

Storage and reconditioning of filler metals

All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15° C (60° F) and 30° C (80° F) and 50% maximum Relative Humidity. After the containers of covered electrodes have been opened, they should be stored as per the following recommendations:

Type of covering	Product Name	Holding Over	Recondition	Time
CELLULOSIC	LA6010, LA 6011	NR	NR	
RUTILE	LA 6013, LA 7014, LA 7024	NR	135-150° (250-300°F)	½ hr
BASIC	LA 7018, LA 18 LMP, LA 18 PLUS, LA 18 PLUS LMP, EXCELARC 18, EXCELARC 18AC, LA 7028, All low alloys	100 –150° C (200 - 300° F)	325-375°C (600-700° F)	1 hr
STAINLESS STEEL	308-15, 316-15, etc. (LIME) 308-16, 316-16, etc. (TITANIA)	100-150° C (480-520° F) 200-225° C (395-430° F)	250-275° C (480-520° F) 200-225° C (395-430° F)	½ hr 1 hr
SOLID WIRES	Hi-Tensile, LA S-3, LA 75G, LA S-6, etc.	NR	NR	
FLUX CORED WIRES	LA T9, LA %91, LA T91C60, LA T91C40, LA T9 PLUS, LA T 91 PLUS, etc.	NR	NR	
SUBMERGED ARC FLUXES	LA 23, LA 59, La 100, LA 505, LA 805	60° C (150° F)	150-200° C (200-300° F)	½ hr to 2 hr

These recommendations apply to filler metals manufactured and/or distributed by
Air Liquide Canada Inc.

Shielding gases for GMAW, FCAW, GTAW

BLUESHIELD 1 (Argon/Helium)

- Inert
- GMAW and GTAW of non-ferrous material such as aluminum, magnesium, titanium and copper.
- Allows short circuit, spray and pulsed current transfer for aluminum GMAW.
- GTAW of plain carbon, alloy and stainless steel.
- Higher heat input than pure argon for faster welding speeds and better wetting.
- More stable arc than **BLUESHIELD 2** or 3.
- Lower rate of ozone formation than that of pure argon shielding. Available in **XPR** cylinders.

BLUESHIELD 2 (Argon/Helium)

- Inert
- GMAW and GTAW of non-ferrous material such as aluminum, magnesium, titanium and copper.
- Allows short circuit, spray and pulsed current transfer for aluminum GMAW.
- Greater heat input into weld pool than **BLUESHIELD 1**.
- Lower rate of ozone formation than that of pure argon or **BLUESHIELD 1** shielding.

BLUESHIELD 3 (Helium/Argon)

- Inert
- GMAW and GTAW of non-ferrous material such as aluminum, magnesium, titanium and copper.
- Allows short circuit or spray transfer for aluminum GMAW.
- Greater heat input into weld pool than **BLUESHIELD 1** or **2**. More stable arc than pure helium.
- Well suited for welding thick sections and for automated welding
- Lower rate of ozone formation than that of pure argon,
- **BLUESHIELD 1** or **BLUESHIELD 2** shielding.

BLUESHIELD 4 (Argon/Oxygen)

- Oxidizing
- GMAW of carbon, low alloy and stainless steels.
- Spray and pulsed current transfer.

BLUESHIELD 5 (Argon/Oxygen)

- Oxidizing
- GMAW of carbon and low alloy steels.
- Spray and pulsed current transfer.
- Greater heat input than **BLUESHIELD 4** for faster travel speed -Well suited for high speed automated welding.

Shielding gases for GMAW, FCAW, GTAW

BLUESHIELD 6 (Argon/Carbon Dioxide)

- Oxidizing
- GMAW of carbon and low alloy steels.
- Spray transfer.
- Better spray transfer than **BLUESHIELD 7**.
- Low penetration in short circuit transfer but good penetration in spray transfer.
- Ideal mixture for high-speed welding using high wire feed speed.
- Available in **XPR** cylinders.

BLUESHIELD 7 (Argon/Carbon Dioxide)

- Oxidizing
- GMAW of carbon and low alloy steels.
- Spray transfer and short circuit transfer.
- Less spatter than **BLUESHIELD 8** in short circuit transfer.

BLUESHIELD 8 (Argon/Carbon Dioxide)

- Oxidizing
- FCAW of carbon, low alloy steels and stainless steels. -Reduced fume emission rates when compared to C02GMAW of carbon and low alloy steels.
- Short circuit transfer only.
- Better penetration in short circuit transfer than **BLUESHIELD**

BLUESHIELD 9 (Helium/Argon/Carbon Dioxide)

- -GMAW of all grades of stainless steels.
- -Short circuit transfer only.
- -High travel speeds possible.

BLUESHIELD 10 (Argon/Carbon Dioxide/Hydrogen)

- GMAW of austenitic (300 series) stainless steels.
- Short circuit, spray and pulsed transfer.
- Cleaner, brighter weld appearance due to hydrogen addition.
- Hydrogen reduces ozone formation.
- It is patented and is therefore a unique product.
- Versatile gas mixture for stainless steel welding.

BLUESHIELD 11 (Argon/Hydrogen)

- Reducing
- GTAW of austenitic (300 series) stainless steels.
- Cleaner, brighter weld appearance due to hydrogen addition. -Hydrogen reduces ozone formation.
- Greater heat input than argon for faster welding speeds.

Shielding gases for GMAW, FCAW, GTAW

BLUESHIELD 12 (Argon/Hydrogen)

- Reducing
- GTAW of austenitic (300 series) stainless steels.
- Cleaner, brighter weld appearance due to hydrogen addition
- Hydrogen reduces ozone.
- Greater heat input than argon or **BLUESHIELD 11** for faster speeds.
- Designed for high speed automated or robotic GTAW applications.

BLUESHIELD 14 (Argon/Hydrogen)

- Plasma cutting primary gas (plasma gas).
- Cutting stainless steels, aluminum and other non-ferrous met
- Faster cutting speeds and better quality cut due to addition of hydrogen.
- Cut surface on stainless steels is especially bright and clean.
- Recommended for thicker materials (**1/2** inches or greater).

BLUESHIELD 15 (Nitrogen/Hydrogen)

- Purging, back shielding or trailing shield for GMAW and GTAW of austenitic (300 series) stainless steels.
- More economical than argon.
- Cleaner, brighter weld appearance than that of argon or nitrogen

BLUESHIELD 23 (Argon/Carbon Dioxide/Oxygen)

- Oxidizing
- GMAW of carbon and low alloy steels.
- Short circuit, spray and pulse transfer.
- Narrow-globular transfer zone.
- Transition to spray is achievable at low current. -Very low spatter level.
- Lower fumes than **BLUESHIELD 8**.
- Lower ozone formation than **BLUESHIELD 4**.
- Especially well suited to robotic applications.
- Most versatile gas mixture for carbon and low alloy steel welding.
- Available in **XPR** cylinders.

Shielding gases for GMAW, FCAW, GTAW

ARCAL 14 (Argon/CO₂/Oxygen)

- Oxidizing
- Optimized gas mixture for GMAW of carbon and low alloy steels. Especially designed for pulse welding.
- Allows also short circuit and spray transfer.
- Narrow globular transfer zone. Transition to spray is achievable at low current.
- Very low spatter level and silicate island formation.
- Minimizes distortion.
- Lower fumes than **BLUESHIELD 8** or **23**.
- Well suited for performing very clean welds.
- Can perform welds with stainless steels wires.
- The **ARCAL** mixtures are in **XPR** cylinders equipped with tulip c to protect the valve at all time.

ARCAL 39 (Argon/Helium/Nitrogen)

- Specifically designed for GTAW of Duplex stainless steel
- Yields the optimum in corrosion resistance and mechanical prope -Excellent operator appeal.

ARCAL 121 (Argon/Helium/CO₂)

- Very small oxidizing power.
- Optimized gas mixture for GMAW of all grades of stainless steels. Especially designed for pulse welding.
- Allows also short circuit and spray transfer.
- Exceptional 'color match' with the base material.
- The most versatile shielding gas for stainless steel welding.
- Very good operator's appeal.
- The **ARCAL** mixtures are in **XPR** cylinders equipped with tulip to protect the valve at all time.

ARCAL 129 (Argon/Helium/CO₂/Oxygen/Nitrogen)

- Specifically designed for GMAW of Duplex Stainless Steels. -Optimized transfer, bead appearance, and penetration profile when welding Duplex Stainless Steel.
- Excellent operator appeal.

ARCAL 211 (Argon/CO₂/Helium)

- Moderately oxidizing,
- Optimized gas mixture for FCAW of carbon, low alloy and stainless Well suites for welding metal-cored wires.
- Lowest fume emission (30% less than with CO₂, 25% less than 75% Ar/25% CO₂)-
- Increased melt-off rates, lower spatter level: better productivity. Better mechanical properties, optimized bead profile.
- It is patented and is therefore a unique product to Air Liquide Canad -The solution for our FCAW welding job.
- The **ARCAL** mixtures are in **XPR** cylinders equipped with tulip c to protect the valve at all time.