

# Electrodes and Flux-Electrode Combinations

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## Material Producer List

Materials and Tests Division-Prefabricated Structural Materials Section



## Electrodes and Flux-Electrode Combinations

### *Reference*

Refer to the Department's *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* for information on the following:

- Item 441, "Steel Structures."

### *General*

The following electrodes and electrode-flux combinations have been approved for use on TxDOT projects. The expiration dates listed apply only to AWS D1.5 welding. To request that a product be added to this list or to renew an expired approval, the fabricator must:

- submit certified copies of all tests required by the applicable AWS A5 specification in accordance with the applicable welding code (AWS D1.5 or D1.1) to the Texas Department of Transportation, Materials and Tests Division's (MTD) Prefabricated Structural Materials Section (CP-51), 125 East 11th Street, Austin, TX 78701-24863, or
- submit a Certificate of Conformance to [MTD\\_StructuralSteel-Inspections@txdot.gov](mailto:MTD_StructuralSteel-Inspections@txdot.gov).

It is the responsibility of consumables users to ensure that updated documents are submitted. For AWS D1.5 welding, approval will expire a year after the test date.

For more information, contact MTD's Prefabricated Structural Materials Section at 512/506-5924.

**Electrodes and Flux-Electrode Combinations**

Producer	Electrode or Flux-Electrode Combination	AWS Classification(s)	AWS Spec <sup>a</sup>	Welding Position <sup>b</sup>	Current	Notes	Expiration Date
Arcos		ER316/316L	A5.9				Expired for AWS D1.5 welding*
ESAB	AlloyShield 70S	F7A5-EC1/F7P5-EC1	A5.17		AC or DCEP		Expired for AWS D1.5 welding*
ESAB	Atom Arc 7018	E7018H4R	A5.1	H, F, VU, OH	DCEP	o	Expired for AWS D1.5 welding*
ESAB	Dual Shield 7100 Ultra	E71T-1C-DH8/T-1M-D/T-9C-DH8/T-9M	A5.20	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
ESAB	Dual Shield 710X	E71T-1C-DH8/T-1M/T-9C-H8/T-9M	A5.20	H, F, VU, OH	DCEP	e, f	Expired for AWS D1.5 welding*
ESAB	Dual Shield 810X-Ni1	E81T1-Ni1C-JH8	5.29	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
ESAB	Dual Shield 8100W	E81T1-W2C/W2M	A5.29	H, F, VU, OH	DCEP	e, f	Expired for AWS D1.5 welding*
ESAB	Dual Shield II 711X	E71T-1C-JDH8/T-12C-JSH8	A5.20	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
ESAB	OK 10.71/Spoolarc 75	F8A4-ENi1K-Ni1H8	A5.23	H, F	AC or DCEP		Expired for AWS D1.5 welding*
ESAB	Spoolarc 81	F7A2-EM12K-H8	A5.17		AC or DCEP		Expired for AWS D1.5 welding*
Hobart	FabCO 95K2	E90T5-K2C H4, -K2M H4	A5.29	H, F	DCEP	e, f	4/13/2021
Hobart	FabCO 811N1	E81T1-Ni1CJH4, -MJ H4	A5.29	H, F, VU, OH	DCEP	aa	2/14/2021
Hobart	FabCO 811W	E81T1-W2CH8	A5.29	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Hobart	FabCo Excel-Arc 71	E71T-1C/MH8, E71T-9C/M H8	A5.20	H, F, VU, OH	DCEP	e, f	8/5/2021
Hobart	FabCo XL 525	E71T-1M, -12MJ H8	A5.20	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
Hobart	FabCOR 86R	E70C-6M-H4	A5.18	H, F	DCEP	f	Expired for AWS D1.5 welding*
Hobart	FabCOR Edge	E70C-6MH4	A5.18		DCEP	f, z	Expired for AWS D1.5 welding*
Hobart	Quantum Arc 6	ER70S-6	A5.18		DCEP		Expired for AWS D1.5 welding*

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Hobart	FABCO RXR (previously called TM RX7)	E70T-1/9 C	A5.20	H, F	DCEP	e	Expired for AWS D1.5 welding*
Hobart	SubCOR N1S/HN-590	F7A8/10-ECNi1-Ni1-H8	A5.23		DCEP		10/20/2021
KelTec	FineArc STS D-MAG	E71T-1C/1M, -12C/12M H8	A5.20	H, F, VU, OH	DCEP	ee	Expired for AWS D1.5 welding*
Lincoln	ER308/308L	ER308/308L	A5.9				Expired for AWS D1.5 welding*
Lincoln	Excalibur 7018MR	E7018-H4R	A5.1	F, VU, OH, H	AC or DCEP	g	Expired for AWS D1.5 welding*
Lincoln	Excalibur 8018-C3MR	E8018-C3H4R	A5.5	F, V, OH, H	AC or DCEP	r	Expired for AWS D1.5 welding*
Lincoln	Excalibur 9018M MR	E9018MH4R	A5.5	F, V, OH, H	DCEP	r	Expired for AWS D1.5 welding*
Lincoln	Jetweld LH-70	E7018 H4R	A5.1	F, V, OH, H	AC or DCEP		Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 761/L-60	F7A2-EL12-H8	A5.17		DCEP	h, y	Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 761/L-61	F7A2-EM12K-H8	A5.17		DCEP		Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 780/L-61	F7A2-EM12K-H8	A5.17		DCEP		Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 781/L-61	F7A0-EM12K	A5.17		DCEP		Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 860/L-61	F7A4-EM12K-H8 (meets req for F7A2)	A5.17		DCEP		Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 860/LA-75	F7A2-ENi1K-Ni1-H8	A5.23			m	Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 865/L-61	F7A2-EM12K-H8	A5.17		DCEP		Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 960/L-61	F7A2-EM12K-H8	A5.17		DCEP		1/4/2022
Lincoln	Lincolnweld 960/LA-75	F8A2-ENi1K-Ni1-H8	A5.23		AC/DCEP/DCEN	m	7/1/2021
Lincoln	Lincolnweld 980/L-61	F7A2-EM12K-H8	A5.17		DCEP		Expired for AWS D1.5 welding*
Lincoln	Lincolnweld MIL 800-HPNi/LA-85	F9A4-ENi5-G-H2	A5.23	H, F	DCEP		5/1/2021
Lincoln	Outershield 70	E70T-1C-H16,9C-H16	A5.20	H, F	DCEP	e	Expired for AWS D1.5 welding*

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Lincoln	Outershield 71 Elite	E71T-1C-H8, -1M-H8, -9C-H8, -9M-H8, -C1A2-CSI-H8, -M21A2-CSI-H8	A5.20	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
Lincoln	SuperArc L-50	ER70S-3	A5.18		DCEP	cc	Expired for AWS D1.5 welding*
Lincoln	SuperArc L-50	ER70S-3	A5.18		DCEP	e, dd, cc	Expired for AWS D1.5 welding*
Lincoln	SuperArc L-56	ER70S-6	A5.18		DCEP	e, z	Expired for AWS D1.5 welding*
Lincoln	SuperArc L-59	ER70S-6	A5.18		DCEP	z	4/1/2021
Lincoln	SuperGlaze 4043	ER 4043	A5.10		DCEP		Expired for AWS D1.5 welding*
Lincoln	SureArc S6	ER70S-6	A5.18		DCEP	e	Expired for AWS D1.5 welding*
Lincoln	UltraCore 71A85	E71T-1M-H8, -9M-H8, E71T1-M21A2-CSI-H8	A5.20	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Lincoln	UltraCore 71C	E71T-1CH8,9CH8	A5.20	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
Lincoln	UltraCore 81Ni1A75-H	E81T1-Ni1M-JH4	A5.29	H, F, VU, OH	DCEP	e, f	Expired for AWS D1.5 welding*
Lincoln	Ultracore HD-M	E71T-1M-H8, -9M-H8	A5.20	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Select-Arc	SelectAlloy 308L-AP	E308LT1-1, -4	A5.22		DCEP		Expired for AWS D1.5 welding*
Select-Arc	Select 810W	E81T1-W2M/C	A5.29	H, F, VU, OH	DCEP	e, f, m	Expired for AWS D1.5 welding*
Select-Arc	Select 730	E71T-1C-H8, E71T-9C-H8, E71T-1M-H8, E71T-9M-H8	A5.20	H, F, VU, OH	DCEP	e, f, m	Expired for AWS D1.5 welding*
Stoody	Stoody 308LT-1 AP	E308LT1-1, -4	A5.22	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Stoody	Stoody 309LT-1 AP	E309LT1-1, -4	A5.22	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Stoody	Stoody 316LT-1AP	E316LT1-1, -4	A5.22	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*

a. For SMAW, see Table A3 of AWS A5.1 or Table A2 of AWS A5.5 for typical amperage ranges. Only SMAW (AWS A5.1 or A5.5) and FCAW (AWS A5.20 or A5.29) are approved for structural field welding. See TxDOT Standard Specification Item 448, Table 1.

- b. H=horizontal, F=flat, V=vertical, VU=vertical up, VD=vertical down, OH=overhead. For SMAW (AWS A5.1 & A5.5), V & OH for 5/32" and under only.
- c. Not approved for welding of bridge structural members. See the appropriate AWS specification (D1.1 or D1.4) and TxDOT Spec item 448, Table 1.
- d. Not approved for structural field welding. See TxDOT Spec item 448, Table 1.
- e. External shielding CO<sub>2</sub>
- f. External shielding 75-80% Ar, remainder CO<sub>2</sub> ("M" classification)
- g. Low-hydrogen electrode (see Table 4.6 of AWS D1.5 for permissible atmospheric exposure)
- h. Active flux. If multiple passes are welded, limit plate thickness to 1" and voltage to 35.
- i. Single-pass welding only
- j. Acceptable for welding HPS70W steel at reduced preheats.
- k. Aluminum electrode. Consult the appropriate AWS A5 spec.
- l. Stainless steel electrode. 3/16" and larger not recommended for all positions. See AWS D1.6 for appropriate base metals.
- m. Weathering electrode: particularly suited for matching of color and properties of weathering steel
- n. To be used only for field welding of root passes that are 100% removed
- o. 5/32" only
- p. 3/32" size not approved
- q. Only 3/32" size approved
- r. 1/4" size not approved
- s. 3/32" size does not have R designation
- t. 3/16" and 1/4" sizes not approved
- u. Only 1/8" size approved.
- v. 5/64" & 3/32": F&H only
- w. 1/8" size does not have H4R designation
- x. H designation not valid for sizes less than 1/4"
- y. External shielding 100% Ar
- z. External shielding 90% Ar, 10% CO<sub>2</sub> ("M" classification)
- aa. Approved for 1/16" size and smaller
- bb. External Shielding 95% Ar, 5% CO<sub>2</sub>
- cc. External Shielding 95% Ar, 5% O<sub>2</sub>
- dd. External Shielding 94% Ar, 6% CO<sub>2</sub>
- ee. Each lot of this product must be accompanied by the test cert from ArcelorMittal stating "Melted and Manufactured in the USA".
- \* Approved for D1.1 welding only