



**CERTIFICATES OF CONFORMANCE
2015**

**Select Arc, Inc
600 Enterprise Drive
P.O. Box 259
Fort Loramie, Oh 45845**

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CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT-ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 71** electrode, classification **E70T-1C, T-9C**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .045" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 3/32" dia.	0.06	1.33	0.80	0.007	0.007
1/16" dia.	0.06	1.66	0.73	0.007	0.009

RADIOGRAPHIC TESTS

Met requirements

FILLET WELD TESTS

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in):	3/32	1/16
Amperage:	385	330
Arc Voltage:	30	29
Current Polarity:	DCEP	DCEP
Electrical Extension (in):	3/4	3/4
Shielding Gas:	CO ₂	CO ₂
No. of Passes/Layers:	13/6	15/7
Interpass Temperature (°F):	300 +/-25	300 +/-25
Heat Input (KJ/in):	45	40

TEST RESULTS:

	Requirements	Actual Results-3/32"	Actual Results-1/16"
Tensile Strength (psi):	70-95,000 min.	83,200	94,600
Yield Strength (psi):	58,000 min.	70,800	83,400
Elongation (%):	22 min.	32	27
Charpy V-notch Impact:		17, 29, 20, 20, 20	30, 31, 32, 36, 35
ft•lb f @ -20°F	20 min. avg.	20 avg.	33 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

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SELECT-ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/Production No. Shipped:

This is to certify that **Select 97** electrode, classification **E70T-1C, T-9C**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .045" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.
Deposit Analysis: 3/32" dia.	0.05	1.66	0.28	0.006	0.010	0.31
.045" dia.	0.03	1.23	0.39	0.005	0.009	0.29

RADIOGRAPHIC TESTS

Met requirements

FILLET WELD TESTS

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

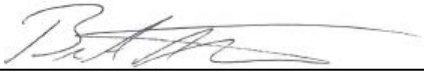
WELDING PARAMETERS:

Electrode Diameter (in):	3/32	.045
Amperage:	391	231
Arc Voltage:	30	29
Current Polarity:	DCEP	DCEP
Electrical Extension (in):	3/4	3/4
Shielding Gas:	CO ₂	CO ₂
No. of Passes/Layers:	12/6	12/6
Interpass Temperature (°F):	300 +/-25	300 +/-25
Heat Input (KJ/in):	50	40

TEST RESULTS:

	Requirements	Actual Results-3/32"	Actual Results-.045"
Tensile Strength (psi):	70-95,000 min.	81,200	75,600
Yield Strength (psi):	58,000 min.	69,600	64,300
Elongation (%):	22 min.	31	30
Charpy V-notch Impact:		19, 22, 23, 20, 25	12, 11, 31, 13, 12
ft•lb f @ -20°F	20 min. avg.	22 avg.	12 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

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Ben Pletcher, Technical Director



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Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 70TR** electrode, classification **E70T-1C, T-9C**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters 1/16" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 3/32" dia.	0.06	1.39	0.57	0.006	0.011
1/16" dia.	0.06	1.39	0.57	0.006	0.011

RADIOGRAPHIC TESTS

Met requirements

FILLET WELD TESTS

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in):	3/32	1/16
Amperage:	400	270
Arc Voltage:	29	30
Current Polarity:	DCEP	DCEP
Electrical Extension (in):	3/4	3/4
Shielding Gas:	CO ₂	CO ₂
No. of Passes/Layers:	10/5	19/9
Interpass Temperature (°F):	300 +/-25	300 +/-25
Heat Input (KJ/in):	50	40

TEST RESULTS:

	Requirements	Actual Results – 3/32"	Actual Results – 1/16"
Tensile Strength (psi):	70-95,000 min.	85,400	75,900
Yield Strength (psi):	58,000 min.	73,600	65,100
Elongation (%):	22 min.	32	33
Charpy V-notch Impact:		30, 30, 26, 31, 17	13, 14, 15, 15, 15
ft•lb f @ -20°F	20 min. avg.	29 avg.	15 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
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Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 720 HP** electrode, classification **E71T-12MJ-H8** as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameter .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel
Requirements:	0.12 max.	1.60 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.
Deposit Analysis:	0.05	1.23	0.44	0.012	0.011	0.44

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

4.4

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 260
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: 75Ar-25%CO₂
 No. of Passes/Layers: 17/8
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 34

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-90,000	87,700
Yield Strength (psi):	58,000 min.	78,400
Elongation (%):	22 min.	29
Charpy V-notch Impact: ft•lb f @ -40°F	20 min. avg.	43, 53, 44, 61, 40 48 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 720 HP** electrode, classification **E71T-12CJ-H4** as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameter .035” through 1/16”, were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel
Requirements:	0.12 max.	1.60 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.
Deposit Analysis:	0.06	1.03	0.31	0.013	0.011	0.43

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

2.5

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 270
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: CO₂
 No. of Passes/Layers: 14/7
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 40

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-90,000	78,200
Yield Strength (psi):	58,000 min.	67,800
Elongation (%):	22 min.	32
Charpy V-notch Impact:		64, 42, 43, 29, 53
ft•lb f @ -40°F	20 min. avg.	46 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



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 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 720** electrode, classification **E71T-9MJ-H8**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.06	1.61	0.54	0.013	0.010

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

3.2

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 310
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 46

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000	91,200
Yield Strength (psi):	58,000 min.	79,400
Elongation (%):	22 min.	28
Charpy V-notch Impact:		27, 25, 43, 30, 43
ft•lb f @ -40°F	20 min. avg.	34 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 720** electrode, classification **E71T-9CJ-H4**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 05, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.60 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.06	1.36	0.43	0.013	0.010

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

2.4

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 300
 Arc Voltage: 29.5
 Current Polarity: DCEP
 Electrical Extension (in): 7/8
 Shielding Gas: CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 40-45

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000	83,000
Yield Strength (psi):	58,000 min.	70,500
Elongation (%):	22 min.	30
Charpy V-notch Impact:		54,46,55,36,30
ft•lb f @ -40°F	20 min. avg.	45 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 720A** electrode, classification **E71T-9M-H4**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.05	1.60	0.47	0.011	0.010

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

3.5

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 305
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 45

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000	90,500
Yield Strength (psi):	58,000 min.	79,500
Elongation (%):	22 min.	27
Charpy V-notch Impact:		49, 53, 41, 38, 43
ft•lb f @ -20°F	20 min. avg.	45 avg.
ft•lb f @ -40°F	-	41, 46, 36, 49, 36 42 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
 Ben Pletcher, Technical Director



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SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 720A** electrode, classification **E71T-9C-H4**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.05	1.39	0.37	0.012	0.010

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3
 1.5

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 296
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 44

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000	83,800
Yield Strength (psi):	58,000 min.	73,300
Elongation (%):	22 min.	31
Charpy V-notch Impact:		35, 33, 30, 39, 70
ft•lb f @ -20°F	20 min. avg.	41 avg.
ft•lb f @ -40°F	-	50, 31, 18, 28, 31 32 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

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SELECT ARC, INC.
600 Enterprise Dr.
P. O. Box 259
Fort Loramie, OH 45845

Supplied to :

Date:
Customer Order Number :
Order Number :
Weight :
Lot/ Production No. Shipped:

This is to certify that Select 727 electrode, classification E71T-9MJ-H8, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on March 5, 2015. All tests required by specifications AWS A5.20/ASME SFA-5.20, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

Table with 6 columns: Requirements, Carbon, Manganese, Silicon, Sulphur, Phosphorus. Rows for Requirements and Deposit Analysis (1/16" dia).

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

3.2

MECHANICAL PROPERTIES

AS WELDED [X]

STRESS RELIEVED (hr @ °F) []

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
Amperage: 310
Arc Voltage: 28
Current Polarity: DCEP
Electrical Extension (in): 3/4-1
Shielding Gas: Ar-25%CO2
No. of Passes/Layers: 12/6
Interpass Temperature (°F): 300 +/-25
Heat Input (KJ/in): 46

TEST RESULTS:

Table with 3 columns: Property, Requirements, Actual Results. Rows for Tensile Strength, Yield Strength, Elongation, Charpy V-notch Impact.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: [Signature]
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

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SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 727** electrode, classification **E71T-9CJ-H4**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 05, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.60 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.06	1.36	0.43	0.013	0.010

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

2.4

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)


WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 300
 Arc Voltage: 29.5
 Current Polarity: DCEP
 Electrical Extension (in): 7/8
 Shielding Gas: CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 40-45

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000	83,000
Yield Strength (psi):	58,000 min.	70,500
Elongation (%):	22 min.	30
Charpy V-notch Impact: ft•lb f @ -40°F	20 min. avg.	54,46,55,36,30 45 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 737** electrode, classification **E71T-9MJ**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.05	1.59	0.33	0.013	0.005

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

5.8

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 276
 Arc Voltage: 27
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: Ar-10%CO₂
 No. of Passes/Layers: 11/6
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 42

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000	88,400
Yield Strength (psi):	58,000 min.	79,200
Elongation (%):	22 min.	27
Charpy V-notch Impact:		38, 32, 27, 50, 19
ft•lb f @ -40°F	20 min. avg.	33 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Encore** electrode, classification **E71T-1M, T-9M**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .045" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.04	1.39	0.45	0.014	0.006

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 260
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 13/7
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 42

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000 min.	83,500
Yield Strength (psi):	58,000 min.	74,100
Elongation (%):	22 min.	32
Charpy V-notch Impact:		49, 53, 57, 27, 60
ft•lb f @ -20°F	20 min. avg.	49 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: _____

Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Encore** electrode, classification **E71T-1C, T-9C-H4**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters .045” through 1/16”, were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16” dia.	0.05	1.17	0.33	0.014	0.005

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

3.1

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 246
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: CO₂
 No. of Passes/Layers: 14/7
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 43

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000 min.	76,100
Yield Strength (psi):	58,000 min.	65,600
Elongation (%):	22 min.	31
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	78, 77, 88, 63, 91 79 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 810-Ni1** electrode, classification **E81T1-Ni1MJ-H8**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 20,2015**. All tests required by specifications **AWS A5.29/ASME SFA-5.29**, for wire diameters .045” through 1/16”, were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium
Requirements:	0.12 max.	1.50 max.	0.80 max.	0.03 max.	0.03 max.	0.80-1.10	0.15 max.	0.35 max.	0.05 max.
Deposit Analysis: 1/16” dia.	0.06	1.37	0.54	0.013	0.009	1.02	0.05	<0.01	0.02

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

5.0

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 257
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 15/8
 Preheat /Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 35

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	95,600
Yield Strength (psi):	68,000 min.	82,900
Elongation (%):	19 min.	29
Charpy V-notch Impact:		22,28,16,23,21
ft•lb f @ -40°F	20 min. avg.	22 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that Select 810-Ni1 electrode, classification E81T1-Ni1CJ-H4, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on March 16, 2014. All tests required by specifications AWS A5.29/ASME SFA-5.29, for wire diameters .045" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium
Requirements:	0.12 max.	1.50 max.	0.80 max.	0.03 max.	0.03 max.	0.80-1.10	0.15 max.	0.35 max.	0.05 max.
Deposit Analysis: 1/16" dia.	0.05	1.17	0.41	0.012	0.009	0.98	0.046	<0.01	0.02

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

3.8

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 258
 Arc Voltage: 30
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: CO₂
 No. of Passes/Layers: 17/9
 Preheat /Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 35

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	90,600
Yield Strength (psi):	68,000 min.	79,400
Elongation (%):	19 min.	28
Charpy V-notch Impact:		10,11,10,19,15
ft•lb f @ -40°F	20 min. avg.	13 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 810-Ni2** electrode, classification **E81T1-Ni2M-H8**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 16, 2015**. All tests required by specifications **AWS A5.29/ASME SFA-5.29**, for wire diameters .045” through 1/16”, were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel
Requirements:	0.12 max.	1.50 max.	0.80 max.	0.03 max.	0.03 max.	1.75-2.75
Deposit Analysis: 1/16” dia.	0.05	1.12	0.46	0.013	0.007	2.46

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

4.6

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 283
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 17/8
 Preheat /Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 35

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	96,300
Yield Strength (psi):	68,000 min.	85,300
Elongation (%):	19 min.	26
Charpy V-notch Impact:		31,35,36,31,28
ft•lb f @ -40°F	20 min. avg.	32 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
 SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that Select 810-Ni2 electrode, classification E81T1-Ni2C-H4, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on March 16, 2015. All tests required by specifications AWS A5.29/ASME SFA-5.29, for wire diameters .045" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel
Requirements:	0.12 max.	1.50 max.	0.80 max.	0.03 max.	0.03 max.	1.75-2.75
Deposit Analysis: 1/16" dia.	0.05	0.96	0.36	0.013	0.007	2.43

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

4.0

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

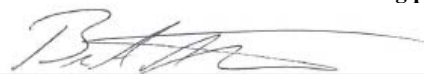
WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 285
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): ¾-1
 Shielding Gas: CO₂
 No. of Passes/Layers: 15/8
 Preheat /Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 40

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	89,700
Yield Strength (psi):	68,000 min.	78,500
Elongation (%):	19 min.	26
Charpy V-notch Impact:		38,38,40,28,38
ft•lb f @ -40°F	20 min. avg.	36 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 810W** electrode, classification **E81T1-W2M-H8**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.29/ASME SFA-5.29**, for wire diameters .045" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Copper
Requirements:	0.12 max.	0.50-1.30	0.35-0.80	0.03 max.	0.03 max.	0.40-0.80	0.45-0.70	0.30-0.75
Deposit Analysis: 1/16" dia.	0.05	1.07	0.56	0.014	0.011	0.59	0.57	0.43

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method AWS A4.3

4.5

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 273
 Arc Voltage: 27
 Current Polarity: DCEP
 Electrical Extension (in): ¾-1
 Shielding Gas: 75Ar-25CO₂
 No. of Passes/Layers: 15/7
 Preheat/Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 39

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	93,100
Yield Strength (psi):	68,000 min.	82,900
Elongation (%):	19 min.	25
Charpy V-notch Impact:		21, 22, 20, 21, 20
ft•lb f @ -20°F	20 min. avg.	21 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 810W** electrode, classification **E81T1-W2C**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.29/ASME SFA-5.29**, for wire diameters .045" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Copper
Requirements:	0.12 max.	0.50-1.30	0.35-0.80	0.03 max.	0.03 max.	0.40-0.80	0.45-0.70	0.30-0.75
Deposit Analysis: 1/16" dia.	0.04	0.93	0.47	0.014	0.010	0.59	0.55	0.43

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 270
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: CO₂
 No. of Passes/Layers: 15/7
 Preheat/Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 41

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	87,000
Yield Strength (psi):	68,000 min.	76,000
Elongation (%):	19 min.	27
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	20, 27, 26, 25, 34 27 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: _____

Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 820-Ni1** electrode, classification **E81T1-Ni1MJ-H8**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.29/ASME SFA-5.29**, for wire diameters .045" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium
Requirements:	0.12 max.	1.50 max.	0.80 max.	0.03 max.	0.03 max.	0.80-1.10	0.15 max.	0.35 max.	0.05 max.
Deposit Analysis: 1/16" dia.	0.03	1.46	0.56	0.012	0.010	0.95	0.06	0.004	0.02

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

2.4

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 305
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 12/6
 Preheat /Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 35

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	95,700
Yield Strength (psi):	68,000 min.	87,600
Elongation (%):	19 min.	27
Charpy V-notch Impact:		23, 24, 21, 21, 12
ft•lb f @ -40°F	20 min. avg.	20 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number:
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 820-Ni1** electrode, classification **E81T1-Ni1CJ-H4**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 10, 2015**. All tests required by specifications **AWS A5.29/ASME SFA-5.29**, for wire diameters .045" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium
Requirements:	0.12 max.	1.50 max.	0.80 max.	0.03 max.	0.03 max.	0.80-1.10	0.15 max.	0.35 max.	0.05 max.
Deposit Analysis: 1/16" dia.	0.02	1.35	0.48	0.012	0.009	1.00	0.06	0.002	0.02

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3

2.2

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)


WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 255
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4-1
 Shielding Gas: CO₂
 No. of Passes/Layers: 15/8
 Preheat /Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 35

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	90,600
Yield Strength (psi):	68,000 min.	81,900
Elongation (%):	19 min.	26
Charpy V-notch Impact:		21,30,24,16,37
ft•lb f @ -40°F	20 min. avg.	25 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
 SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 70C-6** electrode, classification **E70C-6M**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.18/ASME SFA-5.18**, for wire diameters .035" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium	Copper
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.	0.20 max.	0.30 max.	0.08 max.	0.50 max.
Deposit Analysis: .045" diam.	0.04	1.35	0.67	0.008	0.006	0.03	0.04	0.01	<0.01	0.05

RADIOGRAPHIC TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 250
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: 75Ar/25CO₂
 No. of Passes/Layers: 16/8
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 30

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	72,900
Yield Strength (psi):	58,000 min.	60,800
Elongation (%):	22 min.	35
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	19,23,64,24,25 24 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
 Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
 SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 70C-6** electrode, classification **E70C-6M**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.18/ASME SFA-5.18**, for wire diameters .035" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium	Copper
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.	0.20 max.	0.30 max.	0.08 max.	0.50 max.
Deposit Analysis: .045" diam.	0.03	1.51	0.77	0.008	0.006	0.03	0.04	0.01	<0.01	0.06

RADIOGRAPHIC TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 281
 Arc Voltage: 29.0
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: 90Ar/10CO₂
 No. of Passes/Layers: 14/7
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 38

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	73,900
Yield Strength (psi):	58,000 min.	62,300
Elongation (%):	22 min.	38
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	63, 70, 46, 32, 60 54 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
 SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 70C-6LS** electrode, classification **E70C-6M**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.18/ASME SFA-5.18**, for wire diameters .035" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium	Copper
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.	0.20 max.	0.30 max.	0.08 max.	0.50 max.
Deposit Analysis: .045" diam.	0.04	1.49	0.59	0.006	0.004	0.37	0.03	0.01	<0.01	0.04

RADIOGRAPHIC TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 251
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): ¾
 Shielding Gas: 75Ar/25CO₂
 No. of Passes/Layers: 14/7
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 34

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	75,300
Yield Strength (psi):	58,000 min.	63,300
Elongation (%):	22 min.	33
Charpy V-notch Impact:		67, 83, 54, 41, 75
ft•lb f @ -20°F	20 min. avg.	65 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
 SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 70C-6LS** electrode, classification **E70C-6M**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2014**. All tests required by specifications **AWS A5.18/ASME SFA-5.18**, for wire diameters .035" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium	Copper
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.	0.20 max.	0.30 max.	0.08 max.	0.50 max.
Deposit Analysis: .045" diam.	0.04	1.58	0.63	0.007	0.005	0.36	0.03	0.01	<0.01	0.04

RADIOGRAPHIC TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 260
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): ¾
 Shielding Gas: 90Ar/10CO₂
 No. of Passes/Layers: 14/7
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 34

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	77,700
Yield Strength (psi):	58,000 min.	66,500
Elongation (%):	22 min.	30
Charpy V-notch Impact:		83, 87, 101, 75, 67
ft•lb f @ -20°F	20 min. avg.	82 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT-ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to:

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 70C-T** electrode, classification **E70C-6M**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.18/ASME SFA-5.18**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium	Copper
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.	0.50 max.	0.20 max.	0.30 max.	0.08 max.	0.50 max.
Deposit Analysis:	0.04	1.39	0.54	0.007	0.009	0.36	0.05	0.01	<0.01	0.07

RADIOGRAPHIC TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 250
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: 75Ar/25CO₂
 No. of Passes/Layers: 16/8
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 34

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	74,500
Yield Strength (psi):	58,000 min.	63,000
Elongation (%):	22 min.	34
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	52, 56, 99, 68, 95 73 avg.
ft•lb f @ -40°F	-	19, 24, 30, 26, 22 24 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT-ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select 70TR** electrode, classification **E70T-1C, T-9C**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.20/ASME SFA-5.20**, for wire diameters 1/16" through 3/32", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus
Requirements:	0.12 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 3/32" dia.	0.06	1.39	0.57	0.006	0.011
1/16" dia.	0.06	1.39	0.57	0.006	0.011

RADIOGRAPHIC TESTS

Met requirements

FILLET WELD TESTS

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in):	3/32	1/16
Amperage:	400	270
Arc Voltage:	29	30
Current Polarity:	DCEP	DCEP
Electrical Extension (in):	3/4	3/4
Shielding Gas:	CO ₂	CO ₂
No. of Passes/Layers:	10/5	19/9
Interpass Temperature (°F):	300 +/-25	300 +/-25
Heat Input (KJ/in):	50	40

TEST RESULTS:

	Requirements	Actual Results – 3/32"	Actual Results – 1/16"
Tensile Strength (psi):	70-95,000 min.	85,400	75,900
Yield Strength (psi):	58,000 min.	73,600	65,100
Elongation (%):	22 min.	32	33
Charpy V-notch Impact:		30, 30, 26, 31, 17	13, 14, 15, 15, 15
ft•lb f @ -20°F	20 min. avg.	29 avg.	15 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select ER70S-6** electrode, classification **ER70S-6**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **April 1, 2014**. All tests required by specifications **AWS A5.18/ASME SFA-5.18**, for wire diameters .035" through 1/16", were performed in conformance with these specifications and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	Carbon	Manganese	Silicon	Sulphur	Phosphorus	Nickel	Chromium	Molybdenum	Vanadium	Copper
Requirements:	0.06-0.15	1.40-1.85	0.80-1.15	0.035 max.	0.025 max.	0.15 max.	0.15 max.	0.15 max.	0.03 max.	0.50 max.
Electrode Analysis:	0.09	1.51	0.90	0.006	0.011	0.01	0.02	0.01	<0.01	<0.16

RADIOGRAPHIC TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 240
 Arc Voltage: 30
 Current Polarity: DCEP
 Shielding Gas: CO₂
 No. of Passes/Layers: 17/8
 Interpass Temperature (°F): 300 +/-25
 Heat Input (KJ/in): 33

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	73,200
Yield Strength (psi):	58,000 min.	58,100
Elongation (%):	22 min.	36
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	50,84,71,68,91 67 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director



CERTIFICATE OF CONFORMANCE

Manufactured in the U.S.A. by :
SELECT ARC, INC.
 600 Enterprise Dr.
 P. O. Box 259
 Fort Loramie, OH 45845

Supplied to :

Date:
 Customer Order Number :
 Order Number :
 Weight :
 Lot/ Production No. Shipped:

This is to certify that **Select ENi1S** electrode, classification **ECNi1**, and **Lincoln 960 flux** were used for testing on **March 5, 2015**. All tests required by specifications **AWS A5.23**, classification **F7A2-ECNi1-Ni1**, for wire diameters 1/16" through 5/32", were performed in conformance with this specification and the results met all requirements. The test results were as follows:

CHEMICAL ANALYSIS (%)

	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Ti+V+Zr
Requirements:	0.12 max.	1.60 max.	0.80 max.	0.025 max.	0.030 max.	0.15 max.	0.75-1.10	0.35 max.	0.35 max.	0.05 max.
Deposit Analysis: 5/32" dia. (from multipass weld)	0.03	1.29	0.24	0.013	0.015	0.04	0.91	0.12	0.07	<0.01

RADIOGRAPHIC TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED STRESS RELIEVED (hr @ °F)


WELDING PARAMETERS:

Electrode Diameter (in): 5/32
 Amperage: 605
 Arc Voltage: 33
 Current Polarity: DCEP
 Electrical Extension (in): 1
 Flux: Lincoln 960
 No. of Passes/Layers: 19/9
 Preheat /Interpass Temp (°F): 300 +/-25
 Heat Input (KJ/in): 58

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-95,000	75,100
Yield Strength (psi):	58,000 min.	63,200
Elongation (%):	22 min.	29
Charpy V-notch Impact:		66, 61, 61, 68, 57
ft•lb f @ -20°F	20 min. avg.	63 avg.
ft•lb f @ -40°F	-	52, 51, 66, 67, 35
		54 avg.

The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the formulations and manufacturing procedures described in the qualification approval.

Signed by: 
Ben Pletcher, Technical Director