SUBMERGED ARC

SAW
CONSUMABLES

Selection Guide

Submerged Arc (SAW) Flux

Product Name & AWS Class	Key Features	Packaging Available		
700 Series Active Flux		Paper Bag	Plastic Bag	Steel Drum
Lincolnweld® 760 *(EN 760 – S A MS 1; EN 760 – S A CS 1)*	• Highly active flux for handling rust and mill scale • Helps resist porosity caused by arc blow • Slow freezing slag for good weld appearance		✓	
Lincolnweld® 761 *(EN 760 – S A MS 1; EN 760 – S A CS 1)*	• Manganese alloying and carbon reducing flux designed to provide superior crack resistance • Slow freezing slag for a wide, flat weld • Excellent resistance to cracking in single pass applications		✓	
Lincolnweld® 780 *(EN 760 – S A AB 1; EN 760 – S A AR 1)*	• Industry standard for submerged arc welding applications • Fast freezing slag for easy removal and minimized spilling on circumferential welds • When paired with Lincolnweld® L-61 it is recommended for up to three pass welding applications	✓		✓
Lincolnweld® 781 *(EN 760 – S A ZS 1)*	• Features fast follow characteristics that allow for uniform welds at high speeds without undercut or voids • Recommended for high speed, limited pass welding on clean plate and sheet steel	✓		
800 Series Neutral Flux		Paper Bag	Plastic Bag	Steel Drum
Lincolnweld® 860 *(EN 760 – S A AB 1)*	• Industry standard for submerged arc welding applications • Excellent operating characteristics in a variety of general welding applications • Capable of producing weld deposits with impact toughness exceeding 27 J (20 ft•lbf) at -40°C (-40°F) with Lincolnweld® L-61	✓		
Lincolnweld® 865 *(EN 760 – S A AR 1; EN 760 – S A AB 1)*	• General purpose flux designed to weld butt joints and flat and horizontal fillets • When used with Lincolnweld® L-50 or L-61, it is capable of producing 480 MPa (70 ksi) tensile strength after stress relief • Small loss of strength when used in the stress-relieved condition	✓		
Lincolnweld® 880 *(EN 760 – S A AS 1; EN 760 – S A FB 1)*	• Can be used for both joining and hardfacing welding • Optimal bead appearance when used with solid low alloy steel electrodes with a minimum of 0.20% silicon • Use with both solid and flux cored wires	✓		✓
Lincolnweld® 880M *(EN 760 – S A FB 1)*	• A basic flux which features industry proven results in multiple pass applications • Recommended for welding with solid mild steel and low alloy electrodes, as well as Lincoln's LAC series of low alloy flux-cored electrodes • Good deep groove slag removal		✓	

Selection Guide

Submerged Arc (SAW) Flux

Product Name & AWS Class	Key Features	Packaging Available		
800 Series Neutral Flux		Paper Bag	Plastic Bag	Hermetically Sealed Pail
Lincolnweld® 882 *(EN 760 – S A AS 1; EN 760 – S A AS 2)*	• Designed for a variety of welding applications and is known for providing consistent mechanical properties • Recommended for stainless steel welding and can be paired with both mild and low alloy steel electrodes	✓		
Lincolnweld® 888 *(EN 760 – S A FB 1)*	• Designed for use in critical applications • Recommended for joining mild steel and low alloy steels in as-welded and stress-relieved applications • Low H4 diffusible hydrogen levels		✓	
Lincolnweld® 8500 *(EN 760 - S A FB 1)*	• Capable of providing impact properties necessary for thick weld joints from root to cap pass • Operates well on AC and multiple arcs with good resistance to nitrogen porosity • Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F)		✓	
Lincolnweld® MIL800-H *(EN 760 - S A CS 1; EN 760 - S A FB 1)*	• Capable of providing industry leading H2 diffusible hydrogen levels • Designed for low temperature applications • Recommended for both single and multiple arc welding of both butt and fillet welds			✓
Special Neutral Flux		Paper Bag	Plastic Bag	Hermetically Sealed Pail
Lincolnweld® 960 *(EN 760 - S A AB 1)*	• Low cost, general purpose flux designed to weld butt joints and both single and multiple pass fillets • Recommended for automatic and semiautomatic submerged arc welding • A versatile, cost-effective flux that can be used with many alloy systems	✓		
Lincolnweld® 980 *(EN 760 - S A AB 1; EN 60 - S A AR 1)*	• Combines many of the features of the 700 and 800 series fluxes and is ideal for semiautomatic submerged arc welding • Exceptional resistance to flash-through and porosity caused by arc blow in a variety of applications • Especially high productivity when used with Lincolnweld® LC-72 wire	✓		
Lincolnweld® WTX *(EN 760 SA AB 1)*	• Neutral submerged arc welding flux designed to meet the specific requirements of wind tower welding applications • Recommended for use with Lincolnweld® L-61 electrode on both longitudinal and circumferential seam welds • Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F)		✓	

Selection Guide

Submerged Arc (SAW) Flux

Product Name & AWS Class	Key Features	Packaging Available			
Flux for Seam Welding of Pipe		Paper Bag	Plastic Bag	Hermetically Sealed Pail	Bulk Bag
Lincolnweld® 761-Pipe *(EN 760 S A MS 1; EN 760 S A CS 1)*	• Features the chemical composition of 761 with a particle size optimized for seam welding • Low-melting slag system produces wide flat welds with superior resistance to cracks and pockmarking • Can handle up to 5 arcs or 5,000 amps		✓		
Lincolnweld® P223 *(EN 760 - S A AB 1)*	• Industry standard for pipe welding on up to X80 grade pipe • Fast freezing and easily removable slag for excellent bead profile • Can be used for welding with up to three arcs		✓		✓
Lincolnweld® SPX80 *(EN 760 SA AB 1)*	• Designed to meet the specific requirements of spiral pipe seam welding of up to API X80 grade pipe • High speed welding capability for increased productivity • Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -51°C (-60°F) with Lincolnweld® LA-81		✓		
Lincolnweld® 995N *(EN 760 - S A AB 1)*	• A nitrogen limiting flux designed for seam welding of pipe • Recommended for automatic single pass welding with up to five arcs • Produces welds with minimal buildup and good penetration		✓		
High Performance / Alloy Flux		Paper Bag	Plastic Bag	Hermetically Sealed Pail	Bulk Bag
Lincolnweld® AXXX-10	• An alloy flux designed to produce a 1% nickel-bearing weld deposit • Recommended for use on ASTM A533 Class 1 and A588 weathering steels when combined with Lincolnweld® L-61	✓			
Lincolnweld® MIL800-HPNi *(EN 760 - S A CS 1; EN 760 - S A FB 1)*	• When used with Lincolnweld® LA-85 the nickel content will increase from a nominal 1% to a minimum 1% • Use on high performance steel applications, including HPS70W or HPS100W • Capable of producing ultra low H2 diffusible hydrogen levels on HPS steels			✓	

Selection Guide

Submerged Arc (SAW) Solid Wire

Product Name & AWS Class	Key Features	Diameters Available in (mm)					
Mild Steel		1/16 (1.6)	5/64 (2.0)	3/32 (2.4)	1/8 (3.2)	5/32 (4.0)	3/16 (4.8)
Lincolnweld® L-50 *(EM13K)*	• A low carbon, medium manganese, medium silicon wire • Pair it with Lincolnweld® 980 flux for the best flux/wire combination when semiautomatic submerged arc welding	✓	✓	✓	✓	✓	
Lincolnweld® L-56 *(EH11K)*	• A low carbon, high manganese, very high silicon wire • Can be used with Lincolnweld® 800 series fluxes on welds requiring 480 MPa (70 ksi) tensile strength in stress relieved conditions	✓	✓	✓	✓	✓	
Lincolnweld® L-60 *(EL12; EN 756: S 1)*	• A low carbon, low manganese, low silicon general purpose electrode • Provides the lowest hardness and is best suited for use with the Lincolnweld® 700 series of active fluxes		✓	✓	✓	✓	✓
Lincolnweld® L-61 *(EM12K; EN 756: S 2Si)*	• Industry standard for submerged arc welding applications • A low carbon, medium manganese, low silicon general purpose submerged arc electrode	✓	✓	✓	✓	✓	✓
Lincolnweld® L-S3 *(EH12K; EN 756: S 3Si)*	• A low carbon, high manganese, medium silicon electrode designed for use with the Lincolnweld® 800 series of neutral fluxes • Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F) when used with Lincolnweld® 888, 8500, and MIL800-H neutral fluxes				✓	✓	
Lincolnweld® LA-71 *(EM14K)*	• A low carbon, medium manganese, medium silicon electrode containing approximately 0.1% titanium • Small addition of titanium allows deposits to be stress-relieved with little loss of strength, even with extended stress relief times			✓	✓	✓	
Low Alloy		1/16 (1.6)	5/64 (2.0)	3/32 (2.4)	1/8 (3.2)	5/32 (4.0)	3/16 (4.8)
Lincolnweld® L-70 *(EA1; EN 756: S 2Mo)*	• A low carbon, medium manganese, low silicon, 1/2% molybdenum wire used for single or multiple pass welds • A standard choice for pipe fabrication and other limited pass applications		✓		✓	✓	✓
Lincolnweld® LA-75 *(ENi1K)*	• A low carbon, medium manganese, high silicon, nickel-bearing electrode designed for use with Lincolnweld® neutral fluxes • Suitable for use in applications requiring less than 1% Ni wire composition		✓	✓	✓	✓	

Selection Guide

Submerged Arc (SAW) Solid Wire

Product Name & AWS Class	Key Features	Diameters Available in (mm)					
Low Alloy		1/16 (1.6)	5/64 (2.0)	3/32 (2.4)	1/8 (3.2)	5/32 (4.0)	3/16 (4.8)
Lincolnweld® LA-81 *(EG)*	• A low carbon, medium manganese, low silicon, 1/2% molybdenum wire containing small additions of titanium and boron for improved fracture toughness • Generally used in two run applications for arctic grade line pipe				✓	✓	✓
Lincolnweld® LA-82 *(EF2)*	• Designed especially for high strength applications • Recommended when over 620 MPa (90 ksi) tensile strength is required in the as-welded condition or when low temperature impact toughness is required in the stress-relieved condition			✓	✓	✓	
Lincolnweld® LA-84 *(EF3; EN 756: S3 Ni1Mo)*	• A nickel-bearing electrode with 1/2% molybdenum • Can be used for higher strength weldments where impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F) are required			✓			
Lincolnweld® LA-85 *(ENi5)*	• A nickel-bearing wire with 0.2% molybdenum designed for use on weathering steels • Capable of producing weld deposits exceeding 480-550 MPa (70-80 ksi) tensile strength in the as-welded and stress-relieved conditions			✓	✓	✓	✓
Lincolnweld® LA-90 *(EA3K)*	• A low carbon, high manganese, high silicon, 1/2% molybdenum special purpose wire • Recommended for seam welding of pipe and for the general welding of high strength plate	✓	✓	✓	✓	✓	
Lincolnweld® LA-92 *(EB2R; EN 12070: Cr Mo1)*	• Designed for welding 1 1/4% chromium, 1/2% molybdenum steels in high temperature service applications such as pressure vessels or piping • The AWS R designator denotes ultra low residuals which will result in a low Bruscato factor (X-factor)			✓	✓	✓	
Lincolnweld® LA-93 *(EB3R; EN 12070: Cr Mo2)*	• Designed for high temperature applications such as pressure vessels and piping for 2 1/4% chromium, 1% molybdenum steels • The AWS R designator denotes ultra low residuals which will result in a low Bruscato factor (X-factor)			✓	✓	✓	
Lincolnweld® LA-100 *(EM2)*	• A low carbon, high manganese wire with nickel and molybdenum designed to weld high strength steels such as HY-80 and HSLA-80 • Delivers yield strength greater than 690 MPa (100 ksi)	✓	✓	✓	✓	✓	

Selection Guide

Submerged Arc (SAW) Cored Wire

Product Name & AWS Class	Key Features	Diameters Available in (mm)			
Mild Steel		5/64 (2.0)	3/32 (2.4)	1/8 (3.2)	5/32 (4.0)
Lincolnweld® LC-72 *(EC1)*	• A cored wire designed to increase deposition rates 10-30% when used with 980 flux • Designed to provide optimal bead shape, penetration, and slag removal in semiautomatic submerged arc welding	✓	✓		
Low Alloy		5/64 (2.0)	3/32 (2.4)	1/8 (3.2)	5/32 (4.0)
Lincolnweld® LAC-B2 *(ECB2)*	• A cored wire designed to weld with either single or tandem arcs using a neutral flux • A cost-effective choice when welding 1 1/4% chromium, 1/2% molybdenum steels where a low Bruscato factor (X-factor) is not required		✓		✓
Lincolnweld® LAC-M2 *(ECM2)*	• Capable of delivering 690 MPa (100 ksi) yield strength when welded with Lincolnweld® 880, 880M, 888 or MIL800-H fluxes		✓		✓
Lincolnweld® LAC-Ni2 *(ECNi2)*	• A 2% nickel electrode used primarily in weathering steel applications • When used with 888 flux, it can produce impact properties exceeding 27 J (20 ft•lbf) at -73ºC (-100°F)		✓		

Lincolnweld® 760

700 Series Active Flux

EN 760 – S A MS 1; EN 760 – S A CS 1

Key Features

- Highly active flux for handling rust and mill scale
- Helps resist porosity caused by arc blow
- Slow freezing slag for good weld appearance

Typical Applications

- Single pass welding of mild steel
- Flat fillet welds with constant voltage power source

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-60, and L-61

Product Information

Basicity Index:	0.8
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag ED032799

FLUX COMPOSITION(1)

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	% Metal Alloys
Lincolnweld® 760	47	33	17	5	2	2	1	6 max.

AWS TEST RESULTS(1)

Flux/Wire Combination	Weld Condition	Yield Strength(2) MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	@ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	440 (64)	550 (80)	30	53 (39)	-18 (0)	F7A0-EM13K
L-60	As-welded	390 (57)	490 (71)	30	98 (72)	-29 (-20)	F6A2-EL12
L-61	As-welded	410 (59)	530 (77)	28	69 (51)	-29 (-20)	F7A2-EM12K

(1)See test results disclaimer on pg. 9. (2)Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 761

700 Series Active Flux

EN 760 – S A MS 1; EN 760 – S A CS 1

Key Features

- Manganese alloying and carbon reducing flux designed to provide superior crack resistance
- Slow freezing slag for a wide, flat weld
- Excellent resistance to cracking in single pass applications

Typical Applications

- Single pass welding of mild steel
- Large fillets with constant current power sources

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-60, and L-61
For Low Alloy Steel
Lincolnweld® L-70

Product Information

Basicity Index:	0.8
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag ED032765

FLUX COMPOSITION(1)

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%TiO_2	%FeO	% Metal Alloys
Lincolnweld® 761	45	19	22	5	2	2	2	1	6 max.

AWS TEST RESULTS(1)

Flux/Wire Combination	Weld Condition	Yield Strength(2) MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	480 (69)	590 (85)	29	45 (33)	-29 (-20)	F7A2-EM13K-H8
L-60	As-welded	440 (64)	530 (75)	29	64 (47)	-29 (-20)	F7A2-EL12
L-61	As-welded	480 (70)	590 (85)	28	54 (40)	-29 (-20)	F7A2-EM12K-H8
L-70	As-welded	550 (80)	640 (93)	24	58 (43)	-18 (0)	F9A0-EA1-G

(1)See test results disclaimer on pg. 9. (2)Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 780

700 Series Active Flux

EN 760 – S A AB 1; EN 760 – S A AR 1

Key Features

- Industry standard for submerged arc welding applications
- Fast freezing slag for easy removal and minimized spilling on circumferential welds
- When paired with Lincolnweld® L-61 it is recommended for up to three pass welding applications
- Excellent bead shape and slag removal
- Good resistance to moisture contamination for reduced porosity

Typical Applications

- Single pass welding of mild steel
- Roundabouts with minimal spillage
- Horizontal position welding

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-60 and L-61

Product Information

Basicity Index:	0.7
Density:	1.4 g/cm^3

Packaging

50 lb (22.7 kg) Bag	ED019586
550 lb (249.5 kg) Steel Drum	ED032007
3000 lb (1361 kg) Bulk Bag	ED033188

FLUX COMPOSITION(1)

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	%TiO_2	% Metal Alloys
Lincolnweld® 780	9	16	2	11	2	45	1	9	6 max.

AWS TEST RESULTS(1)

Flux/Wire Combination	Weld Condition	Yield Strength(2) MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	520 (75)	600 (87)	27	65 (48)	-18 (0)	F7A0-EM13K
L-60	As-welded	440 (64)	520 (76)	30	88 (65)	-18 (0)	F7A0-EL12-H8
L-61	As-welded	530 (77)	600 (87)	27	46 (34)	-29 (-20)	F7A2-EM12K-H8

(1)See test results disclaimer on pg. 9. (2)Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 781

700 Series Active Flux

EN 760 – S A ZS 1

Key Features

- Features fast follow characteristics that allow for uniform welds at high speeds without undercut or voids
- Recommended for high speed, limited pass welding on clean plate and sheet steel
- Good wetting action

Typical Applications

- Single pass welding – on clean plate and sheet metal up to 48 mm (3/16 in) in thickness
- Hot water tanks, metal buildings and other applications requiring high speed welds

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-60, and L-61
For Low Alloy Steel
Lincolnweld® L-70

Product Information

Basicity Index:	0.8
Density:	1.5 g/cm^3

Packaging

50 lb (22.7 kg) Bag ED019587

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%ZrO_2	%TiO_2	%CaO	% Metal Alloys
Lincolnweld® 781	21	17	14	5	2	4	21	12	1	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	530 (77)	610 (89)	29	38 (28)	-18 (0)	F7A0-EM13K
L-60	As-welded	460 (67)	550 (80)	29	42 (31)	-18 (0)	F7A0-EL12
L-61	As-welded	530 (77)	610 (89)	28	31 (23)	-18 (0)	F7A0-EM12K
L-70	As-welded	590 (85)	660 (96)	25	35 (26)	-18 (0)	F9A0-EA1-G

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 860

800 Series Neutral Flux

EN 760 – S A AB 1

Key Features

- Industry standard for submerged arc welding applications
- Excellent operating characteristics in a variety of general welding applications
- Capable of producing weld deposits with impact toughness exceeding 27 J (20 ft•lbf) at -40°C (-40°F) with Lincolnweld® L-61

Typical Applications

- AASHTO Fracture Critical applications with Lincolnweld® L-61 wire
- Pipe and other double ending applications
- General purpose structural and multiple pass welds
- Storage tanks using L-61 or LA-85
- May be used in as-welded or stress-relieved applications

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-56, L-60, L-61, LA-71, L-S3
For Low Alloy Steel
Lincolnweld® L-70, LA-75, LA-82, LA-85

Product Information

Basicity Index:	1.1
Density:	1.4 g/cm^3

Packaging

50 lb (22.7 kg) Bag	ED019589

Lincolnweld® 860

(EN 760 – S A AB 1)

FLUX COMPOSITION[1]

	$\%SiO_2$	%MnO	%MgO	$\%CaF_2$	$\%Na_2O$	$\%Al_2O_3$	%CaO	$\%TiO_2$	% Metal Alloys
Lincolnweld® 860	19	11	17	12	2	32	2	2	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	430 (62)	520 (75)	30	84 (62)	-29 (-20)	F7A2-EM13K-H8
L-56	As-welded	470 (68)	590 (86)	28	61 (45)	-29 (-20)	F7A2-EH11K
L-56	Stress-relieved[3]	440 (64)	570 (82)	29	80 (59)	-29 (-20)	F7P2-EH11K
L-60	As-welded	370 (54)	450 (65)	34	138 (102)	-29 (-20)	F6A2-EL12-H8
L-61	As-welded	410 (59)	500 (72)	31	58 (43)	-40 (-40)	F7A4-EM12K-H8
L-61	Stress-relieved[3]	340 (49)	440 (64)	37	222 (164)	-46 (-50)	F6P5-EM12K-H8
L-S3	As-welded	500 (73)	590 (86)	28	52 (38)	-29 (-20)	F7A2-EH12K
LA-71	As-welded	450 (65)	540 (78)	30	110 (81)	-29 (-20)	F7A2-EM14K-H8
LA-71	Stress relieved[3]	400 (58)	520 (75)	32	119 (88)	-29 (-20)	F7P2-EM14K-H8
L-70	As-welded	450 (65)	550 (80)	28	54 (40)	-29 (-20)	F7A2-EA1-A2-H8
L-70	Stress-relieved[3]	430 (62)	520 (76)	31	47 (35)	-29 (-20)	F7P2-EA1-A2-H8
LA-75	As-welded	460 (66)	550 (80)	32	107 (79)	-29 (-20)	F7A2-ENi1K-Ni1-H8
LA-75	Stress-relieved[3]	410 (60)	540 (79)	30	99 (73)	-29 (-20)	F7P2-ENi1K-Ni1-H8
LA-82	As-welded	660 (96)	740 (107)	24	50 (37)	-40 (-40)	F9A4-EF2-F2-H8
LA-85	As-welded	520 (75)	600 (87)	26	38 (28)	-40 (-40)	E8A4-ENi5-Ni5-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 865

800 Series Neutral Flux

EN 760 – S A AR 1; EN 760 – S A AB 1

Key Features

- General purpose flux designed to weld butt joints and flat and horizontal fillets
- When used with Lincolnweld® L-50 or L-61, it is capable of producing 480 MPa (70 ksi) tensile strength after stress relief
- Small loss of strength when used in the stress-relieved condition

Typical Applications

- Butt joints and flat and horizontal fillets
- Pair with Lincolnweld® L-61 on A516 steels

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-61, LA-71
For Low Alloy Steel
Lincolnweld® LA-75

Product Information

Basicity Index:	1.0
Density:	1.3 g/cm^3

Packaging

50 lb (22.7 kg) Bag EDS27857

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%TiO_2	% Metal Alloys
Lincolnweld® 865	11	1	14	19	2	37	12	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	@ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	500 (72)	580 (84)	27	53 (39)	-29 (-20)	F7A2-EM13K-H8
L-50	Stress-relieved[3]	440 (64)	550 (80)	30	28 (21)	-46 (-50)	F7P5-EM13K-H8
L-61	As-welded	480 (70)	570 (83)	22	85 (63)	-29 (-20)	F7A2-EM12K-H8
L-61	Stress-relieved[3]	450 (65)	550 (80)	30	117 (86)	-29 (-20)	F7P2-EM12K-H8
LA-71	As-welded	540 (78)	630 (91)	26	73 (54)	-29 (-20)	F7A2-EM14K-H8
LA-75	As-welded	520 (76)	600 (87)	23	77 (57)	-29 (-20)	F8A2-ENi1K-G-H8
LA-75	Stress-relieved[3]	500 (73)	610 (88)	27	79 (58)	-29 (-20)	F8P2-ENi1K-G-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 880

800 Series Neutral Flux

EN 760 – S A AS 1; EN 760 – S A FB 1

Key Features

- Can be used for both joining and hardfacing welding
- Optimal bead appearance when used with solid low alloy steel electrodes with a minimum of 0.20% silicon
- Use with both solid and flux cored wires

Typical Applications

- Applications requiring smooth bead appearance
- Hardfacing applications

Recommended Wires

For Low Alloy Steel
Lincolnweld® LA-75, LA-90, LA-100, LAC-B2, LAC-M2, LAC-Ni2

Product Information

Basicity Index:	2.0
Density:	1.4 g/cm^3

Packaging

50 lb (22.7 kg) Bag	ED027866
550 lb (249.5 kg) Steel Drum	ED028322

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	%ZrO_2	% Metal Alloys
Lincolnweld® 880	17	27	27	2	16	2	7	5 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
LA-75	As-welded	430 (62)	530 (77)	30	98 (72)	-62 (-80)	F7A8-ENi1K-Ni1-H8
LA-90	As-welded	540 (79)	640 (93)	28	61 (45)	-40 (-40)	F8A4-EA2K-A4-H8
LA-100	As-welded	630 (92)	700 (101)	28	53 (39)	-40 (-40)	F9A4-EM2-M2-H8
LAC-B2	Stress relieved[4]	480 (70)	590 (85)	26	135 (100)	-29 (-20)	F8P2-ECB2-B2-H8
LAC-M2	As-welded	730 (106)	820 (119)	18	72 (53)	-51 (-60)	F11A6-ECM2-M2-H8
LAC-Ni2	As-welded	460 (66)	540 (79)	29	140 (103)	-51 (-60)	F7A6-ECNi2-Ni2-H8
LAC-Ni2	Stress relieved[3]	430 (63)	540 (78)	30	95 (70)	-73 (-100)	F7P10-ECNi2-Ni2-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F). [4]Stress-relieved for 1 hour at 691°C (1275°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 880M

800 Series Neutral Flux

EN 760 – S A FB 1

Key Features

- A basic flux which features industry proven results in multiple pass applications
- Recommended for welding with solid mild steel and low alloy electrodes, as well as Lincoln's LAC series of low alloy flux-cored electrodes
- Good deep groove slag removal
- Excellent choice for single arc AC submerged arc welding

Typical Applications

- Tandem arc applications for offshore fabrication
- Jobs requiring 480 MPa (70 ksi) tensile strength after stress relief when used with L-56, L-S3, or LA-71

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-56, LA-71, L-S3
For Low Alloy Steel
Lincolnweld® LA-75, LA-85, LA-90, LA-92, LA-93, LA-100, LAC-B2, LAC-M2, LAC-Ni2

Product Information

Basicity Index:	3.3
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag	ED031853

Lincolnweld® 880M

(EN 760 – S A FB 1)

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	%K_2O	% Metal Alloys
Lincolnweld® 880M	12	1	29	29	1	18	8	1	1 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	410 (59)	510 (74)	32	263 (194)	-62 (-80)	F7A8-EM13K-H8
L-56	As-welded	480 (69)	580 (85)	31	121 (89)	-51 (-60)	F7A6-EH11K-H8
L-56	Stress-relieved[3]	400 (58)	540 (78)	32	158 (116)	-51 (-60)	F7P6-EH11K-H8
L-S3	As-welded	400 (58)	510 (74)	32	264 (195)	-51 (-60)	F7A6-EH12K-H8
LA-71	As-welded	480 (70)	570 (82)	29	143 (105)	-62 (-80)	F7A8-EM14K-H8
LA-71	Stress-relieved[3]	430 (63)	550 (80)	31	164 (121)	-62 (-80)	F7P8-EM14K-H8
LA-75	As-welded	440 (64)	550 (80)	31	167 (123)	-62 (-80)	F7A8-ENi1K-Ni1-H8
LA-85	As-welded	520 (76)	610 (88)	24	57 (42)	-51 (-60)	F7A6-ENi5-Ni5-H8
LA-85	Stress-relieved[3]	490 (71)	590 (85)	27	145 (107)	-62 (-80)	F7P8-ENi5-Ni5-H8
LA-90	As-welded	580 (84)	680 (99)	26	68 (50)	-51 (-60)	F9A6-EA3K-A3-H8
LA-90	Stress-relieved[3]	520 (75)	630 (91)	28	145 (107)	-62 (-80)	F8P8-EA3K-A3-H8
LA-92	Stress-relieved[4]	460 (66)	570 (82)	28	178 (131)	-29 (-20)	F7P2-EB2R-B2-H8
LA-93	Stress-relieved[4]	510 (74)	610 (88)	26	214 (158)	-18 (0)	F7P0-EB3R-B3-H8
LA-100	As-welded	680 (98)	730 (106)	25	129 (95)	-51 (-60)	F9A6-EM2-M2-H8
LAC-B2	Stress-relieved[4]	500 (72)	600 (87)	25	144 (106)	-29 (-20)	F8P2-ECB2-B2-H8
LAC-M2	As-welded	760 (110)	820 (119)	23	83 (61)	-51 (-60)	F11A6-ECM2-M2-H8
LAC-Ni2	As-welded	510 (73)	600 (87)	22	77 (57)	-73 (-100)	F7A10-ECNi2-Ni2-H8
LAC-Ni2	Stress-relieved[3]	480 (69)	570 (83)	28	103 (76)	-73 (-100)	F7P10-ECNi2-Ni2-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F). [4]Stress-relieved for 1 hour at 691°C (1275°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 882

800 Series Neutral Flux

EN 760 – S A AS 1; EN 760 – S A AS 2

Key Features

- Designed for a variety of welding applications and is known for providing consistent mechanical properties
- Recommended for stainless steel welding and can be paired with both mild and low alloy steel electrodes
- Smooth bead appearance

Typical Applications

- Single wire or tandem welding
- Used for welding of stainless, mild and low alloy steel
- Excellent for multiple pass fillet welds

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-56, L-60, L-61, LA-71, L-S3

For Low Alloy Steel
Lincolnweld® L-70, LA-75, LA-82, LA-85, LA-92, LA-93, LAC-Ni2

Product Information

Basicity Index:	1.6
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Bag	ED027859

Lincolnweld® 882

(EN 760 – S A AS 1; EN 760 – S A AS 2)

FLUX COMPOSITION[1]

	$\%SiO_2$	%MnO	%MgO	$\%CaF_2$	$\%Na_2O$	$\%Al_2O_3$	%CaO	$\%ZrO_2$	% Metal Alloys
Lincolnweld® 882	16	1	22	24	2	24	1	7	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	420 (61)	520 (76)	29	130 (96)	-51 (-60)	F7A6-EM13K-H8
L-56	As-welded	500 (73)	600 (87)	28	92 (68)	-40 (-40)	F7A4-EH11K-H8
L-56	Stress-relieved[3]	420 (61)	560 (81)	30	47 (35)	-46 (-50)	F7P5-EH11K-H8
L-60	As-welded	370 (54)	460 (67)	32	207 (153)	-51 (-60)	F6A6-EL12-H8
L-61	As-welded	400 (58)	500 (72)	31	190 (140)	-51 (-60)	F7A6-EM12K-H8
L-S3	As-welded	410 (60)	520 (76)	28	130 (96)	-51 (-60)	F7A6-EH12K-H8
L-S3	Stress-relieved[3]	410 (59)	510 (78)	32	115 (85)	-62 (-80)	F7P8-EH12K-H8
LA-71	As-welded	480 (69)	570 (82)	31	61 (45)	-51 (-60)	F7A6-EM14K-H8
LA-71	Stress-relieved[3]	430 (62)	550 (80)	32	70 (52)	-51 (-60)	F7P6-EM14K-H8
L-70	Stress-relieved[3]	450 (65)	550 (80)	30	76 (56)	-40 (-40)	F7P4-EA1-A2-H8
LA-75	As-welded	430 (62)	540 (79)	32	133 (98)	-40 (-40)	F7A4-ENi1K-Ni1-H8
LA-82	As-welded	660 (95)	740 (108)	26	56 (41)	-51 (-60)	F10A6-EF2-F2-H8
LA-85	As-welded	510 (74)	610 (88)	25	88 (65)	-40 (-40)	F7A4-ENi5-Ni5-H8
LA-85	Stress-relieved[3]	500 (73)	590 (86)	26	102 (75)	-40 (-40)	F7P4-ENi5-Ni5-H8
LA-92	Stress-relieved[4]	520 (75)	610 (89)	27	83 (61)	-29 (-20)	F7P2-EB2R-B2-H8
LA-93	Stress-relieved[4]	610 (88)	700 (101)	23	214 (158)	-18 (0)	F9P0-EB3R-B3-H8
LAC-Ni2	As-welded	570 (83)	660 (95)	20	72 (53)	-40 (-40)	F8A4-ECNi2-Ni2-H8
LAC-Ni2	Stress-relieved[3]	500 (73)	600 (87)	25	100 (74)	-40 (-40)	F7P4-ECNi2-Ni2-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F). [4]Stress-relieved for 1 hour at 691°C (1275°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 888

800 Series Neutral Flux

EN 760 – S A FB 1

Key Features

- Designed for deep groove slag removal in critical applications
- Recommended for joining mild steel and low alloy steels in as-welded and stress-relieved applications
- Low H4 diffusible hydrogen levels
- Moisture resistant packaging
- Charpy V-Notch and CTOD test results available for most alloy systems

Typical Applications

- Excellent operation with multiple arcs
- Offshore
- Structural fabrication
- Shipbuilding

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-56, L-S3, L-61, LA-71
For Low Alloy Steel
Lincolnweld® L-70, LA-75, LA-82, LA-84, LA-85, LA-90, LA-100, LAC-Ni2, LAC-M2, LAC-B2

Product Information

Basicity Index:	2.2
Density:	1.3 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag	ED031596

Lincolnweld® 888

(EN 760 – S A FB 1)

FLUX COMPOSITION[1]

	$\%SiO_2$	%MnO	%MgO	$\%CaF_2$	$\%Na_2O$	$\%Al_2O_3$	%CaO	%FeO	$\%K_2O$	% Metal Alloys
Lincolnweld® 888	18	1	27	25	2	19	5	1	2	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	430 (62)	540 (78)	31	122 (90)	-62 (-80)	F7A8-EM13K-H4
L-50	Stress-relieved[3]	370 (53)	510 (74)	32	187 (138)	-62 (-80)	F6P8-EM13K-H4
L-56	As-welded	510 (74)	610 (88)	29	71 (52)	-51 (-60)	F8A6-EH11K-H4
L-56	Stress-relieved[3]	410 (59)	540 (79)	32	118 (87)	-62 (-80)	F7P8-EH11K-H4
L-61	As-welded	420 (61)	520 (75)	31	121 (89)	-51 (-60)	F7A6-EM12K-H4
L-S3	As-welded	480 (70)	570 (83)	33	70 (52)	-62 (-80)	F7A8-EH12K-H4
L-S3	Stress-relieved[3]	370 (54)	510 (74)	33	165 (122)	-62 (-80)	F6P8-EH12K-H4
LA-71	As-welded	520 (75)	610 (89)	28	68 (50)	-51 (-60)	F7A6-EM14K-H4
LA-71	Stress-relieved[3]	410 (60)	540 (78)	32	134 (99)	-62 (-80)	F7P8-EM14K-H4
L-70	As-welded	510 (74)	600 (87)	29	60 (45)	-40 (-40)	F7A4-EA1-A2-H4
L-70	Stress-relieved[3]	470 (69)	570 (83)	31	126 (93)	-40 (-40)	F7P4-EA1-A2-H4
LA-75	As-welded	470 (68)	580 (84)	31	122 (90)	-62 (-80)	F7A8-ENi1K-Ni1-H4
LA-82	As-welded	690 (99)	780 (113)	23	70 (52)	-62 (-80)	F10A8-EF2-F2-H4
LA-82	Stress-relieved[3]	600 (87)	700 (102)	25	79 (58)	-51 (-60)	F9P6-EF2-F2-H4
LA-84	As-welded	630 (92)	720 (105)	23	77 (57)	-62 (-80)	F9A8-EF3-F3-H4
LA-84	Stress-relieved[3]	580 (84)	670 (98)	26	34 (25)	-51 (-60)	F8P6-EF3-F3-H4
LA-85	As-welded	540 (78)	640 (92)	26	79 (58)	-51 (-60)	F8A6-ENi5-Ni5-H4
LA-85	Stress-relieved[3]	500 (72)	590 (86)	27	76 (56)	-51 (-60)	F7P6-ENi5-Ni5-H4
LA-90	As-welded	610 (89)	700 (102)	26	56 (41)	-51 (-60)	F9A6-EA3K-A3-H4
LA-100	As-welded	690 (100)	760 (111)	25	61 (45)	-40 (-40)	F10A4-EM2-M2-H4
LAC-B2	Stress-relieved[4]	520 (76)	620 (90)	24	82 (60)	-40 (-40)	F8P4-ECB2-B2-H8
LAC-M2	As-welded	860 (124)	930 (135)	15	63 (46)	-62 (-80)	F12A8-ECG-G-H8
LAC-Ni2	As-welded	540 (78)	630 (92)	20	56 (42)	-62 (-80)	F8A8-ECNi2-Ni2-H8
LAC-Ni2	Stress-relieved[3]	480 (70)	580 (84)	27	64 (47)	-73 (-100)	F7P10-ECNi2-Ni2-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F). [4]Stress-relieved for 1 hour at 691°C (1275°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 8500

800 Series Neutral Flux

EN 760 - S A FB 1

Key Features

- Capable of providing impact properties necessary for thick weld joints from root to cap pass
- Operates well on AC and multiple arcs with good resistance to nitrogen porosity
- Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F)
- CTOD data available for this flux with many alloy systems

Typical Applications

- Fabrication of offshore drilling platforms
- Multiple pass welding
- Single and multiple arc welding

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-56, L-61, L-S3, LA-71
For Low Alloy Steel
Lincolnweld® LA-82, LA-85, LA-90, LA-92

Product Information

Basicity Index:	2.9
Density:	1.3 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag	ED031854

Note

- This product contains micro-alloying elements. Additional information available upon request.

Lincolnweld® 8500

(EN 760 - S A FB 1)

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	%K_2O	%TiO_2	% Metal Alloys
Lincolnweld® 8500	13	1	30	24	2	19	8	1	1	1 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	430 (63)	520 (76)	32	129 (95)	-62 (-80)	F7A8-EM13K-H8
L-56	As-welded	470 (68)	570 (82)	31	132 (97)	-62 (-80)	F7A8-EH11K
L-56	Stress-relieved[3]	430 (62)	540 (79)	33	151 (111)	-62 (-80)	F7P8-EH11K
L-61	As-welded	400 (58)	480 (70)	31	168 (124)	-51 (-60)	F7A6-EM12K-H8
L-S3	As-welded	460 (67)	570 (82)	29	91 (67)	-62 (-80)	F7A8-EH12K-H8
LA-71	As-welded	450 (66)	550 (80)	30	155 (115)	-62 (-80)	F7A8-EM14K-H8
LA-71	Stress-relieved[3]	420 (61)	520 (75)	32	220 (162)	-62 (-80)	F7P8-EM14K-H8
LA-82	As-welded	660 (95)	740 (108)	22	87 (64)	-51 (-60)	F9A6-EF2-F2-H8
LA-82	Stress-relieved[3]	610 (89)	700 (102)	24	83 (61)	-51 (-60)	F9P6-EF2-F2-H8
LA-85	As-welded	510 (74)	590 (86)	29	155 (114)	-62 (-80)	F8A8-ENi5-Ni5-H8
LA-85	Stress-relieved[3]	500 (72)	590 (85)	28	134 (99)	-51 (-60)	F7P6-ENi5-Ni5-H8
LA-90	As-welded	670 (97)	590 (85)	24	84 (62)	-29 (-20)	F9A2-EA3K-A3-H8
LA-92	Stress-relieved[4]	550 (80)	640 (93)	26	209 (154)	-18 (0)	F8P0-EB2-B2-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F). [4]Stress-relieved for 1 hour at 691°C (1275°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® MIL800-H

800 Series Neutral Flux

EN 760 - S A CS 1; EN 760 - S A FB 1

Key Features

- Capable of providing industry leading H2 diffusible hydrogen levels
- Designed for low temperature applications
- Recommended for both single and multiple arc welding of both butt and fillet welds

Typical Applications

- HY-80 and HSLA-80 steels with Lincolnweld® LA-100 wire
- Horizontal and flat fillet welds
- Single and multiple arc welding
- High strength or highly restrained weldments where delayed cracking is a concern

Recommended Wires

For Mild Steel
Lincolnweld® L-S3, LA-71
For Low Alloy Steel
Lincolnweld® LA-75, LA-82, LA-85, LA-90, LA-93, LA-100

Product Information

Basicity Index:	3.2
Density:	1.3 g/cm^3

Packaging

50 lb (22.7 kg)	
Hermetically Sealed Pail	ED020925

Lincolnweld® MIL800-H

(EN 760 - S A CS 1; EN 760 - S A FB 1)

FLUX COMPOSITION[1]

	$\%SiO_2$	%MnO	%MgO	$\%CaF_2$	$\%Na_2O$	$\%Al_2O_3$	%CaO	$\%K_2O$	% Metal Alloys
Lincolnweld® MIL800-H	13	1	34	23	1	16	8	1	1 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-S3	As-welded	500 (73)	610 (88)	27	76 (56)	-62 (-80)	F7A8-EH12K-H2
L-S3	Stress-relieved[3]	440 (64)	570 (82)	30	118 (87)	-62 (-80)	F7P8-EH12K-H2
LA-71	As-welded	470 (68)	570 (82)	30	163 (120)	-51 (-60)	F7A6-EM14K-H2
LA-71	Stress-relieved[3]	420 (61)	540 (79)	32	193 (140)	-51 (-60)	F7P6-EM14K-H2
LA-75	As-welded	460 (67)	560 (82)	30	156 (115)	-62 (-80)	F7A8-ENi1K-Ni1-H2
LA-82	As-welded	700 (102)	800 (116)	21	91 (67)	-51 (-60)	F10A6-EF2-F2-H2
LA-82	Stress-relieved[3]	660 (95)	740 (108)	25	76 (56)	-51 (-60)	F10P6-EF2-F2-H2
LA-85	As-welded	570 (82)	660 (95)	25	108 (80)	-62 (-80)	F8A8-ENi5-Ni5-H2
LA-85	Stress-relieved[3]	540 (78)	630 (92)	26	83 (61)	-62 (-80)	F8P8-ENi5-Ni5-H2
LA-90	As-welded	620 (90)	710 (103)	26	77 (57)	-51 (-60)	F9A6-EA3K-A3-H2
LA-90	Stress-relieved[3]	590 (86)	690 (100)	26	84 (62)	-51 (-60)	F9P6-EA3K-A3-H2
LA-93	Stress-relieved[4]	580 (84)	690 (99)	23	34 (25)	-29 (-20)	F9P2-EB3R-B3-H2
LA-100	As-welded	670 (97)	780 (112)	25	107 (79)	-51 (-60)	F10A6-EM2-M2-H2

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F). [4]Stress-relieved for 1 hour at 691°C (1275°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 960

Special Neutral Flux

EN 760 - S A AB 1

Key Features

- Low cost, general purpose flux designed to weld butt joints and both single and multiple pass fillets
- Recommended for automatic and semiautomatic submerged arc welding
- A versatile, cost-effective flux that can be used with many alloy systems
- Can be used on A588 weathering steels when combined with Lincolnweld® LA-75

Typical Applications

- Single and multiple pass welding
- Fillet and butt welds with unlimited plate thickness
- Can weld steel with heavy scale or rust when used with Lincolnweld® L-50 wire
- Weathering steels when used with Lincolnweld® LA-75 wire

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-61, LA-71
For Low Alloy Steel
Lincolnweld® LA-75, LA-85, LA-93, LA-100

Product Information

Basicity Index:	1.1
Density:	1.4 g/cm^3

AWS D1.8 and FEMA 353

Approved when paired with the following wires:

- 1/8 in (3.2 mm) Lincolnweld® L-61
- 1/8 in (3.2 mm) Lincolnweld® LA-84
- 1/8 in (3.2 mm) Lincolnweld® LA-85

Packaging

50 lb (22.7 kg) Bag	ED022412

Lincolnweld® 960

(EN 760 - S A AB 1)

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	%TiO_2	% Metal Alloys
Lincolnweld® 960	21	10	21	10	2	31	1	1	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	460 (66)	570 (83)	27	58 (43)	-29 (-20)	F7A2-EM13K-H8
L-61	As-welded	420 (61)	520 (75)	32	125 (92)	-29 (-20)	F7A2-EM12K-H8
LA-71	As-welded	460 (66)	570 (82)	29	44 (32)	-29 (-20)	F7A2-EM14K-H8
LA-71	Stress-relieved[3]	420 (61)	540 (79)	31	89 (66)	-29 (-20)	F7P2-EM14K-H8
LA-75	As-welded	480 (69)	600 (87)	30	76 (56)	-29 (-20)	F8A2-ENi1K-Ni1-H8
LA-75	Stress-relieved[3]	420 (61)	550 (80)	29	53 (39)	-51 (-60)	F7P6-ENi1K-Ni1-H8
LA-85	As-welded	520 (76)	640 (93)	24	57 (42)	-29 (-20)	F8A2-ENi5-G-H8
LA-85	Stress-relieved[3]	500 (73)	610 (88)	25	39 (29)	-46 (-50)	F7P5-ENi5-G-H8
LA-93	Stress-relieved[4]	580 (84)	680 (98)	22	65 (48)	-18 (0)	F9P0-EB3R-G-H8
LA-100	As-welded	680 (99)	740 (108)	25	33 (24)	-40 (-40)	F10A4-EM2-G-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F). [4]Stress-relieved for 1 hour at 691°C (1275°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 980

Special Neutral Flux

EN 760 - S A AB 1; EN 760 - S A AR 1

Key Features

- Combines many of the features of the 700 and 800 series fluxes and is ideal for semiautomatic submerged arc welding
- Exceptional resistance to flash-through and porosity caused by arc blow in a variety of applications
- Especially high productivity when used with Lincolnweld® LC-72 wire

Recommended Wires

For Mild Steel
Lincolnweld® L-50, L-61, LC-72
For Low Alloy Steel
Lincolnweld® LA-75, LAC-Ni2

Product Information

Basicity Index:	0.6
Density:	1.4 g/cm^3

Typical Applications

- Semiautomatic, single and multiple pass submerged arc welding
- General purpose fabrication
- Fillet welds

Packaging

50 lb (22.7 kg) Bag ED027861

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%TiO_2	% Metal Alloys
Lincolnweld® 980	11	14	2	12	2	47	7	4 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-50	As-welded	430 (63)	540 (78)	31	43 (32)	-29 (-20)	F7A2-EM13K-H8
L-61	As-welded	430 (63)	530 (77)	31	37 (27)	-29 (-20)	F7A2-EM12K-H8
LC-72	As-welded	450 (65)	540 (78)	28	43 (32)	-29 (-20)	F7A2-EC1-H8
LA-75	As-welded	510 (74)	600 (87)	28	61 (45)	-29 (-20)	F7A2-ENi1K-Ni1-H8
LAC-Ni2	As-welded	540 (79)	630 (91)	25	110 (81)	-29 (-20)	F8A2-ECNi2-Ni2-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® WTX

Special Neutral Flux

EN 760 SA AB 1

Key Features

- Neutral submerged arc welding flux designed to meet the specific requirements of wind tower welding applications
- Recommended for use with Lincolnweld® L-61 electrode on both longitudinal and circumferential seam welds
- Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F)
- Smooth bead profile to achieve excellent toe angles, tie-in, and bead appearance on interior and exterior applications

Recommended Wires

For Mild Steel
Lincolnweld® L-61
For Low Alloy Steel
Lincolnweld® L-70

Product Information

Basicity Index:	1.4
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag ED032990

Typical Applications

- Wind tower base
- Wind tower door frame

FLUX COMPOSITION[1]

	%SiO_2	%Mn_xO_y	%MgO	%CaF_2	%NaO	%Al_2O_3	%CaO	%ZrO_2	%FeO	%K_2O	%TiO_2
Lincolnweld® WTX	21	9	23	13	2	25	5	1	2	1	1

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-61	As-welded	430 (63)	540 (78)	31	84 (62)	-62 (-80)	F7A8-EM12K-H8
L-70	As-welded	500 (73)	610 (88)	25	46 (34)	-40 (-40)	F8A4-EA1-A3-H8

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 761-Pipe

Flux for Seam Welding of Pipe

EN 760 S A MS 1; EN 760 S A CS 1

Key Features

- Features the chemical composition of 761 with a particle size optimized for seam welding
- Low-melting slag system produces wide flat welds with superior resistance to cracks and pockmarking
- Can handle up to 5 arcs or 5,000 amps

Typical Applications

- Single and multiple arc welding
- Longitudinal seam welding of API grade pipe
- Spiral seam welding of API grade or water pipe

Recommended Wires

For Mild Steel
Lincolnweld® L-61
For Low Alloy Steel
Lincolnweld® L-70

Product Information

Basicity Index:	0.8
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag	ED032797
2600 lb (1179 kg) Bulk Bag	ED032768

FLUX COMPOSITION[1]

	%SiO_2	%Mn_xO_y	%MgO	%CaF_2	%NaO	%Al_2O_3	%TiO_2	%FeO	% Metal Alloys
Lincolnweld® 761-Pipe	45	19	22	5	2	2	2	1	6 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf) @ °C (°F)		AWS Classification (A5.17/A5.23)
L-61	As-welded	490 (70)	580 (85)	28	54 (40)	-29 (-20)	F7A2-EM12K-H8
L-70	As-welded	550 (80)	640 (93)	24	58 (43)	-18 (0)	F9A0-EA1-G

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® P223

Flux for Seam Welding of Pipe

EN 760 - S A AB 1

Key Features

- Industry standard for pipe welding on up to X80 grade pipe
- Fast freezing and easily removable slag for excellent bead profile
- Can be used for welding with up to three arcs

Typical Applications

- Pipe welding up to X80 grade pipe
- Two run welding applications for pipe fabrication
- Multiple pass welding for general construction

Recommended Wires

For Mild Steel
Lincolnweld® L-56, L-61, LA-71, L-S3
For Low Alloy Steel
Lincolnweld® L-70, LA-90

Product Information

Basicity Index:	1.5
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag	ED032764
2600 lb (1179 kg) Bulk Bag	ED032767

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%NaO	%Al_2O_3	%CaO	%TiO_2	%K_2O	%FeO	% Metal Alloys
Lincolnweld® P223	23	4	21	21	2	20	4	2	1	1	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-56	As-welded	500 (73)	620 (90)	30	68 (50)	-51 (-60)	F7A6-EH11K-H8
L-56	Stress-relieved[3]	540 (65)	580 (84)	30	66 (49)	-51 (-60)	F7P6-EH11K-H8
L-61	As-welded	430 (63)	530 (77)	31	126 (93)	-40 (-40)	F7A4-EM12K
LA-71	As-welded	480 (69)	570 (83)	29	94 (69)	-40 (-40)	F7A4-EM14K-H8
LA-71	Stress-relieved[3]	410 (60)	540 (78)	32	76 (56)	-51 (-60)	F7P6-EM14K-H8
L-S3	As-welded	460 (67)	570 (82)	30	88 (65)	-62 (-80)	F7A8-EH12K-H8
L-S3	Stress-relieved[3]	410 (60)	540 (78)	32	103 (76)	-62 (-80)	F7P8-EH12K-H8
L-70	As-welded	550 (80)	650 (94)	25	53 (39)	-29 (-20)	F8A2-EA1-A2
LA-90	As-welded	630 (91)	720 (105)	25	60 (44)	-18 (0)	F9A0-EA3K-G

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. [3]Stress-relieved for 1 hour at 621°C (1150°F).
NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® SPX80

Flux for Seam Welding of Pipe

EN 760 SA AB 1

Key Features

- Designed to meet the specific requirements of spiral pipe seam welding of up to API X80 grade pipe
- High speed welding capability for increased productivity
- Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -51°C (-60°F) with Lincolnweld® LA-81
- Smooth bead profile achieves optimal appearance on both inner and outer diameter welds
- Self-peeling slag allows for clean and easy slag removal for reliable non-destructive testing results

Typical Applications

- Spiral pipe mills
- Two run welding applications
- Weld up to API X80 pipe

Recommended Wires

For Mild Steel
Lincolnweld® L-61

For Low Alloy Steel
Lincolnweld® L-70, LA-81, LA-90

Product Information

Basicity Index:	1.3
Density:	1.2 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag	ED032960
2600 lb (1179 kg) Bulk Bag	ED033319

Lincolnweld® SPX80

(EN 760 SA AB 1)

FLUX COMPOSITION[1]

	$\%SiO_2$	%MnO	%MgO	$\%CaF_2$	%NaO	$\%Al_2O_3$	%CaO	$\%ZrO_2$	%FeO	$\%TiO_2$
Lincolnweld® SPX80	23	9	21	14	2	25	2	2	1	1

AWS TEST RESULTS[1] - MULTI-PASS

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-61	As-Welded	430 (62)	543 (79)	31	94 (69)	-46 (-50)	F7A5-EM12K-H8
L-70	As-Welded	530 (77)	620 (89)	25	68 (50)	-40 (-40)	F8A4-EA1-A4-H8
LA-90	As-Welded	610 (89)	720 (105)	25	39 (29)	-40 (-40)	F8A4-EA1-A4-H8

AWS TEST RESULTS[1] - TWO RUN

Flux/Wire Combination	Steel Type	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-61	A131	As-welded	460 (67)	600 (87)	30	45 (33)	-18 (0)	F7TA0-EM12K
L-70	A131	As-welded	500 (72)	620 (89)	27	38 (28)	-40 (-40)	F7TA4-EA1
L-70	X65	As-welded	560 (82)	650 (94)	26	88 (65)	-40 (-40)	F8TA4G-EA1
LA-81	X65	As-welded	580 (84)	680 (98)	25	43 (32)	-40 (-40)	F9TA4G-EG
LA-81	X80	As-welded	630 (92)	690 (101)	26	114 (84)	-51 (-60)	F9TA6G-EG
LA-90	X65	As-welded	590 (86)	690 (101)	24	37 (27)	-51 (-60)	F9TA6G-EA3K
LA-90	X70	As-welded	580 (85)	700 (102)	27	113 (83)	-40 (-40)	F9TA4G-EA3K
LA-90	X80	As-welded	630 (93)	690 (100)	27	72 (53)	-40 (-40)	F9TA4G-EA3K

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® 995N

Flux for Seam Welding of Pipe

EN 760 - S A AB 1

Key Features

- A nitrogen limiting flux designed for seam welding of pipe
- Recommended for automatic single pass welding with up to five arcs
- Produces welds with minimal buildup and good penetration
- Capable of producing Charpy V-Notch test results required for arctic grade service

Typical Applications

- Automatic, single pass welding
- Single or multiple arc welding
- High speed longitudinal seam welding on a range of pipe steels
- One side welding requiring impact properties

Recommended Wires

For Mild Steel
Lincolnweld® L-61
For Low Alloy Steel
Lincolnweld® L-70, LA-81, LA-90

Product Information

Basicity Index:	1.3
Density:	1.0 g/cm^3

Packaging

50 lb (22.7 kg) Plastic Bag ED032831

FLUX COMPOSITION[1]

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	%ZrO_2	%FeO	%TiO_2	% Metal Alloys
Lincolnweld® 995N	19	11	16	14	3	27	5	2	1	1	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-61	As-welded	430 (63)	540 (79)	29	83 (61)	-40 (-40)	F7A4-EM12K-H8
L-70	As-welded	510 (74)	610 (88)	24	73 (54)	-29 (-20)	F8A2-EA1-A4
LA-81	As-welded	590 (96)	660 (96)	26	58 (43)	-29 (-20)	F9A2-EG-G
LA-90	As-welded	600 (87)	700 (102)	25	54 (40)	-29 (-20)	F9A2-EA3K-G

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® AXXX-10

High Performance / Alloy Flux

Key Features

- An alloy flux designed to produce a 1% nickel-bearing weld deposit
- Recommended for use on ASTM A533 Class 1 and A588 weathering steels when combined with Lincolnweld® L-61

Typical Applications

- Welding of A588 weathering steels and ASTM A533-Class 1

Recommended Wires

For Low Alloy
Lincolnweld® L-61

Product Information

Basicity Index:	1.0
Density:	1.4 g/cm^3

Packaging

50 lb (22.7 kg) Bag	ED027862

Notes

- Since the alloy level in the weld deposit depends upon the arc voltage, and thus the arc length, always maintain a consistent arc voltage. If more flexibility in procedure is necessary, use 960 flux and LA-75 electrode.

FLUX COMPOSITION(1)

	%SiO_2	%MnO	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%ZrO_2	%TiO_2	% Metal Alloys
Lincolnweld® AXXX-10	18	5	22	11	2	19	22	1	5 max.

AWS TEST RESULTS(1)

Flux/Wire Combination	Weld Condition	Yield Strength(2) MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
L-61	As-welded	460 (67)	570 (83)	30	85 (63)	-40 (-40)	F7A4-EM12K-Ni1-H8

(1)See test results disclaimer on pg. 9. (2)Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® MIL800-HPNi

High Performance / Alloy Flux

EN 760 - S A CS 1; EN 760 - S A FB 1

Key Features

- When used with Lincolnweld® LA-85 the nickel content will increase from a nominal 1% to a minimum 1%
- Use on high performance steel applications, including HPS70W or HPS100W
- Capable of producing ultra low H2 diffusible hydrogen levels on HPS steels

Recommended Wires

For Low Alloy Steel
Lincolnweld® LA-75, LA-85, LA-100

Product Information

Basicity Index:	3.1
Density:	1.3 g/cm^3

Typical Applications

- Bridge fabrication with HPS70W steel, when used with LA-85 wire
- Single or multiple wire arc welding
- Butt and fillet welds on low alloy steels

Packaging

50 lb (22.7 kg)	
Hermetically Sealed Pail	ED028657

FLUX COMPOSITION[1]

	%SiO_2	%MgO	%CaF_2	%Na_2O	%Al_2O_3	%CaO	%TiO_2	%K_2O	%FeO	% Metal Alloys
Lincolnweld® MIL800-HPNi	13	34	22	1	16	8	2	1	1	3 max.

AWS TEST RESULTS[1]

Flux/Wire Combination	Weld Condition	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation (%)	Charpy V-Notch J (ft•lbf)	Charpy V-Notch @ °C (°F)	AWS Classification (A5.17/A5.23)
LA-75	As-welded	560 (81)	640 (93)	28	145 (107)	-51 (-60)	F8A6-ENi1K-G-H2
LA-85	As-welded	600 (88)	690 (100)	25	143 (105)	-40 (-40)	F9A4-ENi5-G-H2
LA-100	As-welded	800 (116)	850 (123)	23	91 (67)	-40 (-40)	F11A4-EM2-G-H2

[1]See test results disclaimer on pg. 9. [2]Measured with 0.2% offset. NOTE: For the most up-to-date AWS certificates of conformances please visit www.lincolnelectric.com

Lincolnweld® L-50

Mild Steel Solid Electrode

AWS EM13K

Key Features

- A low carbon, medium manganese, medium silicon wire
- Pair it with Lincolnweld® 980 flux for the best flux/wire combination when semiautomatic submerged arc welding

Conformances

AWS A5.17/A5.17M: 1997	EM13K
MIL-E-23765/1D &1E:	MIL-70S-3

Recommended Fluxes

Lincolnweld® 760, 761, 780, 781, 860, 865, 880M, 882, 888™, 8500, 960, 980, P223

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	600 lb (272 kg) Speed Feed® Drum	1000 lb (453 kg) Speed Feed® Drum	1000 lb (453 kg) Accu-Trak® Drum	2200 lb (998 kg) Speed Feed® Stem
1/16 (1.6)	ED011317	ED011316		ED029083	
5/64 (2.0)	ED011335		ED011334		
3/32 (2.4)	ED011328		ED011327		
1/8 (3.2)	ED011323		ED011322		
5/32 (4.0)	ED011332		ED011331		ED032997

WIRE COMPOSITION[1] - As Required per AWS A5.17/A5.17M:1997

	%C	%Mn	%Si	%S	%P	%Cu
Lincolnweld® L-50	0.06 - 0.16	0.90 - 1.40	0.35 - 0.75	0.030	0.030	0.35

[1]Single values are maximums.

Lincolnweld® L-56

Mild Steel Solid Electrode

AWS EH11K

Key Features

- A low carbon, high manganese, very high silicon wire
- Can be used with Lincolnweld® 800 series fluxes for welds requiring 480 MPa (70 ksi) tensile strength in stress relieved conditions

Conformances

AWS A5.17/A5.17M: 1997	EH11K
MIL-E-23765/1D & 1E:	MIL-70S-6

Recommended Fluxes

Lincolnweld® 860, 880M, 882, 888, 8500, P223

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	500 lb (227 kg) Accu-Trak® Drum	1000 lb (453 kg) Speed Feed® Reel	1000 lb (453 kg) Speed Feed® Drum	1000 lb (453 kg) Accu-Trak® Drum	2200 lb (998 kg) Speed Feed® Stem
1/16 (1.6)	ED011666	ED029225			ED029085	
5/64 (2.0)	ED011678		EDS01631			
3/32 (2.4)	ED011674			ED030425		
1/8 (3.2)	ED011671			ED030426		ED032998
5/32 (4.0)	EDS11677			ED028264		ED032999

WIRE COMPOSITION[1] - As Required per AWS A5.17/A5.17M:1997

	%C	%Mn	%Si	%S	%P	%Cu
Lincolnweld® L-56	0.06 - 0.15	1.40 - 1.85	0.80 - 1.15	0.030	0.030	0.35

[1]Single values are maximums.

Lincolnweld® L-60

Mild Steel Solid Electrode

AWS EL12; EN 756: S 1

Key Features

- A low carbon, low manganese, low silicon general purpose electrode
- Provides the lowest hardness and is best suited for use with the Lincolnweld® 700 series of active fluxes

Conformances

AWS A5.17/A5.17M: 1997	EL12
EN 756:	S 1
MIL-E-23765/4:	MIL-EL12

Recommended Fluxes

Lincolnweld® 760, 761, 780, 781, 860, 882

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	600 lb (272 kg) Speed Feed® Drum	1000 lb (453 kg) Speed Feed® Drum
1/16 (1.6)	ED011762	EDS11760	ED011761
5/64 (2.0)	ED011752		ED011751
3/32 (2.4)	ED011743	EDS11741	ED011742
1/8 (3.2)	ED011758		ED011757
5/32 (4.0)	ED011749		ED011748

WIRE COMPOSITION[1] - As Required per AWS A5.17/A5.17M:1997

	%C	%Mn	%Si	%S	%P	%Cu
Lincolnweld® L-60	0.04 - 0.14	0.25 - 0.60	0.10	0.030	0.030	0.35

[1]Single values are maximums.

Lincolnweld® L-61

Mild Steel Solid Electrode

AWS EM12K; EN 756: S 2Si

Key Features

- Industry standard for submerged arc welding applications
- A low carbon, medium manganese, low silicon general purpose submerged arc electrode
- A good choice for a wide range of applications with single or multiple pass subarc welding

Conformances

AWS A5.17/A5.17M: 1997	EM12K
EN 756:	S 2Si
MIL-E-23765/4:	MIL-EM12K

Recommended Fluxes

Lincolnweld® 760, 761, 780, 781, 860, 865, 882, 888, 761-Pipe, P223, 960, 980, WTX, AXXX-10, 995N, SPX80

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	300 lb (136 kg) Speed Feed® Reel	300 lb (136 kg) Speed Feed® Drum	600 lb (272 kg) Speed Feed® Drum
1/16 (1.6)	ED011803			
5/64 (2.0)	ED011825			EDS11823
3/32 (2.4)	ED011815			EDS11813
1/8 (3.2)	ED011807			EDS11805
5/32 (4.0)	ED011821	ED030412	ED030628	EDS11819
3/16 (4.8)	ED011812			

Diameter in. (mm)	750 lb (340 kg) Speed Feed® Reel	1000 lb (453 kg) Speed Feed® Drum	2200 lb (998 kg) Speed Feed® Stem
1/16 (1.6)			
5/64 (2.0)	ED011826	ED011824	
3/32 (2.4)	EDS11817	ED011814	
1/8 (3.2)	EDS11809	ED011806	ED032973
5/32 (4.0)	ED030012	ED011820	ED032972
3/16 (4.8)		ED011811	ED032994

WIRE COMPOSITION[1] - As Required per AWS A5.17/A5.17M:1997

	%C	%Mn	%Si	%S	%P	%Cu
Lincolnweld® L-61	0.05 - 0.15	0.80 - 1.25	0.10 - 0.35	0.030	0.030	0.35

[1]Single values are maximums.

Lincolnweld® L-S3

Mild Steel Solid Electrode

AWS EH12K; EN 756: S 3Si

Key Features

- A low carbon, high manganese, medium silicon electrode designed for use with the Lincolnweld® 800 series of neutral fluxes
- Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F) when used with Lincolnweld® 888, 8500, and MIL800-H neutral fluxes

Conformances

AWS A5.17/A5.17M: 1997	EH12K
EN 756:	S 3Si

Recommended Fluxes

Lincolnweld® 860, 880M, 882, 888, 8500, MIL800-H, P223

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil
1/8 (3.2) 5/32 (4.0)	ED016767 ED016248

WIRE COMPOSITION[1] - As Required per AWS A5.17/A5.17M:1997

	%C	%Mn	%Si	%S	%P	%Cu
Lincolnweld® L-S3	0.06 - 0.15	1.50 - 2.0	0.25 - 0.65	0.025	0.025	0.35

[1]Single values are maximums.

Lincolnweld® LA-71

Mild Steel Solid Electrode

AWS EM14K

Key Features

- A low carbon, medium manganese, medium silicon electrode containing approximately 0.1% titanium
- Small addition of titanium allows deposits to be stress-relieved with little loss of strength, even with extended stress relief times
- Widely used with neutral basic fluxes in both as-welded and post-weld heat treated conditions

Conformances

AWS A5.17/A5.17M: 1997 EM14K

Recommended Fluxes

Lincolnweld® 860, 865, 880M, 882, 888, 8500, MIL800-H, 960, P223

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	1000 lb (453 kg) Speed Feed® Drum
3/32 (2.4)	ED011052	
1/8 (3.2)	ED011051	EDS30781
5/32 (4.0)	ED011053	EDS30782

WIRE COMPOSITION(1) - As Required per AWS A5.17/A5.17M:1997

	%C	%Mn	%Si	%Ti	%S	%P	%Cu
Lincolnweld® LA-71	0.06 - 0.19	0.90 - 1.40	0.35 - 0.75	0.03 - 0.17	0.025	0.025	0.35

(1)Single values are maximums.

Lincolnweld® L-70

Low Alloy Solid Electrode

AWS EA1; EN 756: S 2Mo

Key Features

- A low carbon, medium manganese, low silicon, 1/2% molybdenum wire used for single or multiple pass welds
- A standard choice for pipe fabrication and other limited pass applications

Conformances

AWS A5.23/A5.23M: 2007	EA1
EN 756:	S 2Mo
MIL-E-23765/4:	MIL-EA1

Recommended Fluxes

Lincolnweld® 761, 781, 860, 882, 888, 995N, 761-Pipe, P223, SPX80

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	1000 lb (453 kg) Speed Feed® Drum	2200 lb (998 kg) Speed Feed® Stem
5/64 (2.0)	ED012054		
1/8 (3.2)	ED012051	ED021192	ED032971
5/32 (4.0)	ED012053	ED021193	ED032970
3/16 (4.8)	ED012052	EDS21194	ED032996

WIRE COMPOSITION[1] - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Mo	%S	%P	%Cu
Lincolnweld® L-70	0.05 - 0.15	0.65 - 1.00	0.20	0.45 - 0.65	0.025	0.025	0.35

[1]Single values are maximums.

Lincolnweld® LA-75

Low Alloy Solid Electrode

AWS ENi1K

Key Features

- A low carbon, medium manganese, high silicon, nickel-bearing electrode designed for use with Lincolnweld® neutral fluxes
- Suitable for use in applications requiring less than 1% Ni wire composition

Conformances

AWS A5.23/A5.23M: 2007 ENi1K

Recommended Fluxes

Lincolnweld® 860, 865, 880, 880M, 882, 888, MIL800-H, MIL800-HPNi, 960, 980

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	1000 lb (453 kg) Speed Feed® Drum
5/64 (2.0)	ED011066	
3/32 (2.4)	ED011064	ED027225
1/8 (3.2)	ED011062	
5/32 (4.0)	ED011065	ED027224

WIRE COMPOSITION[1] - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Ni	%S	%P	%Cu
Lincolnweld® LA-75	0.12	0.80 - 1.40	0.40 - 0.80	0.75 - 1.25	0.020	0.020	0.35

[1]Single values are maximums.

Lincolnweld® LA-81

Low Alloy Solid Electrode

AWS EG

Key Features

- A low carbon, medium manganese, low silicon, 1/2% molybdenum wire containing small additions of titanium and boron for improved fracture toughness
- Generally used in two run applications for arctic grade line pipe
- It can be used to weld up to API X90 grade pipe

Conformances

AWS A5.23/A5.23M: 2007 EG

Recommended Fluxes

Lincolnweld® 995N, SPX80

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	1000 lb (453 kg) Speed Feed® Drum	2200 lb (998 kg) Speed Feed® Stem
1/8 (3.2) 5/32 (4.0) 3/16 (4.8)	ED023163	EDS31060	ED032993 ED032992 ED032995

WIRE COMPOSITION - *As Required per AWS A5.23/A5.23M:2007*

	%C	%Mn	%Si	%Mo	%Ti	%B	%Cu
Lincolnweld® LA-81[1]	0.05	1.2	0.2	0.50	0.1	0.01	0.20

[1]No AWS limits. Values are typical.

Lincolnweld® LA-82

Low Alloy Solid Electrode

AWS EF2

Key Features

- Designed especially for high strength applications
- Recommended when over 620 MPa (90 ksi) tensile strength is required in the as-welded condition or when low temperature impact toughness is required in the stress-relieved condition

Conformances

AWS A5.23/A5.23M: 2007 EF2

Recommended Fluxes

Lincolnweld® 860, 882, 888, 8500, MIL800-H

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil
3/32 (2.4) 1/8 (3.2) 5/32 (4.0)	EDS30785 ED026958 ED026959

WIRE COMPOSITION[1] - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Ni	%Mo	%S	%P	%Cu
Lincolnweld® LA-82	0.10 - 0.18	1.70 - 2.40	0.2	0.40 - 0.80	0.40 - 0.65	0.025	0.025	0.35

[1]Single values are maximums.

Lincolnweld® LA-84

Low Alloy Solid Electrode

AWS EF3; EN 756: S3 Ni1Mo

Key Features

- A nickel-bearing electrode with 1/2% molybdenum
- Can be used for higher strength weldments where impact properties exceeding 27 J (20 ft•lbf) at -62°C (-80°F) are required
- Suitable for use where consumables with less than 1% Ni are required

Conformances

AWS A5.23/A5.23M: 2007	EF3
EN 756:	S3 Ni1Mo

Recommended Fluxes

Lincolnweld® 860, 880M, 882, 888, P223, MIL800-H, MIL800-HPNi

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	1000 lb (453 kg) Speed Feed® Drum
3/32 (2.4)	ED031871	ED031872

DEPOSIT COMPOSITION(1) - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Ni	%Mo	%S	%P	%Cu
Lincolnweld® LA-84	0.10 - 0.18	1.75 - 2.20	0.2	0.80 - 1.0	0.45 - 0.60	0.010 - 0.020	0.010 - 0.020	0.05 - 0.15

(1)Single values are maximums.

Lincolnweld® LA-85

Low Alloy Solid Electrode

AWS ENi5

Key Features

- A nickel-bearing wire with 0.2% molybdenum designed for use on weathering steels
- Capable of producing weld deposits with 480-550 MPa (70-80 ksi) tensile strength in the as-welded and stress-relieved conditions

Conformances

AWS A5.23/A5.23M: 2007 ENi5

Recommended Fluxes

Lincolnweld® 860, 880M, 882, 888, 8500, MIL800-H, MIL800-HPNi, 960

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	1000 lb (453 kg) Speed Feed® Drum
3/32 (2.4) 1/8 (3.2) 5/32 (4.0) 3/16 (4.8)	ED023166 ED023167 ED023168 ED023169	ED029965

WIRE COMPOSITION[1] - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Ni	%Mo	%S	%P	%Cu
Lincolnweld® LA-85	0.12	1.20 - 1.60	0.05 - 0.30	0.75 - 1.25	0.10 - 0.30	0.025	0.020	0.35

[1]Single values are maximums.

Lincolnweld® LA-90

Low Alloy Solid Electrode

AWS EA3K

Key Features

- A low carbon, high manganese, high silicon, 1/2% molybdenum special purpose wire
- Recommended for seam welding of pipe and for the general welding of high strength plate

Conformances

AWS A5.23/A5.23M: 2007 EA3K

Recommended Fluxes

Lincolnweld® 880, 880M, 888, 8500, MIL800-H, 995N, P223, SPX80

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	750 lb (340 kg) Speed Feed® Reel	1000 lb (453 kg) Speed Feed® Drum
1/16 (1.6)	ED013999		
5/64 (2.0)	ED011086		
3/32 (2.4)	ED011084		
1/8 (3.2)	EDS11083		
5/32 (4.0)	EDS11085	EDS01154	EDS01152

WIRE COMPOSITION[1] - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Mo	%S	%P	%Cu
Lincolnweld® LA-90	0.05 - 0.15	1.60 - 2.10	0.50 - 0.80	0.40 - 0.60	0.025	0.025	0.35

[1]Single values are maximums.

Lincolnweld® LA-92

Low Alloy Solid Electrode

AWS EB2R; EN 12070: Cr Mo1

Key Features

- Designed for welding 1 1/4% chromium, 1/2% molybdenum steels in high temperature service applications such as pressure vessels or piping
- The AWS R designator denotes ultra low residuals which will result in a low Bruscato factor (X-factor)

Conformances

AWS A5.23/A5.23M: 2007	EB2R
EN 12070:	Cr Mo1

Recommended Fluxes

Lincolnweld® 880M, 882, MIL800-H, 960

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil
3/32 (2.4)	EDS30783
1/8 (3.2)	EDS26960
5/32 (4.0)	EDS26961

WIRE COMPOSITION[1] - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Cr	%Mo	%S	%P	%Cu
Lincolnweld® LA-92	0.07 - 0.15	0.45 - 1.00	0.05 - 0.30	1.00 - 1.75	0.45 - 0.65	0.025	0.025	0.35

[1]Single values are maximums.

Lincolnweld® LA-93

Low Alloy Solid Electrode

AWS EB3R; EN 12070: Cr Mo2

Key Features

- Designed for high temperature applications such as pressure vessels and piping for 2 1/4% chromium, 1% molybdenum steels
- The AWS R designator denotes ultra low residuals which will result in a low Bruscato factor (X-factor)

Conformances

AWS A5.23/A5.23M: 2007	EB3R
EN 12070:	Cr Mo2

Recommended Fluxes

Lincolnweld® 880M, 882, MIL800-H, 960

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil	1000 lb (453 kg) Speed Feed® Drum
3/32 (2.4) 1/8 (3.2) 5/32 (4.0)	EDS30784 EDS26962 EDS26963	ED032185

WIRE COMPOSITION[1] - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Cr	%Mo	%S	%P	%Cu
Lincolnweld® LA-93	0.05 - 0.15	0.40 - 0.80	0.05 - 0.30	2.25 - 3.00	0.90 - 1.10	0.025	0.025	0.35

[1]Single values are maximums.

Lincolnweld® LA-100

Low Alloy Solid Electrode

AWS EM2 & ER100S-G & ER110S-G

Key Features

- A low carbon, high manganese wire with nickel and molybdenum designed to weld high strength steels such as HY-80 and HSLA-80
- Delivers yield strength greater than 690 MPa (100 ksi)
- Low H2 hydrogen levels can be achieved when used with MIL800-H flux

Conformances

AWS A5.23/A5.23M: 2007	EM2
MIL-E-23765/2D & /2E:*	MIL-100S-1 or MIL-100S-2 (with MIL800-H)

*NAVSEA Technical Publication T9074-BC-GIB-010/0200

Recommended Fluxes

Lincolnweld® 880, 880M, 888, MIL800-H, MIL800-HPNi, 960

DIAMETERS / PACKAGING

Diameter in. (mm)	60 lb (27.2 kg) Coil
1/16 (1.6)	ED010996
5/64 (2.0)	ED011002
3/32 (2.4)	ED010999
1/8 (3.2)	ED010998
5/32 (4.0)	EDS11001

WIRE COMPOSITION(1) - As Required per AWS A5.23/A5.23M:2007

	%C	%Mn	%Si	%Cr	%Ni	%Mo	%Ti
Lincolnweld® LA-100	0.10	1.25 - 1.80	0.20 - 0.60	0.30	1.40 - 2.10	0.25 - 0.55	0.10

	%Zr	%Al	%V	%S	%P	%Cu
Lincolnweld® LA-100	0.10	0.10	0.05	0.015	0.010	0.25

(1)Single values are maximums.

Lincolnweld® LC-72

Mild Steel Cored Electrode

AWS EC1

Key Features

- A cored wire designed to increase deposition rates 10-30% when used with 980 flux
- Designed to provide optimal bead shape, penetration, and slag removal in semiautomatic submerged arc welding

Conformances

AWS A5.17/A5.17M: 1997 EC1

Recommended Fluxes

Lincolnweld® 980

DIAMETERS / PACKAGING

Diameter in. (mm)	50 lb (23 kg) Coil	300 lb (136 kg) Speed Feed® Reel	600 lb (272 kg) Speed Feed® Reel	600 lb (272 kg) Speed Feed® Drum
5/64 (2.0) 3/32 (2.4)	ED011099 ED011098	EDS01186	EDS27184	EDS01187

DEPOSIT COMPOSITION - *As Required per AWS A5.23/A5.23M:2007*

	%C	%Mn	%Si	%S	%P	%Cu
Lincolnweld® LC-72[1]	0.15	1.8	0.9	0.035	0.035	0.35

[1]Limits are for weld metal deposited with a particular flux (Lincolnweld® 980 flux).

Lincolnweld® LAC-B2

Low Alloy Cored Electrode

AWS ECB2

Key Features

- Designed to weld with either single or tandem arcs using a neutral flux
- A cost-effective choice when welding 1 1/4% chromium, 1/2% molybdenum steels where a low Bruscato factor (X-factor) is not required

Conformances

AWS A5.23/A5.23M: 2007 ECB2

Recommended Fluxes

Lincolnweld® 880, 880M, 888

DIAMETERS / PACKAGING

Diameter in. (mm)	50 lb (23 kg) Coil	600 lb (272 kg) Speed Feed® Drum
3/32 (2.4)	ED010954	ED019581
5/32 (4.0)	ED010955	ED019582

Lincolnweld® LAC-M2

Low Alloy Cored Electrode

AWS ECM2

Key Features

- Capable of delivering 690 MPa (100 ksi) yield strength when welded with Lincolnweld® 880, 880M, 888 or MIL800-H fluxes

Conformances

AWS A5.23/A5.23M: 2007 ECM2

Recommended Fluxes

Lincolnweld® 880, 880M, 888, MIL800-H

DIAMETERS / PACKAGING

Diameter in. (mm)	50 lb (23 kg) Coil
3/32 (2.4) 5/32 (4.0)	ED010981 ED010982

Lincolnweld® LAC-Ni2

Low Alloy Cored Electrode

AWS ECNi2

Key Features

- A 2% nickel electrode used primarily in weathering steel applications
- When used with 888 flux, it can produce impact properties exceeding 27 J (20 ft•lbf) at -73ºC (-100°F)

Conformances

AWS A5.23/A5.23M: 2007 ECNi2

Recommended Fluxes

Lincolnweld® 880, 880M, 882, 888, 980

DIAMETERS / PACKAGING

Diameter in. (mm)	50 lb (23 kg) Coil
3/32 (2.4)	ED010986