

# SuperGlaze®

## ALUMINUM WELDING WIRES



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# SUPERGLAZE® ALUMINUM WIRES

SuperGlaze® products help prevent the common issues associated with aluminium wire feeding such as birdnesting, tangling, and burnbacks. The key lies with a smooth surface finish and consistent alloying chemical composition. The result is a stable arc, improved feedability, and exceptional control with every weld!

## THREE UNIQUE FEATURES:

- A proprietary process which gives SuperGlaze® a superior surface finish for optimum surface integrity.
- A manufacturing process that precisely controls the alloy chemical composition to produce consistent welding wire characteristics.
- State of the art testing equipment to evaluate the composition, surface condition, and feedability of the wire to help achieve problem-free welding



# HERE'S HOW OUR PROCESS WORKS

## MELTING AND ALLOYING AT OUR FACILITY

Unlike other manufacturers, Lincoln Electric is the only one fully integrated facility in the world that starts at the source with pure aluminium ingots and the right alloying components. With this process, we are able to hold tight tolerances in the composition and low levels of impurities which will lead to consistent weld quality and low porosities.

## ROD CASTING

Our continuous casting keeps the rod surface free from imperfections and impurities creating world-class rod for our wire drawing process.

## WIRE MILL DRAWING

We use advanced wire drawing technology to preserve both surface integrity and internal soundness.

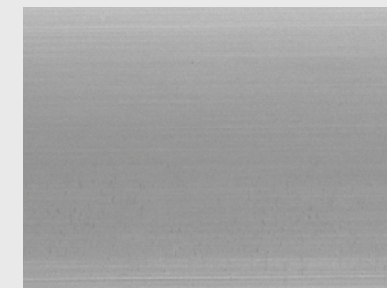
## SPOOLING & PACKAGING

We put the highest care into spooling and our GEM-PAK to guarantee the best feeding performance. To help ensure superior quality of welding wire, continuous finished product inspection is done. Surface quality is evaluated along with feedability and welding performance.

## The SuperGlaze® Advantage 5356 Wire Surfaces, Magnified 60x



Poor performing product



SuperGlaze® "Best in Class"

## ALLOYS AND PRODUCT OVERVIEW

Process	Product name	Classifications		General Description	Typical applications
		AWS A5.10	EN ISO 18273		
MIG/TIG	<b>SuperGlaze® 4043</b>	ER4043	S Al 4043 (AlSi5)	4043 is a great choice for the welding of heat-treatable base alloys and more specifically the 6XXX series alloys. It has a lower melting point and more fluidity than the 5XXX series filler alloys and is preferred by welders because of its favorable operating characteristics. ER4043 type wires may reduce crack sensitivity with the 6XXX series base alloys. 4043 is suitable for sustained elevated temperature service, i.e. above 65°C.	6XXX alloys, and most casting alloys Automotive components such as frame and drive shafts Bicycle frames
MIG/TIG	<b>SuperGlaze® 4047</b>	ER4047	S Al 4047 (AlSi12)	A lower melting point and higher fluidity are possible advantages 4047 has over 4043. 4047 produces very clean weld deposits and possesses excellent operator appeal. It can be used as a substitute for an ER4043 type wire to minimize hot cracking, and produce higher fillet weld shear strength and leak-free welds. 4047 is suitable for sustained elevated temperature service, i.e. above 65°C.	Automotive components Heat Exchangers Body panels Brazing of aluminium sheets, extrusions and castings
MIG/TIG	<b>SuperGlaze® 5183</b>	ER5183	S Al 5183 (AlMg4,5Mn07(A))	5183 is designed to weld high magnesium alloys to meet higher tensile strength requirements. Use on 5083 and 5654 base materials when required tensile strengths are 40,000 psi (276 MPa) or greater. Typical applications are in the marine and cryogenic industries, and high strength structural aluminium fabrication.	Marine fabrication and repair Cryogenic tanks Shipbuilding and other high strength structural aluminum applications Railcars Offshore industry
MIG	<b>SuperGlaze® 5183 PLUS</b>				
MIG/TIG	<b>SuperGlaze® 5356</b>	ER5356	S Al 5356 (AlMg5Cr(A))	5356 is our most popular aluminium MIG wire. It is a great general purpose filler alloy designed for the welding of 5XXX series alloys when 40,000 psi (276 MPa) tensile strength is not required.	Trailer Manufacturing Formed truck panels Structural frames in the shipbuilding industry
MIG	<b>SuperGlaze® 5356 PLUS</b>				
MIG/TIG	<b>SuperGlaze® 5556A</b>	ER5556A	S Al 5556A (AlMg5Mn)	5556A is commonly used for welding high strength base materials like 5083 and provides good strength on 6XXX base materials. The elements are controlled to obtain increased weld strength over the 5356 alloy. It shows high corrosion resistance, making it suitable for marine applications. Good ductility and improved crack resistance	Marine Aircraft Military Industry

Lincoln Electric produces a variety of alloys in its globally unique vertically integrated aluminium welding wire facility. The ability to manufacture alloy and cast rods internally allows Lincoln Electric to produce many alloy chemical compositions not listed in this brochure. Additionally, tailored alloy and product requirements can be met for specific applications. Please contact your local Lincoln Electric sales representative for more information.

## CHEMICAL COMPOSITION

Product name	Shielding gas (ACC. EN ISO 14175)	Approvals*		Typical chemical composition									
		MIG	TIG	Al	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Be
SuperGlaze® 4043	l1 : Inert gas Ar (100%) l3 : Inert gas Ar+ 0.5-95% He Flow rate: 16-35 l/min	TÜV, DB, CE, CWB		bal.	5.26	0.15	0.01	0.01	0.03	-	0.001	0.01	<0.0002
SuperGlaze® 4047		-		bal.	11-13	max. 0.8	max. 0.30	max. 0.15	max. 0.10	-	max. 0.20	-	0.0003
SuperGlaze® 5183		TÜV, DB, CWB, ABS, DNV, KR, LR, RINA, CCS, BV, CE	TÜV, DB, ABS, CE	bal.	0.03	0.13	0.001	0.65	4.99	0.10	0.02	0.07	0.0002
SuperGlaze® 5183 PLUS													
SuperGlaze® 5356		TÜV, DB, CWB, ABS, DNV, KR, LR, RINA, CCS, BV, CE	TÜV, DB, ABS, CE	bal.	0.05	0.09	0.03	0.12	4.90	0.08	<0.01	0.15	0.0002
SuperGlaze® 5356 PLUS													
SuperGlaze® 5556A		CE		bal.	0.05	0.11	-	0.6	5.1	0.08	-	0.09	0.0002



## MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

Product name	Mechanical properties, typical, all weld metal			
	Shielding gas	Condition	Tensile Strength (MPa)	Elongation (%)
SuperGlaze® 4043	l1	AW	165-195	16-22
SuperGlaze® 4047			170-260	5-15
SuperGlaze® 5183 PLUS			275-310	25-35
SuperGlaze® 5356			240-290	25-33
SuperGlaze® 5356 PLUS			290-300	23-30
SuperGlaze® 5556A			290-310	23-30

### TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

\* Approvals may vary depending on product type

## PACKAGING AND ACCESSORIES

### Gem-Pak® Aluminum Wire Bulk Packaging System

The patented Gem-Pak system consists of a unique core structure and glass gems that are weighted based on alloy and wire diameter, which lay on top of the wire as it unreels during use.

This allows for a smooth tangle-free performance and controlled feed system unlike any other aluminum wire bulk packaging system in the market.

### TANGLE-FREE GUARANTEED



Gem-Pak Glass Gems

Standard  
Aluminum  
Packages

### SOLUTION BENEFITS

The patented Gem-Pak aluminium wire bulk packaging system minimizes feeding issues and tangling resulting in **minimal arc-flaring and contact tip burnbacks.**

- Achieve **consistent and reliable welds** with dependable wire feeding.
- Reduce your non-productive downtime and maximize your uptime with SuperGlaze® Gem-Pak today!

50%

Reduction In Contact Tips

+54 Mins

Time Saved on Tip  
Changeover



30%

Repair Rate Reduciton

+36 Mins

Time Saved on  
Repairing Parts



#### Production Time Disclosure

The production and down time information provided above is merely an estimate. Customer results may vary, and may be less than the information provided above based on the unique characteristics of each customer's welding environment. Up time calculated by subtracting un-productive time per robot from total time. Additional uptime calculated by subtracting repair time per part per robot. Specific automotive customer case study comparing 3/64" (1.2mm) 4043 wire on different drum package vs. SuperGlaze® 4043 Gem-Pak™, using 27k lbs of wire per year.

## Gem-Pak™ Bulk Packaging



VS

## Competition



- » Simple design, no complex external pay-off systems
- » Wire travels straight up in one layer with least resistance
- » Patented design helps minimize arc-flaring and tip burnback

- » Complex and expensive mechanical spinners
- » Plastic rings create resistance at different levels
- » Wire loops tangle inside the drum creating burn-backs

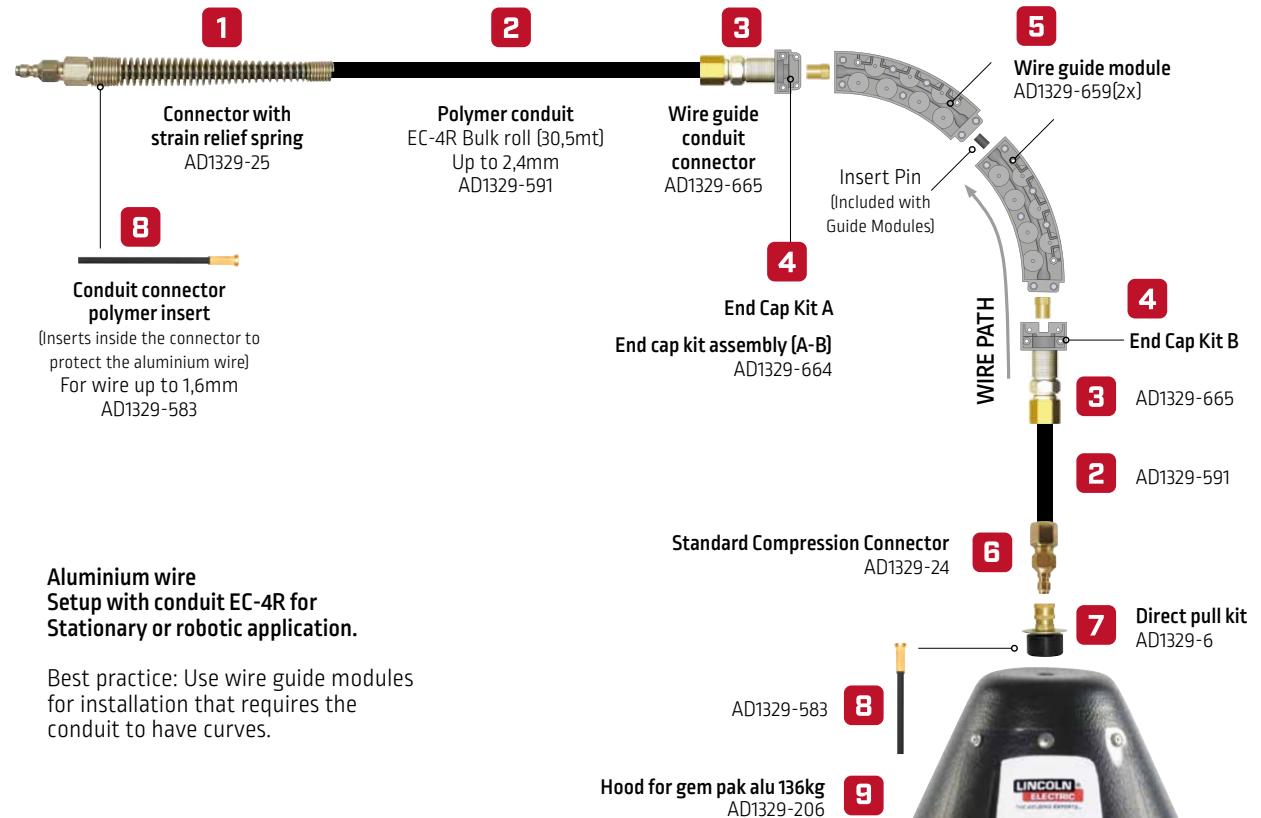
## GEM-PAK® PAYOFF ACCESSORIES



Autodrive 4R220  
or Autodrive SA

### To order

Description	Reference
1 – Polymer compression fitting w/strain relief connector	AD1329-25
2 – 300 Id x .460 Od polymer conduit, 30.5m	AD1329-591
3 – Wire guide conduit connector	AD1329-665
4 – Male and female end caps kit	AD1329-664
5 – Wire guide module, 45-degree	AD1329-659
6 – Polymer compression (ferrule)	AD1329-24
7 – Direct pull kit	AD1329-6
8 – Connector liner 2.3mm id, polymer	AD1329-583
9 – Square hood chimeless	AD1329-206

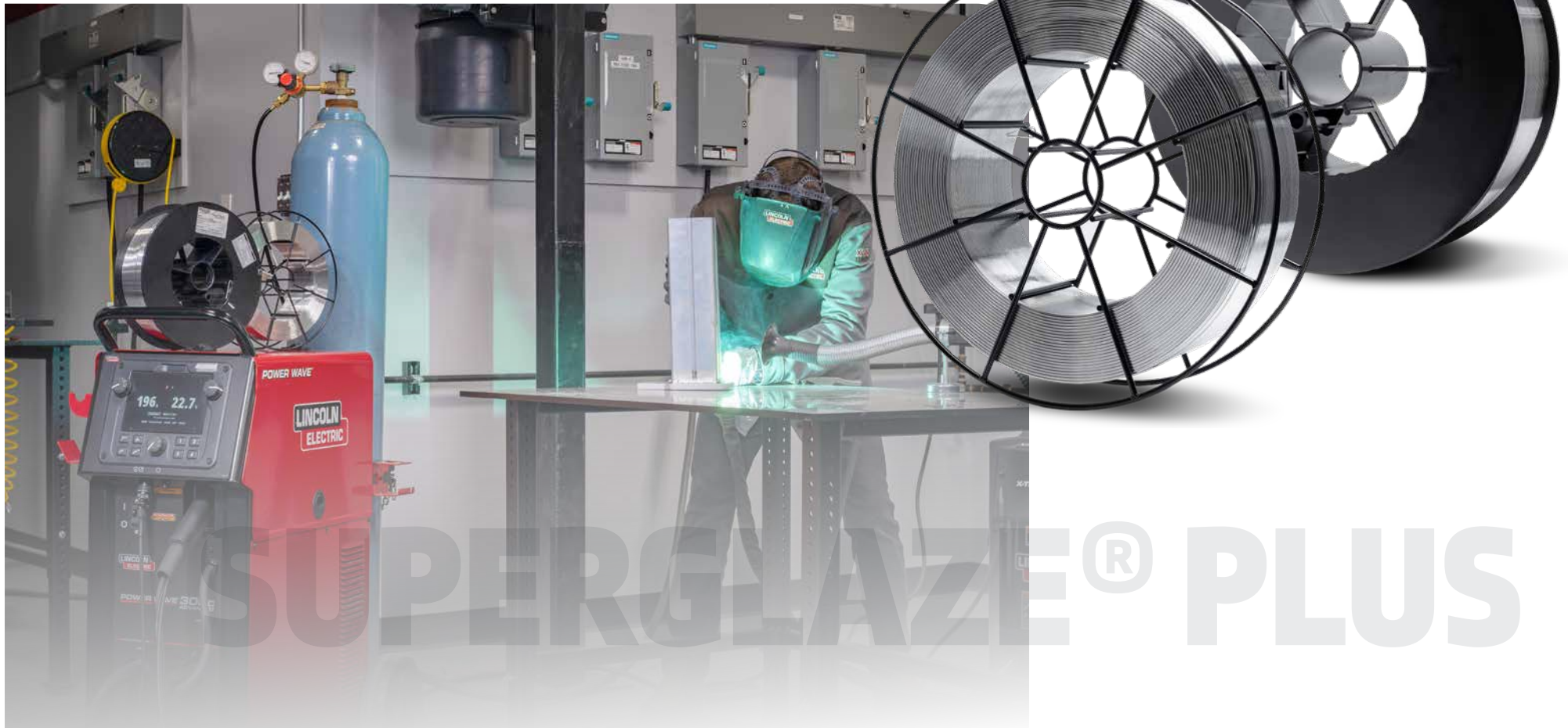


# SUPERGLAZE® PLUS **NEW**

Experience the next generation of aluminum arc stability and welding performance with **SuperGlaze® 5356 Plus** & **SuperGlaze® 5183 Plus** spooled products from Lincoln Electric.

- Cosmetic Welds.
- Easier Puddle Control
- Optimal feeding

## ALUMINUM WELDING WIRE







## PRODUCTS AVAILABILITIES

ALLOY	Material description			
	MIG		TIG	
4043	ED702748	1.2 mm - 7.26 KG spool (S300)	ED701957	1.6 x 1000 mm - 5 KG carton box
	ED701753	1.0 mm - 7 KG spool (BS300)	ED702537	2.0 x 1000 mm - 5 KG carton box
	ED701754	1.2 mm - 7 KG spool (BS300)	ED701958	2.4 x 1000 mm - 5 KG carton box
	ED701755	1.6 mm - 7 KG spool (BS300)	ED701959	3.2 x 1000 mm - 5 KG carton box
	ED036610	1.2 mm - 136 KG GEM-PAK		
	ED036611	1.6 mm - 136 KG GEM-PAK		
4047	ED036613	1.2 mm - 136 KG GEM-PAK		
	ED036612	1.6 mm - 136 KG GEM-PAK		
5183	ED034791	1.2 mm - 136 KG GEM-PAK	ED701963	1.6 x 1000 mm - 5 KG carton box
			ED702566	2.0 x 1000 mm - 5 KG carton box
			ED701965	2.4 x 1000 mm - 5 KG carton box
	ED034792	1.6 mm - 136 KG GEM-PAK	ED701964	3.2 x 1000 mm - 5 KG carton box
			ED702517	4.0 x 1000 mm - 5 KG carton box
5183 PLUS	ED704127	1.2 mm - 7 KG spool (BS300)		
	ED704128	1.2 mm - 7.26 KG spool (S300)		
	ED704129	1.6 mm - 7 KG spool (BS300)		



ALLOY	Material description			
	MIG		TIG	
5356	ED034550	1.2 mm - 136 KG GEM-PAK	ED701966	1.6 x 1000 mm - 5 KG carton box
			ED702518	2.0 x 1000 mm - 5 KG carton box
			ED702387	2.4 x 1000 mm - 5 KG carton box
ED701967			3.2 x 1000 mm - 5 KG carton box	
ED702585			4.0 x 1000 mm - 5 KG carton box	
5356 PLUS	ED034551	1.6 mm - 136 KG GEM-PAK		
	ED704123	1.2 mm - 7 KG spool (BS300)		
	ED704124	1.2 mm - 7.26 KG spool (S300)		
5556A	ED704125	1.6 mm - 7 KG spool (BS300)		
	ED703762	1.0 mm - 7.26 KG spool (S300)	ED703764	3.2 x 1000 mm - 5 KG carton box
	ED703763	1.2 mm - 7.26 KG spool (S300)	ED703765	4.0 x 1000 mm - 5 KG carton box
	ED702986	1.6 mm - 7.26 KG spool (S300)		



### CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company® is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment.

Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose, is specially disclaimed.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric act the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to [www.lincolnelectric.eu](http://www.lincolnelectric.eu)



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