

The image shows a row of large, white, cylindrical industrial tanks or vessels. Each tank is equipped with various pipes, valves, and gauges. The most prominent feature is the large, red, hand-operated valves on the front of the tanks. The tanks are situated outdoors on a gravel base, with a clear blue sky in the background. The overall scene is well-lit, suggesting a bright, sunny day.

**LINCOLNWELD® 822™**  
SUBMERGED ARC (SAW) FLUX

**LINCOLN®**  
**ELECTRIC**



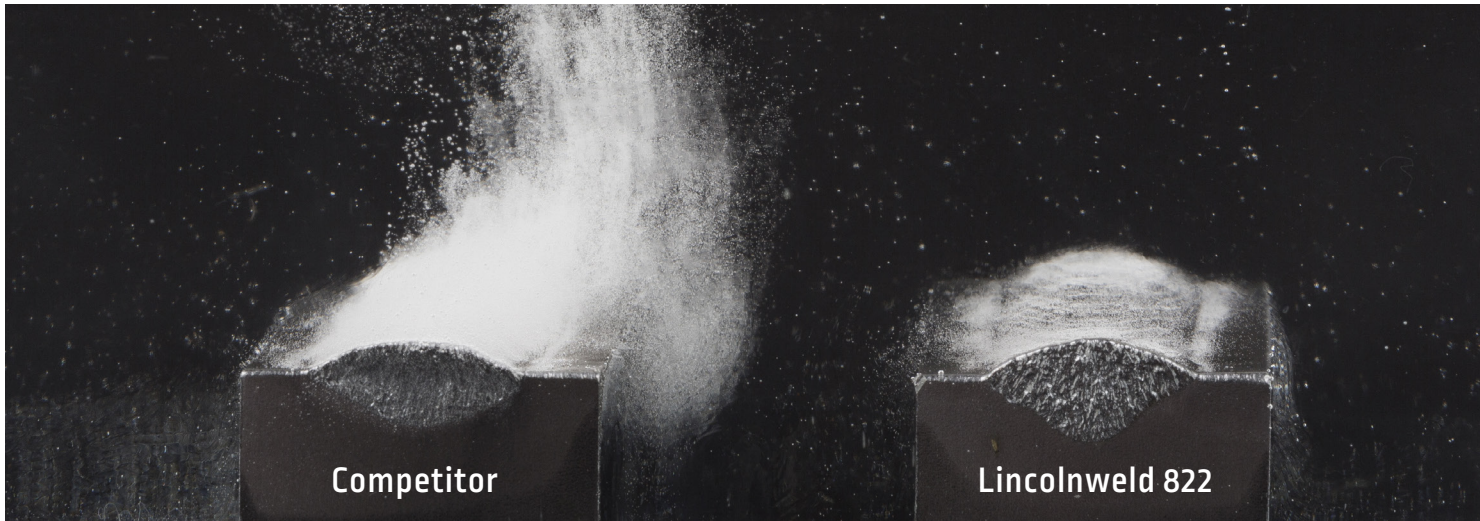
# Durable, Dry and Tough Lincolnweld® 822™

Building reactors, pressure vessels and columns in the oil and gas and chemical process industries is a challenging business. Pressure vessel walls can range in thickness from 2 to 8 inches, and when fully operational, the reactions within take place at extreme temperatures. In the production of these vessels, quality and durability need to be an integral part of the welding and fabrication process.

Lincolnweld® 822™ flux with Lincolnweld wires promote clean, strong weld metal that's critical to the integrity of chemical and refinery vessels. Designed for use with Lincolnweld LA-92 (LNS-150) and LA-93 (LNS-151) electrodes, Lincolnweld 822 ensures a low Bruscato factor (X factor), provides toughness at low temperatures and maintains strength after long post-weld heat treatments.

Diffusible hydrogen increases the risk of weld cracking and failure. Lincolnweld 822 helps reduce these risks when used with Lincolnweld LA-71™, LA-92, and LA-93 electrodes. Lincolnweld 822 does this with no flux baking required, saving you time and money.

*Get tough and stay tough with Lincolnweld 822.*



*Lincolnweld 822 has better diffusible hydrogen when compared to the competition. Picture shows hydrogen gas escaping from the weld.*

## Quality in the Weld, Integrity in the Vessel

### Low-Temperature Toughness

Welds in vessels that normally operate at high temperatures still may see very low temperatures during installation and downtime. Lincolnweld 822 helps maintain ductility in the weld, even at low temperatures, providing extra assurance during these critical times.

### X Marks the Spot

Many applications in the power generation and process industries are at extreme temperatures over an extended period of time. This can be problematic to the base material and weld metal. Lincolnweld 822 provides a low Bruscato factor ( $X < 10$ ) when paired with Lincolnweld LA-92 and LA-93, which provides resistance to temper embrittlement during service.

### Keep it Dry, Keep it Simple

Lincolnweld 822 maintains a lower diffusible hydrogen level than competing fluxes. No need for conditioning the flux prior to use nor holding the flux in drying ovens that can lead to errors and consume valuable production time. The two-step process is as fast as it is simple: pull it out of the bag and start welding.

#### Typical Applications »

Power Generation, Process  
Chemical, Pressure Vessels

#### Recommended Wire »

Mild Steel  
• Lincolnweld LA-71  
Low Alloy Steel  
• Lincolnweld LA-92, LA-93

#### Product Information »

• Basicity Index: 2.6  
• Density: 1.3

**PACKAGING**

50 lb [22.7 kg] Plastic Bag

ED036223

**FLUX COMPOSITION<sup>(1)</sup>**

	% SiO <sub>2</sub>	% MnO	% MgO	% CaF <sub>2</sub>	% Na <sub>2</sub> O	% Al <sub>2</sub> O <sub>3</sub>	% CaO	% Metal Alloys
Lincolnweld® 822	15	2	32	21	3	18	5	3 max

**AWS TEST RESULTS<sup>(1)</sup>**

Flux/Wire Combination	Weld Condition	Yield Strength <sup>(2)</sup> MPa [ksi]	Tensile Strength MPa [ksi]	Elongation [%]	Charpy V-Notch		AWS Classification (A5.17/A5.23)
					J [ft.-lbf]	@ °C [°F]	
LA-92	As-welded	640 [92]	710 [102]	24	95 [70]	-29 [-20]	F9A2-EB2R-B2R-H4
LA-92	Stress-relieved <sup>(3)</sup>	480 [70]	580 [85]	29	200 [148]	-40 [-40]	F8P4-EB2R-B2R-H4
LA-93	As-welded	760 [110]	880 [128]	20	35 [26]	-18 [0]	F11A0-EB3R-B3R-H4
LA-93	Stress-relieved <sup>(3)</sup>	550 [80]	660 [96]	23	156 [115]	-40 [-40]	F9P4-EB3R-B3R-H4
LA-71	As-welded	480 [70]	580 [85]	27	151 [111]	-62 [-80]	F7A8-EM14K-H4
LA-71	Stress-relieved <sup>(4)</sup>	430 [63]	560 [81]	31	127 [93]	-62 [-80]	F7P8-EM14K-H4

<sup>(1)</sup>See test results disclaimer. <sup>(2)</sup> Measured with 0.2% offset. <sup>(3)</sup> Stress-relieved for 1 hour at 691°C (1275°F). <sup>(4)</sup> Stress-relieved for 1 hour at 620°C (1150°F).

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.

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 specifically disclaimed.

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