Electrodes and Flux-Electrode Combinations

NOTE: Refresh the page to view the most current list.

Reference

Refer to the Spec Book 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. The 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, Construction Division, Materials and Pavements Section/Structural Materials Branch (CP-51), 125 E. 11th Street, Austin, TX 78701-24863, or

- submit a Certificate of Conformance to CST_StructuralSteel-Inspections@txdot.gov.

It is the responsibility of consumable 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 CST/M&P's Structural Materials Branch at 512/506-5924.

Electrodes and Flux Electrode Combinations							
Producer	**Electrode or Flux-Electrode Combination**	**AWS Classification(s)**	**AWS Spec[a]**	**Welding Position[b]**	**Current**	**Notes**	**Expiration Date**
ESAB	Atom Arc 8018	E8018-C3-H4R	A5.5	H, F, VU, OH	AC or DCEP	g	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		3/31/2017 (-1C & -9C only); -1M & -9M 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	4/29/2017
ESAB	Dual Shield 710X-M	E71T-1C/T-1M-DH8/T-9C/T-9M-DH8	A5.20	H, F, VU, OH	DCEP	e, f	Expired for AWS D1.5 welding*
ESAB	Dual Shield 8100W	E81T1-W2/W2M	A5.29	H, F, VU, OH	DCEP	e, f	3/08/2017
ESAB	Dual Shield II 70 Ultra	E71T-1(M),12M	A5.20	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
ESAB	Dual Shield II 710X	E71T-1C/T-1MDH8/T-9C/T-9M-DH8	A5.20	H, F, VU, OH	DCEP	e, f	4/29/2017
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	Dual Shield II 80-Ni1H4	E81T1-Ni1M-JH4	A5.29	H, F, VU, OH	DCEP	f	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	OK 10.71/Spoolarc 81	F7A5-EM12K-H8	A5.17		DCEP		Expired for AWS D1.5 welding*
ESAB	OK 429/Spoolarc 75	F8A4-ENi1K-Ni1-H8	A5.23		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*
ESAB	Spoolarc 86	ER70S-6H4	A5.18	H, F	DCEP	e	Expired for AWS D1.5 welding*
Hobart	Excel-Arc 71	E71T-1C,-1M,-9C,-9M	A5.20	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Hobart	FabCO 811N1	E81T1-Ni1CJ H4, -MJ H4	A5.29	H, F, VU, OH	DCEP	aa	3/17/2017

Electrodes and Flux Electrode Combinations							
Producer	**Electrode or Flux-Electrode Combination**	**AWS Classification(s)**	**AWS Spec[a]**	**Welding Position[b]**	**Current**	**Notes**	**Expiration Date**
Hobart	FabCO 811W	E81T1-W2C H8	A5.29	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Hobart	FabCO RXR	E70T-1/9C	A5.20	H, F	DCEP	e	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 1/16 60 CL	E70C-6M H4	A5.18		DCEP	f	1/28/2017
Hobart	Formula XL-525	E71T-1M; -12MJH8	A5.20	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
Hobart	Formula XL-550	E71T-1C,-12CJH8	A5.20	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
Hobart	Hobart 418	E7018	A5.1		AC or DCEP	g	Expired for AWS D1.5 welding*
Hobart	Hoballoy 8018C3	E8018-C3 H4	A5.5	H, F, VU, OH	AC or DCEP	G	Expired for AWS D1.5 welding*
Hobart (Corex)	Metal-Cor 6	E70C-6M H4	A5.18	H, F	DCEP	f	Expired for AWS D1.5 welding*
Hobart (Corex)	Metal-Cor 6L	E70C-6MH4	A5.18		DCEP	f, bb	Expired for AWS D1.5 welding*
Hobart	Metal-Cor Maxim	E70C-6MH4	A5.18	H, F	DCEP	f	Expired for AWS D1.5 welding*
Hobart	Metalloy Vantage Ni1	E80C-Ni1 H4	A5.28		DCEP		Expired for AWS D1.5 welding*
Hobart	Quantum Arc 6	ER70S-6	A5.18		DCEP		Expired for AWS D1.5 welding*
Hobart	TM RX7	E70T-1/9 C	A5.20	H, F	DCEP	e	Expired for AWS D1.5 welding*
Hobart (Tri-Mark)	TM-771	E71T-1CH8,12CJH8	A5.20	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
Hobart (Tri-Mark)	TM-711M	E71T1-CH8,MH8	A5.20	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Hobart	Formula XL-525	E71T-1M,12MJH8	A5.20	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*

Electrodes and Flux Electrode Combinations							
Producer	**Electrode or Flux-Electrode Combination**	**AWS Classification(s)**	**AWS Spec[a]**	**Welding Position[b]**	**Current**	**Notes**	**Expiration Date**
Hobart (Tri-Mark)	TM-811N1	E81T1-Ni1(CJH8)/E81T1-Ni1(MJH8)	A5.29	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Hobart (Corex)	Verti-Cor II Ni1	E81T1-Ni1(CJH8)/E81T1-Ni1(MJH8)	A5.29	H, F, VU, OH	DCEP		Expired for AWS D1.5 welding*
Lincoln	Excalibur 7018 MR	E7018-H4R	A5.1	F, VU, OH, H	AC or DCEP	g	Expired for AWS D1.5 welding*
Lincoln	Excalibur 7018-1 MR	E7018-1H4R	A5.1	F, V, OH, H	AC or DCEP	g	Expired for AWS D1.5 welding*
Lincoln	Excalibur 8018-C3 MR	E8018-C3-H4R	A5.5	F, V, OH, H	AC or DCEP	g, m, r	8/17/2017
Lincoln	Excalibur 9018M MR	E9018M, E9018M H4R	A5.5	F, V, OH, H	DCEP		Expired for AWS D1.5 welding*
Lincoln	Jetweld LH-70	E7018-H4-R, E7018	A5.1	F, V, OH, H	AC or DCEP		Expired for AWS D1.5 welding*
Lincoln	Jet-LH 78 MR	E7018(H4R)	A5.1	F, V, OH, H	DCEP	g	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 780/L-61	F7A0-EL12-H8	A5.17			h	Expired for AWS D1.5 welding*
Lincoln	Lincolnweld 860/L-61	F7A4-EM12K-H8 (meets req for F7A2)	A5.17		DCEP		7/1/2017
Lincoln	Lincolnweld 860/LA-75	F7A2-ENi1K-Ni1-H8	A5.23			m	2/24/2017
Lincoln	Lincolnweld 960/L-61	F7A2-EM12K-H8	A5.17		DCEP		3/9/2017
Lincoln	Lincolnweld 960/LA-75	F8A2-ENi1K-Ni1-H8	A5.23		DCEP	m	5/13/2017
Lincoln	Lincolnweld AXXX10/L-61	F7A4-EM12K-Ni1-H8	A5.23				Expired for AWS D1.5 welding*
Lincoln	Lincolnweld MIL 800-HPNi/LA-85	F9A4-ENi5-G-H2	A5.23	H, F	DCEP	i	5/4/17
Lincoln	Outershield 70	E70T-1C-H16,9C-H16	A5.20	H, F	DCEP	e	7/21/2017
Lincoln	Outershield 71M	E71T-1C-J/-JH16/-1M-J/-JH16, E71T-9C-J/-JH16/-9M-J/-9M-JH16	A5.20	H, F (C) H, F, VU, OH (M)	DCEP		Expired for AWS D1.5 welding*

Electrodes and Flux Electrode Combinations							
Producer	**Electrode or Flux-Electrode Combination**	**AWS Classification(s)**	**AWS Spec[a]**	**Welding Position[b]**	**Current**	**Notes**	**Expiration Date**
Lincoln	SuperArc L-50	ER70S-3	A5.18		DCEP	e, dd	Expired for AWS D1.5 welding*
Lincoln	SuperArc L-56	ER70S-6	A5.18		DCEP	e	Expired for AWS D1.5 welding*
Lincoln	SuperArc LA-90	ER80S-D2	A5.28	H, F	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-1MH8,9MH8	A5.20	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
Lincoln	UltraCore 71C	E71T-1CH8,9CH8	A5.20	H, F	DCEP	e	Expired for AWS D1.5 welding*
Lincoln	UltraCore 81Ni1A75-H	E81T1-Ni1M-JH4	A5.29	H, F, VU, OH	DCEP	f	5/19/2017
Lincoln	UltraCore 81Ni2A75-H	E81T1-Ni2M-JH4	A5.29	H, F, VU, OH	DCEP	f, aa	Expired for AWS D1.5 welding*
Lincoln	UltraCore 81Ni1C-H	E81T1-Ni1C-JH4	A5.29	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
Lincoln	UltraCore 712C	E71T-12CJH8,9CJH8,1CJH8	A5.20	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
Lincoln	UltraCore HD-M	E71T-1M-H8, -9M-H8, E71T1-M21A2-CS1-H8	A5.20	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
Select-Arc	Select 70C-6	E70C-6M	A5.18	H, F	DCEP	f	Expired for AWS D1.5 welding*
Select-Arc	Select 70C-6	E70C-6M	A5.18	H, F	DCEP	z	Expired for AWS D1.5 welding*
Select-Arc	Select 70C-T	E70C-6M	A5.18	H, F		f	Expired for AWS D1.5 welding*
Select-Arc	Select 810-Ni2	E81T1-Ni2C-H8	A5.29	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
Select-Arc	Select 810-Ni2	E81T1-Ni2C	A5.29	H, F, VU, OH	DCEP	e	Expired for AWS D1.5 welding*
Select-Arc	Select 810-Ni2	E81T1-Ni2M	A5.29	H, F, VU, OH	DCEP	f	Expired for AWS D1.5 welding*
Select-Arc	VMC-105	EWTG	A5.25			q, y	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 CO2
f. External shielding 75-80% Ar, remainder CO2 ("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% CO2 ("M" classification)
aa. Approved for 1/16" size and smaller
bb. External Shielding 95% Ar, 5% CO_2
cc. External Shielding 95% Ar, 5% O2
dd. External Shielding 94% Ar, 6% CO_2

* approved for D1.1 welding only