

## Lincoln Electric Releases New Consumable Selection Guide for Wind Tower Fabrication



**Cleveland** — One of the most critical factors in wind tower fabrication is the selection of the right welding consumables. To make it easier for fabricators to choose the optimal combination of submerged arc wire and flux for wind tower welding applications, Lincoln Electric has released its new Wind Tower Fabrication: Consumable Selection Guide.

The guide leverages Lincoln Electric's 70+ years of experience in submerged arc consumable design and manufacturing and provides welding solutions designed specifically for the wind tower industry.

This guide will assist fabricators in determining critical welding process factors, including consumable selection and welding procedures. In addition to determining consumable solutions for wind tower welding, Lincoln Electric developed an optimized welding procedure to help fabricators increase productivity and reduce unnecessary costs.

Lincoln Electric ran extensive tests to determine which combinations of Lincolnweld<sup>®</sup> submerged arc wire and flux meet the critical weld chemistry restrictions present in wind tower fabrication. The combinations included in the guide comprise these 10 Lincoln Electric products:

### Lincolnweld Mild Steel Submerged Arc Wire

- Lincolnweld L-61 (AWS EM12K) is a low carbon, medium manganese, low silicon general purpose electrode. It is a good choice for a wide range of applications with single or multiple-pass sub arc welding.
- Lincolnweld L-S3 (AWS EH12K) is a low carbon, high manganese, medium silicon electrode designed for use with the Lincolnweld 800 series of neutral fluxes. It produces low temperature impact properties ideal for the most demanding offshore applications.

### Lincolnweld Low Alloy Submerged Arc Wire

- Lincolnweld LA-85 (AWS ENi5) is a nickel-bearing wire with 0.2% molybdenum for use on weathering steels and applications requiring excellent low temperature impact properties.
- Lincolnweld L-70 (AWS EA1) is a low carbon, medium manganese and low silicon 0.5% molybdenum wire used for single or multiple-pass welds. This electrode is a standard choice for pipe fabrication and other limited pass applications where impact properties are required.
- Lincolnweld LA-90 (AWS EA3K) is a low carbon, high manganese and high silicon 0.5% molybdenum special purpose wire.
- Lincolnweld LA-81 (AWS EG) is a low carbon, medium manganese and low silicon 0.5% molybdenum wire containing small additions of titanium and boron for extremely high

toughness. It is often used in two-pass applications for arctic grade line pipe or as a back bead on multiple-pass welds. It can be used to weld up to API X90 grade pipe.

#### Lincolnweld® Special Neutral Flux

- Lincolnweld 960 is a low cost, general purpose flux designed to weld butt joints and both single and multiple-pass fillets. It can be used for automatic and semiautomatic sub arc welding and produces welds with excellent impact properties and slag removal. 960 Flux is designed to meet AASHTO Fracture Critical Requirements.

#### Lincolnweld® Flux for Seam Welding of Pipe

- Lincolnweld P223 is an industry standard for pipe welding on up to X80 grade pipe, especially where good impact properties are required. P223 slag is fast freezing, making it ideal for pipe welding even small diameters. P223 is an excellent choice for two-run welding as well as multiple pass welding application.
- Lincolnweld 995N, a nitrogen limiting flux, is recommended for one or two-pass, square butt welding such as longitudinal and spiral seams on pipe greater than 1/2" in thickness. 995N flux is specifically recommended with LA-81 electrode for applications requiring a minimum of 50 ft. lbs. impact strength at -50°F (-46°C).

#### Lincolnweld 800 Series Neutral Flux

- Lincolnweld 888™ is a basic flux designed for joining mild steel and low alloy steels for critical applications that require excellent mechanical properties with robust low temperature fracture toughness. 888™ is designed to be used for as-welded and stress relieved applications. It has optimal slag removal in deep groove and narrow gap applications and is designed to give robust cap pass impact toughness, engineered to handle multiple arc applications (up to five arcs) with ease.

Note: The terms “low,” “medium” and “high” are used in the context of American Welding Society classifications stated.

These 10 Lincolnweld products are recommended for usage in the following nine combinations:

<i>Flux / Wire Combinations</i>	<i>AWS Classifications</i>
960 / L-61	F7A2-EM12K-H8
P223 / L-61	F7A4-EM12K
P223 / L-S3	F7A8-EH12K-H8
P223 / L-70	F8A2-EA1-A2
995N / L-70	F8A2-EA1-A4
995N / LA-81	F9A2-EA2TiB-G
995N / LA-90	F9A2-EA3K-G
888 / L-S3	F7A8-EH12K-H4
888 / LA-83	F8A6-ENi5-Ni5-H4

To obtain a copy of Lincoln Electric's Wind Tower Fabrication Consumable Selection Guide, call (888) 355-3213 or visit [www.lincolnelectric.com](http://www.lincolnelectric.com) to obtain Bulletin GSM08-01 to learn more.

The Lincoln Electric Company, headquartered in Cleveland, Ohio, is the world leader in the design, development and manufacture of arc welding products, robotic arc-welding systems, plasma and oxyfuel cutting equipment and has a leading global position in the brazing and soldering alloys market. Attn: Magazine Staff - Please send prospect lead inquiries only to Lincoln Electric c/o Ultimate Lead Systems, Inc., P.O. Box 739, Berea, OH 44017.

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