



DRIVERS & TRENDS

Global energy constraints and the need to reduce environmental impact continue to drive development of new materials and design concepts to further reduce the weight of passenger cars and road transport vehicles.

APPLICATION REQUIREMENTS

Solutions from Lincoln Electric are designed to meet customer expectations for Bodywork, Chassis Components, Power Train, Exhaust and Seat manufacturing.

Smooth weld shapes, flat toe angles and few silicate islands are important in order to achieve extended fatigue life when high-speed welding on chassis components. All of which can be met by using the RapidArc® welding process. This patented Lincoln process, utilizing a very short arc, also meets the requirements of exhaust welding with high alloy MIG-Wires.

Joining materials of different wall thicknesses, bridging variable gap sizes and controlling a large number of starts and stops are critical for seat manufacturing and perfectly supported by the very stable arc performance of Supramig® welding wires.

For very critical joints with thin materials on body in white structures, the world famous STT® process and Power Mode® lead the industry in low heat MIG-/MAG-processes and provide excellent results with very low spatter.

LINCOLN SOLUTION

Lincoln Supramig® and Ultramag® high quality mild steel MIG-Wires



- ✓ Tolerances of chemistry tighter than ISO 14341 to achieve optimum process stability and repeat accuracy
- ✓ Ecological AccuTrak® drums with 250 kg and 500 kg welding wire for long on-stream times and reliable feeding performance
- ✓ Excellent starting behavior, reducing spatter and wear of expensive contact tips
- ✓ A proven track record of excellent performance in robotic applications
- ✓ Barcode Labeling according to VDA 4092
- ✓ Consumables registered in IMDS-System



Lincoln SuperGlaze®, high quality Aluminum MIG-Wires

- ✓ Completely integrated process from green rod to welding wire production
- ✓ Excellent surface and feeding properties due to diamond shaving applied in production
- ✓ Ecological packaging AccuPak® boxes available with up to 136 kg of Aluminum Wire



EQUIPMENT

POWER WAVE I400 &
AUTODRIVE 4R100 WIRE FEEDER



- Modular concept applying just one machine for all processes and materials
- Very robust design ensuring operational availability using the industry's fastest switching inverter technology
- Versatile range of pre-installed Waveforms for steel and aluminum, such as RapidArc®, PowerMode®, and Pulse-On-Pulse®
- Software- and Waveform updates available free of charge
- Full featured production monitoring and weld data recording system with parts identification
- Plug-and-play connection to Fanuc Arcmate controllers via Ethernet IP. Devicenet connection to other robotic systems

CONSUMABLES

RECOMMENDED WIRES FOR MAG WELDING OF STEEL STRUCTURES

| Wire type | Classification | | Standard Product availability - Ø (mm) | | | | Base material |
|-----------------|-----------------|----------------|--|-------------------------|--------------------------|--------------------------|---|
| | AWS A5.18/5.18M | ISO 14341 | Plastic S300 15kg-Spool | Metal B300 15kg-Spool | 250 kg Accutrak® EcoDrum | 500 kg Accutrak® EcoDrum | |
| Supramig® | ER70-S6 | G 42 4 M G3Si1 | 0.8-1.0-1.2 | 0.8-0.9-1.0-1.2-1.4-1.6 | 0.8-0.9-1.0-1.2-1.4-1.6 | 1.0-1.2-1.6 | Mild steels EN10025 S185, S235, S275, S355 Fine grained steels EN10113-2S275, S355, S420 Fine grained steels EN10113-3 S275M, S275ML, S355M, S355ML, 420M, S420ML, S460 |
| Supramig® Ultra | ER70-S6 | G 46 4 M G4Si1 | 1.0-1.2-1.4-1.6 | 0.8-1.0-1.2-1.4-1.6 | 0.8-1.0-1.2-1.4-1.6 | 1.0-1.2-1.4-1.6-2.0 | |
| Ultramag® | ER70-S6 | G 42 4 M G3Si1 | 0.8-1.0-1.2-1.4-1.6 | 0.8-1.0-1.2-1.6 | 0.8-0.9-1.0-1.2 | 0.9-1.0-1.2-1.4-1.6 | |
| Ultramag® SG3 | ER70-S6 | G 46 4 M G4Si1 | 0.8-1.0-1.2-1.4-1.6 | 0.8-0.9-1.0-1.2-1.4-1.6 | 0.8-1.0-1.2 | 0.8-1.0-1.2-1.4-1.6 | |
| Autal SG2 | ER70-S6 | G 46 4 M G3Si1 | 0.8-1.0-1.2-1.6 | 0.8-1.0-1.2-1.6 | 0.8-1.0-1.2-1.6 | | |
| Autal SG3 | ER70-S6 | G 46 4 M G4Si1 | 0.8-1.0-1.2-1.6 | 0.8-1.0-1.2-1.6 | 0.8-1.0-1.2-1.6 | | |

RECOMMENDED WIRES FOR MIG WELDING OF ALUMINIUM STRUCTURES

| Wire type | Alloy | Classification | | Standard Product availability - Ø (mm) | | Base material EN485-2 & EN1706 | | | | | | | | | | | | | | | | | |
|------------------|---------------|----------------|-----------|--|---------------|--------------------------------|---------------|-----------|--------------|---------|---------------|--------------|-------------|---------------|---------------|----------------|----------------|------------|------------|--------------|--------------|-------------|---------|
| | | AWS A5.10 | ISO 18273 | BS300 7kg-Spool | AccuPak® box* | Wrought Alloys | | | | | | | Cast Alloys | | | | | | | | | | |
| | | | | | | Al Mg 1.5 Mn | Al Mg2 Mn 0.8 | Al Mg 2.5 | Al Mg 4.5 Mn | Al Mg 4 | Al Mg 3.5 (A) | Al Mg 2.7 Mn | Al Mg 3 | Al Mg 1 Si Cu | Al Mg Si 1 Mn | Al Zn 4.5 Mg 1 | Al Si 7 Mg 0.3 | Al Si2 (a) | Al Si 6 Cu | Si Si 8 Cu 3 | Al Si 2 (Cu) | Al Mg 3 (a) | Al Mg 5 |
| Superglaze® 5754 | Al Mg 3 | | S Al 5754 | 0.8-1.0-1.2-1.6-2.4 | 1.2-1.6 | 5040 | 5049 | 5052 | 5083 | 5086 | 5154 | 5454 | 5754 | 6061 | 6082 | 7020 | 42100 | 44200 | 45000 | 46200 | 47000 | 51100 | 51300 |
| Superglaze® 5356 | Al Mg 5 | ER5356 | S Al 5556 | 0.8-1.0-1.2-1.6-2.4 | 1.2-1.6 | | | | | | | | | | | | | | | | | | |
| Superglaze® 5183 | Al Mg 4.5Mn | ER5183 | S Al 5183 | 0.8-1.0-1.2-1.6-2.4 | 1.2-1.6 | | | | | | | | | | | | | | | | | | |
| Superglaze® 5087 | Al Mg 4.5MnZr | ER5087 | S Al 5087 | 0.8-1.0-1.2-1.6-2.4 | 1.2-1.6 | | | | | | | | | | | | | | | | | | |
| Superglaze® 4043 | Al Si 5 | ER4043 | S Al 4043 | 0.8-1.0-1.2-1.6-2.4 | 1.2-1.6 | | | | | | | | | | | | | | | | | | |
| Superglaze® 4047 | Al Si 12 | ER4047 | S Al 4047 | 0.8-1.0-1.2-1.6-2.4 | 1.2-1.6 | | | | | | | | | | | | | | | | | | |

*136 Kg except Superglaze 4043 & 407 (125Kg)

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|-----------|------|------------|--------------|
| Excellent | Good | Reasonable | Not suitable |
|-----------|------|------------|--------------|

RECOMMENDED STAINLESS STEEL MIG-WIRES FOR WELDING MUFFLERS, CATALYTIC CONVERTERS, PARTICULATE FILTERS AND EXHAUST MANIFOLDS

| Austenitic Wires | Classification | | Standard Product availability - Ø (mm) | Ferritic Wires | Classification | | Standard Product availability - Ø (mm) |
|------------------|----------------|--------------|--|----------------|----------------|--------------|--|
| | EN 12072 - 99 | Werkst.- Nr. | BS300 15kg-Spool | | EN 12072 - 99 | Werkst.- Nr. | 250 kg Drums |
| LNM 307 | 18 8 Mn | 1.4370 | 1.0-1.2 | LNM 409 Nb | - | - | on request |
| LNM 304LSi | 19 9 L Si | 1.4316 | 0.8-1.0-1.2-1.6 | LNM 430L Nb | GZ 18 Nb L | 1.4511 | 1.0 |
| LNM 309LSi | 23 12 L Si | 1.4332 | | LNM 439 Ti | - | - | on request |