



Product: FabCO Excel-Arc 71
Diameter: .045"
Shielding Gas: M21-ArC-25
Current/Polarity: DCEP
Classification: E71T-1 H8, E71T-9 H8
Specification: AWS A5.20/A5.20M:2005
Test Completed: 7/23/2018

Certificate of Conformance

For AWS D1.8/D1.8M, Seismic Supplement

This is to certify that the product named is of the same classification, manufacturing process, and material requirements as the material, which was used for the test which was concluded on the date shown, the results of which are shown below. All test required by the code or specifications were performed at that time and the material tested met all requirements. The product was manufactured and supplied by the Quality System Program of Hobart Brothers, which meets the requirements of ISO 9001:2015, ANSI/AWS A5.01, and other specification and Military requirements, as applicable.

Test Settings	High Heat Input	Low Heat Input	Lot- # B614611305181	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	80.4 kJ/in	28.4 kJ/in	Mechanical Properties		80.4 kJ/in	28.4 kJ/in
			Test Reference #		PD6466	PD6465
Voltage	25	26.5	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	90,500 79,000 32.4 120	99,400 93,900 22.9 81
Current (amps)	225	250				
WFS (ipm)	385	460				
Travel Speed (ipm)	4.2	14				
Stick Out	3/4"	3/4"				
# of passes	8	18				
# of layers	4	8				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # S619722703192	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	79.4 kJ/in	26.9 kJ/in	Mechanical Properties		79.4 kJ/in	26.9 kJ/in
			Test Reference #		PB6512	PB6198
Voltage	25	27	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	96,500 80,000 27 93	104,400 98,600 22 94
Current (amps)	225	250				
WFS (ipm)	385	450				
Travel Speed (ipm)	4.25	15.5				
Stick Out	1/2"-3/4"	1/2"-3/4"				
# of passes	6	17				
# of layers	4	6				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # X613682106211	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	82.3 kJ/in	27.8 kJ/in	Mechanical Properties		82.3 kJ/in	27.8 kJ/in
			Test Reference #		PC6755	PC6757
Voltage	25	26	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	90,400 75,700 26 107	104,000 98,200 24 105
Current (amps)	225	250				
WFS (ipm)	385	450				
Travel Speed (ipm)	4.1	14				
Stick Out	1/2"-3/4"	1/2"-3/4"				
# of passes	6	17				
# of layers	3	6				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

**Diffusible Hydrogen - Tested in accordance with AWS A5.20/A5.20M, Clause 16
 & Extended Exposure - in accordance with AWS D1.8/D1.8M**

Condition	Lot - #	Test Reference #	Average (ml/100g)
As Received	B611752703191	HB2534	6.1 (ml/100g)
7 Day Exposure	B611752703191	HB2533	7.7 (ml/100g)

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David A. Thomas, Quality Assurance Representative



Product: FabCO Excel-Arc 71
Diameter: .045"
Shielding Gas: C1 (100% CO2)
Current/Polarity: DCEP
Classification: E71T-1 H8, E71T-9 H8
Specification: AWS A5.20/A5.20M:2005
Test Completed: 6/29/2018

Certificate of Conformance

For AWS D1.8/D1.8M, Seismic Supplement

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Test Settings	High Heat Input	Low Heat Input	Lot- # B611752703191	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	80.4 kJ/in	27.9 kJ/in	Mechanical Properties		80.4 kJ/in	27.9 kJ/in
			Test Reference #		PD6265	PD6266
Voltage	25	26	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	80,920 72,700 27.9 122	89,800 83,500 23.2 109
Current (amps)	225	250				
WFS (ipm)	385	450				
Travel Speed (ipm)	4.2	14				
Stick Out	3/4"	3/4"				
# of passes	8	20				
# of layers	4	7				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # S609122403191	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	79.4 kJ/in	27.9 kJ/in	Mechanical Properties		79.4 kJ/in	27.9 kJ/in
			Test Reference #		PB6426	PB6175
Voltage	25	27	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	81,500 70,200 29 121	93,800 89,300 24 105
Current (amps)	225	250				
WFS (ipm)	385	450				
Travel Speed (ipm)	4.25	14.5				
Stick Out	1/2"-3/4"	1/2"-3/4"				
# of passes	6	17				
# of layers	4	8				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # S619722703192	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	79.4 kJ/in	27.9 kJ/in	Mechanical Properties		79.4 kJ/in	27.9 kJ/in
			Test Reference #		PB6517	PB6202
Voltage	25	27	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	86,300 72,200 25 107	93,400 89,100 26 107
Current (amps)	225	250				
WFS (ipm)	385	450				
Travel Speed (ipm)	4.25	14.5				
Stick Out	1/2"-3/4"	1/2"-3/4"				
# of passes	6	18				
# of layers	4	7				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

**Diffusible Hydrogen - Tested in accordance with AWS A5.20/A5.20M, Clause 16
 & Extended Exposure - in accordance with AWS D1.8/D1.8M**

Condition	Lot - #	Test Reference #	Average (ml/100g)
As Received	B611752703191	HB2498	5.8 (ml/100g)
7 Day Exposure	B611752703191	HB2532	9.1 (ml/100g)

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David A. Thomas, Quality Assurance Representative



Product: FabCO Excel-Arc 71
Diameter: .052"
Shielding Gas: M21-ArC-25
Current/Polarity: DCEP
Classification: E71T-1M; E71T-9M H8
Specification: AWS A5.20/A5.20M:2010
Test Completed: 3/16/2020

Certificate of Conformance

For AWS D1.8/D1.8M, Seismic Supplement

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Test Settings	High Heat Input	Low Heat Input	Lot- # D600272902291	AWS D1.8 Requirements	High Heat Input	Low Heat Input									
	78.8 kJ/in	32.4 kJ/in	Mechanical Properties		78.8 kJ/in	32.4 kJ/in									
			Test Reference #		PD9213	PD9216									
Voltage	24.5	26	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000	82,000	95,000									
Current (amps)	225	260					58,000	72,000	89,000						
WFS (ipm)	240	330								22	29	25			
Travel Speed (ipm)	4.2	12.5											40	125	102
Stick Out	3/4"	3/4"													
# of passes	8	19													
# of layers	4	7													
Preheat Temp. °F	300+/-25	RT													
Interpass Temp. °F	500+/-50	200+/-25													
Weld Position	3G	1G													

Test Settings	High Heat Input	Low Heat Input	Lot- # A602452905221	AWS D1.8 Requirements	High Heat Input	Low Heat Input									
	81.0 kJ/in	29.0 kJ/in	Mechanical Properties		78.8 kJ/in	28.8 kJ/in									
			Test Reference #		PC3161	PC3166									
Voltage	24.5	26	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000	88,000	104,000									
Current (amps)	225	260					58,000	77,000	99,000						
WFS (ipm)	245	360								22	25	22			
Travel Speed (ipm)	4.1	14.1											40	122	74
Stick Out	5/8"	3/4"													
# of passes	7	19													
# of layers	4	6													
Preheat Temp. °F	300+/-25	RT													
Interpass Temp. °F	500+/-50	200+/-25													
Weld Position	3G	1G													

Test Settings	High Heat Input	Low Heat Input	Lot- # W606483003182	AWS D1.8 Requirements	High Heat Input	Low Heat Input									
	81.0 kJ/in	29.0 kJ/in	Mechanical Properties		81.0 kJ/in	29.0 kJ/in									
			Test Reference #		PC3073	PC3032									
Voltage	24.5	26	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000	90,000	103,000									
Current (amps)	225	260					58,000	74,000	99,000						
WFS (ipm)	245	365								22	28	22			
Travel Speed (ipm)	4.1	14											40	107	116
Stick Out	5/8"	3/4"													
# of passes	7	18													
# of layers	4	6													
Preheat Temp. °F	300+/-25	RT													
Interpass Temp. °F	500+/-50	200+/-25													
Weld Position	3G	1G													

Diffusible Hydrogen - Tested in accordance with AWS A5.20/A5.20M, Clause 16 & Extended Exposure - in accordance with AWS D1.8/D1.8M

Condition	Lot - #	Test Reference #	Average (ml/100g)
As Received	D600272902291	HB4023	4.6 (ml/100g)
7 Day Exposure	D600272902291	HB4037	7.0 (ml/100g)

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David A. Thomas, Quality Assurance Representative



Product: FabCO Excel-Arc 71
Diameter: 1/16"
Shielding Gas: M21-ArC-25
Current/Polarity: DCEP
Classification: E71T-1M H8, E71T-9M H8
Specification: AWS A5.20/A5.20M:2005
Test Completed: 8/08/2019

Certificate of Conformance

For AWS D1.8/D1.8M, Seismic Supplement

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Test Settings	High Heat Input	Low Heat Input	Lot- # C604351904291	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	78.8 kJ/in	31.0 kJ/in	Mechanical Properties		78.8 kJ/in	31.0 kJ/in
			Test Reference #		PD7581	PD7733
Voltage	24	25.5	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000	83,000	90,000
Current (amps)	230	282				
WFS (ipm)	170	240				
Travel Speed (ipm)	4.2	13.9				
Stick Out	3/4"	3/4"				
# of passes	8	17				
# of layers	4	7				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # Z601232203162	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	79.2 kJ/in	31.0 kJ/in	Mechanical Properties		79.2 kJ/in	31.0 kJ/in
			Test Reference #		PD1878	PD1876
Voltage	24	25.5	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000	84,000	94,000
Current (amps)	220	282				
WFS (ipm)	170	230				
Travel Speed (ipm)	4.0	13.9				
Stick Out	3/4"	3/4"				
# of passes	8	19				
# of layers	4	8				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # V612211904181	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	78.3 kJ/in	30.0 kJ/in	Mechanical Properties		78.3 kJ/in	30.0 kJ/in
			Test Reference #		PC0826	PC0828
Voltage	24	25.5	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000	77,000	93,000
Current (amps)	220	280				
WFS (ipm)	177	250				
Travel Speed (ipm)	4.05	14				
Stick Out	3/4"	3/4"				
# of passes	7	17				
# of layers	4	7				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Diffusible Hydrogen - Tested in accordance with AWS A5.20/A5.20M, Clause 16 & Extended Exposure - in accordance with AWS D1.8/D1.8M

Condition	Lot - #	Test Reference #	Average (ml/100g)
As Received	C600301902292	HB3064	3.6 (ml/100g)
7 Day Exposure	C600301902292	HB3118	11.4 (ml/100g)

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David A. Thomas, Quality Assurance Representative



Product: FabCO Excel-Arc 71
Diameter: 1/16"
Shielding Gas: C1 (100% CO2)
Current/Polarity: DCEP
Classification: E71T-1 H8, E71T-9 H8
Specification: AWS A5.20/A5.20M:2005
Test Completed: 8/08/2019

Certificate of Conformance

For AWS D1.8/D1.8M, Seismic Supplement

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Test Settings	High Heat Input	Low Heat Input	Lot- # C604351904291	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	78.8 kJ/in	31.0 kJ/in	Mechanical Properties		78.8 kJ/in	31.0 kJ/in
			Test Reference #		PD7581	PD7733
Voltage	24	26	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	83,000 73,000 26 144	86,000 82,000 25 111
Current (amps)	230	282				
WFS (ipm)	170	240				
Travel Speed (ipm)	4.2	13.9				
Stick Out	3/4"	3/4"				
# of passes	8	17				
# of layers	4	7				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # Z601232203162	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	82.5 kJ/in	31.0 kJ/in	Mechanical Properties		82.5 kJ/in	31.0 kJ/in
			Test Reference #		PD2034	PD2033
Voltage	28	27	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	72,600 63,400 31 197	83,100 76,200 25 134
Current (amps)	275	279				
WFS (ipm)	235	240				
Travel Speed (ipm)	4.0	15				
Stick Out	3/4"	3/4"				
# of passes	7	21				
# of layers	4	8				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Test Settings	High Heat Input	Low Heat Input	Lot- # V612211904181	AWS D1.8 Requirements	High Heat Input	Low Heat Input
	81.5 kJ/in	29.8 kJ/in	Mechanical Properties		81.5 kJ/in	29.8 kJ/in
			Test Reference #		PC0825	PC0997
Voltage	25	27	Tensile Strength (psi) Yield Strength (psi) Elongation (%) Average Charpy V-notch Impact Properties ft•lbs @ +70 °F	70,000 58,000 22 40	73,000 63,000 31 197	83,000 76,000 25 134
Current (amps)	220	285				
WFS (ipm)	175	275				
Travel Speed (ipm)	4.07	15.5				
Stick Out	5/8"	3/4"				
# of passes	7	18				
# of layers	4	7				
Preheat Temp. °F	300+/-25	RT				
Interpass Temp. °F	500+/-50	200+/-25				
Weld Position	3G	1G				

Diffusible Hydrogen - Tested in accordance with AWS A5.20/A5.20M, Clause 16 & Extended Exposure - in accordance with AWS D1.8/D1.8M

Condition	Lot - #	Test Reference #	Average (ml/100g)
As Received	C600301902292	HB3063	4.5 (ml/100g)
7 Day Exposure	C600301902292	HB3117	9.6 (ml/100g)

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David A. Thomas, Quality Assurance Representative