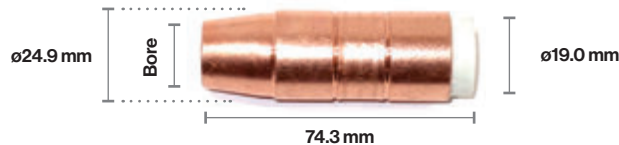
A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332219	BLU-MIGBER4491	P4491	2.95	19	Conical Nozzle	30
A0332221	BLU-MIGBER4492	P4492	2.95	14	Tapered Nozzle	10



A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332932	BLU-MIGBER4591	P4591	2.95	19	Buse MIG HD, type conique	5



A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	DESCRIPTION	PACKAGE QUANTITY
A0332933	BLU-MIGBER4592	P4592	2.95	14	HD Conical Nozzle	5



A NUMBER	MFG	PART NUMBER	WALL (MM)	BORE (MM)	DESCRIPTION	PACKAGE QUANTITY
A0323037	BLU-MIGBER4295	P4295	2.85	9.5	Pipeline Nozzle	5



## BERNARD STYLE

### LINERS

#### BND/BN'Q'

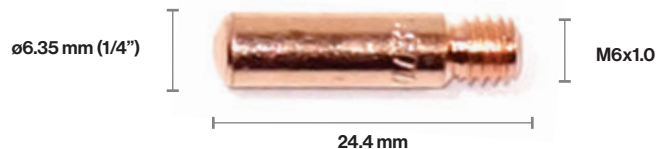
**200E / 300E / 350E / 200A / 350A**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	LENGTH M	NIPPLE	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A1185676	BLU-MIGB43115	P43115	Steel liner x 15 FT	4.9	Brass Nipple	0.8-1.2	0.030-0.045	5
A1185677	BLU-MIGB44215	P44215	Steel liner x 15 FT	4.9	Brass Nipple	1.2-1.6	0.045-0.0625	5



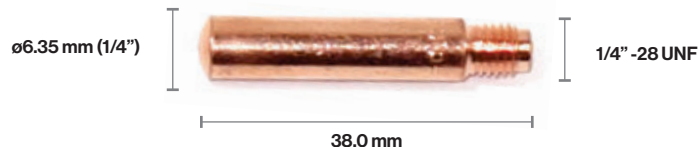
## TWECO STYLE

### CONTACT TIPS



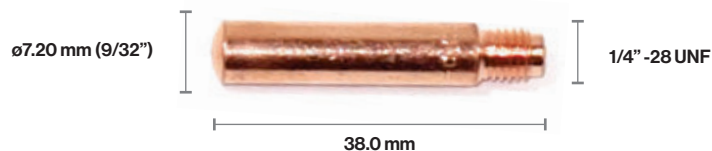
### TWC NO.1

A NUMBER	MFG	PART NUMBER	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A0398386	BLU-MIGTW1123R	P1123	0.6	0.023	25
A0398387	BLU-MIGTW1130R	P1130	0.8	0.03	25
A0398388	BLU-MIGTW1135R	P1135	0.9	0.035	50
A0398389	BLU-MIGTW1145R	P1145	1.2	0.045	25



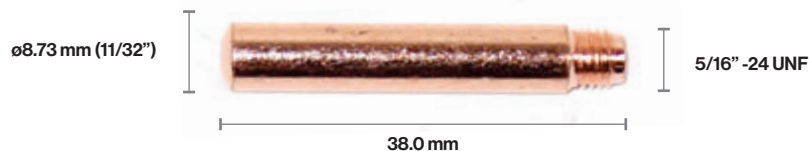
### TWC NO.2 / NO.3 / NO.4

A NUMBER	MFG	PART NUMBER	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A0398390	BLU-MIGTW1430R	P1430	0.8	0.03	25
A0398391	BLU-MIGTW1435R	P1435	0.9	0.035	25
A0400003	BLU-MIGTW1440R	P1440	1	0.04	1
A0398392	BLU-MIGTW1445R	P1445	1.2	0.045	25



### TWC NO.2 / NO.3 / NO.4

A NUMBER	MFG	PART NUMBER	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A0398399	BLU-MIGTW14H35R	P14H-35	0.9	0.035	200
A0398402	BLU-MIGTW14H40R	P14H-40	1	0.04	25
A0398405	BLU-MIGTW14H45R	P14H-45	1.2	0.045	50
A0398408	BLU-MIGTW14H52R	P14H-52	1.3	0.052	100



### TWC NO.5

A NUMBER	MFG	PART NUMBER	WIRE SIZE (MM)	WIRE SIZE (IN)	PACKAGE QUANTITY
A0398410	BLU-MIGTW15AH116R	P15H-116	1.6	0.0625	25
A0398412	BLU-MIGTW15H35R	P15H-35	0.9	0.035	25
A0398413	BLU-MIGTW15H45R	P15H-45	1.2	0.045	25
A0398414	BLU-MIGTW15H52R	P15H-52	1.3	0.052	25



## TWECO STYLE

### LINERS

#### TWC

**NO.1 / NO.2**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	LONG. M	NIPPLE	WIRE SIZE (MM)	WIRE SIZE (MM)	PACKAGE QUANTITY
A1185673	BLU-MIGT42404515	P42-4045-15	Steel liner x 15 FT	4.9	Brass Nipple	1.0-1.2	0.040 - 0.045	5

#### TWC

**NO.3 / NO.4 / NO.5**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	LONG. M	NIPPLE	WIRE SIZE (MM)	WIRE SIZE (MM)	PACKAGE QUANTITY
A1185674	BLU-MIGT44354515	P44-3545-15	Steel liner x 15 FT	4.9	Brass Nipple	0.9-1.2	0.035 - 0.045	5

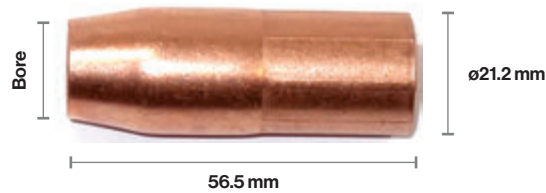
#### TWC

**NO.3 / NO.4 / NO.5**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	LONG. M	NIPPLE	WIRE SIZE (MM)	WIRE SIZE (MM)	PACKAGE QUANTITY
A1185675	BLU-MIGT4411615	P44-116-15	Steel liner x 15 FT	4.9	Brass Nipple	1.6	0.0625	5

## TWECO STYLE

### NOZZLES



#### TWC

**NO.1**

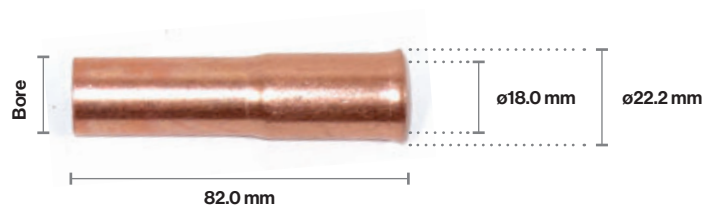
A NUMBER	MFG	PART NUMBER	DESCRIPTION	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0332389	BLU-MIGTW2150	P21-50	Nozzle Self Insulated	1.6	12.7	5



#### TWC

**NO.2 / NO.3**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0332409	BLU-MIGTW2362	P23-62	Nozzle Self Insulated	1.6	12.7	5
A0332412	BLU-MIGTW2375	P23-75	Nozzle Self Insulated	1.6	19	5



#### TWC

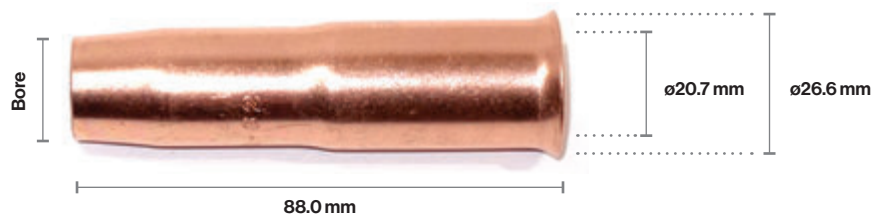
**NO.2**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0332399	BLU-MIGTW2262	P22-62	Nozzle Self Insulated	1.25	16	5



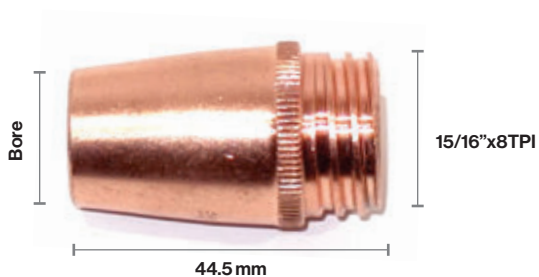
## TWECO STYLE

### NOZZLES



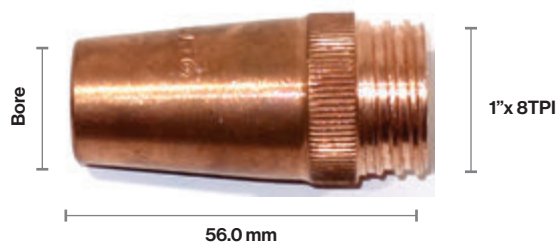
**TWC** **NO.3 / NO.4**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0332421	BLU-MIGTW24A62	P24A-62	Nozzle Adjustable	1.25	16	10



**TWC** **NO.2 / NO.3 / NO.4**

A NUMBER	MFG	PART NUMBER	DESCRIPTION	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0332433	BLU-MIGTW24CT62S	P24CT-62S	Nozzle Fixed Coarse Thread	3.75	16	5



**TWC** **NO.5**

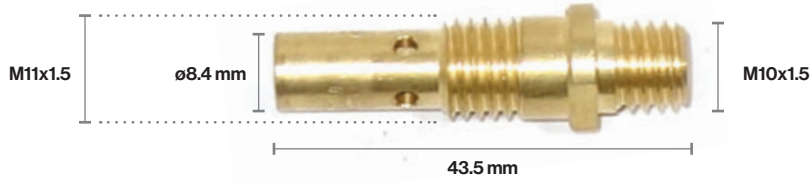
A NUMBER	MFG	PART NUMBER	DESCRIPTION	WALL (MM)	BORE (MM)	PACKAGE QUANTITY
A0332832	BLU-MIGTW25CT62	P25CT-62	Nozzle Fixed Coarse Thread	4	16	5





**TYPE TWECO**

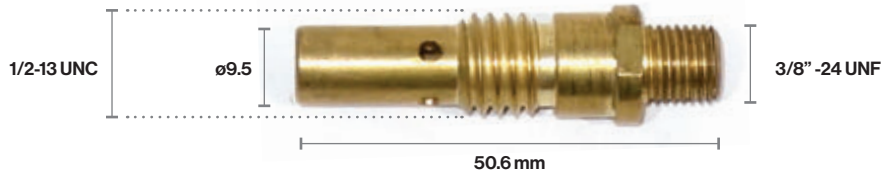
**DIFFUSERS**



**TWC**

**NO.1**

A NUMBER	MFG	PART NUMBER	PACKAGE QUANTITY
A0267424	BLU-MIGTW51	P51	5



**TWC**

**NO.2**

A NUMBER	MFG	PART NUMBER	PACKAGE QUANTITY
A0267425	BLU-MIGTW52	P52	5



**TWC**

**NO.3 / NO.4**

A NUMBER	MFG	PART NUMBER	PACKAGE QUANTITY
A0267427	BLU-MIGTW54A	P54A	50

712.....	054	ARCAL™ M-23.....	022, 024	BLUESHIELD™ 654-309L.....	093
714.....	054	ARCAL™ M12He18.....	022, 024	BLUESHIELD™ 654P-309L.....	093
735.....	054	ARCAL™ M12Me5N.....	022, 024	BLUESHIELD™ 7.....	022, 023
738.....	055	ARCAL™ M14.....	022, 024	BLUESHIELD™ 8.....	022, 023
740.....	054	ARCAL™ N2-2.....	022, 024	BLUESHIELD™ 9.....	022, 023
1.5% Lanthanum.....	107	ARCAL™ N5-5.....	022, 024	BLUESHIELD™ aluminum.....	091
104/114 Series.....	060	ARCAL™ R1-2.....	022, 024	BLUESHIELD™ and ARCAL™.....	022, 023, 024
10AL.....	037	ARCAL™ R1-5.....	022, 024	BLUESHIELD™ cable connectors.....	101
1400 Series.....	066	ARCAL™ R2-35.....	022, 024	BLUESHIELD™ carbon steel	
1AI.....	037	ARCAL™ Speed.....	022, 024	flux-cored wires.....	083, 084, 085
2% Ceriated.....	107	"B" tank cart.....	096	BLUESHIELD™ carbon steel	
2% Thoriated.....	107	Beanies.....	113	metal-cored wires.....	080, 081
2290-H.....	055	Blaze shield.....	110	BLUESHIELD™ copper ground clamps.....	103
2AL.....	037	Blue clad welding gloves.....	116	BLUESHIELD™ dual-locking	
48 Series.....	064	Blue cowhide grain.....	117	cable connectors.....	102
56 Series.....	061, 062	Blue cushion.....	115	BLUESHIELD™ electrode holders.....	103
6D.....	037	Blue fusion.....	110	BLUESHIELD™ FCAW stainless	
6DM.....	037	Blue shell.....	110	consumables.....	093
7HP.....	037	Blue312 torch handle.....	051	BLUESHIELD™ GMAW stainless	
8AL.....	037	Blue322 torch handle.....	052	consumables.....	093
Acetylene.....	015	Blue499 manual cutting torch.....	056	BLUESHIELD™ gouging	
Acetylene tips.....	057, 058	Blue512b cutting attachment.....	051	carbon electrodes.....	106
ALBEE™ duo.....	096	Blue522/blue523 cutting attachments.....	052	BLUESHIELD™ GTAW stainless	
ALBEE™ range.....	021	BLUEBLEND™.....	045	consumables.....	092
ALBEEKIT.....	048	BLUEBRUSH™.....	046	BLUESHIELD™ low-alloy electrodes.....	074
ALIGAL™.....	026	BLUEBURR™.....	046	BLUESHIELD™ low-alloy steel	
ALIGAL™ 1.....	026	BLUECHOP™.....	044	flux-cored wires.....	086, 087
ALIGAL™ 12.....	026	BLUECUT™.....	044	BLUESHIELD™ low-alloy steel	
ALIGAL™ 13.....	026	BLUEGRIND™.....	045	metal-cored wires.....	082
ALIGAL™ 15.....	026	BLUEPLASMA™.....	028	BLUESHIELD™ MIG pliers.....	104
ALIGAL™ 2.....	026	BLUESHIELD™ A.....	022, 023	BLUESHIELD™ mild-steel electrodes.....	072
ALIGAL™ 28.....	026	BLUESHIELD™ 6.....	022, 023	BLUESHIELD™ MNR.....	075, 076, 077
ALIGAL™ 3.....	026	BLUESHIELD™ 620-308L.....	092	BLUESHIELD™ MNR - Universal.....	075
ALIGAL™ 5.....	026	BLUESHIELD™ 622-316L.....	092	BLUESHIELD™ MNR - 4x4.....	075
ALMIG™.....	022, 024	BLUESHIELD™ 624-309L.....	092	BLUESHIELD™ MNR - Builder 38.....	076
ALPHAGAZ™ 1.....	032, 033	BLUESHIELD™ 630-308L.....	092	BLUESHIELD™ MNR - Builder MN.....	076
ALPHAGAZ™ 2.....	032, 033	BLUESHIELD™ 630-309L.....	092	BLUESHIELD™ MNR - Cast 55.....	076
ALPHAGAZ™ 1000.....	032, 033	BLUESHIELD™ 630-316L.....	092	BLUESHIELD™ MNR - Cast 99.....	076
ALPHAGAZ™ pure gases.....	032, 033	BLUESHIELD™ 640-308L.....	093	BLUESHIELD™ MNR - Chinook.....	075
ALTIG™.....	022, 024	BLUESHIELD™ 640-308L HiSil.....	093	BLUESHIELD™ MNR - Eraser.....	075
ALTOP™.....	012	BLUESHIELD™ 640-309L.....	093	BLUESHIELD™ MNR - Hard 58.....	077
ALTOP™ duo.....	096	BLUESHIELD™ 640-309L HiSil.....	093	BLUESHIELD™ MNR - Hard 60.....	077
Ammonia (NH <sub>3</sub> ).....	035	BLUESHIELD™ 640-316L.....	093	BLUESHIELD™ MNR - Hard 60.....	077
ARCAL™ 211.....	022, 024	BLUESHIELD™ 640-316L HiSil.....	093	BLUESHIELD™ MNR - Krome 62.....	077
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