



**CERTIFICATES OF CONFORMANCE
2008**

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

INDEX

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<u>Flux Cored Electrodes</u>		
Select 71	AWS A5.20	E70T-1C, T-9C
Select 97	"	E70T-1C, T-9C
Select 720	"	E71T-1M, T-1MJ, T-9M, T-9MJ
Select 720	"	E71T-1C, T-1CJ, T-9C, T-12C, T-12CJ
Select 727	"	E71T-1M, T-9M
Select 727	"	E71T-1C, T-9C, T-12C
Select 810-Ni1	AWS 5.29	E81T1-Ni1MJ
Select 810-Ni1	"	E81T1-Ni1CJ
Select 810-Ni2	"	E81T1-Ni2M
Select 810-Ni2	"	E81T1-Ni2C
Select 810-W	"	E81T1-W2M
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<u>Solid and Metal Cored Electrodes</u>		
Select 70C-3	AWS 5.18	E70C-3M
Select 70C-6	"	E70C-6M
Select 70C-T	"	E70C-6M
Select ER70S-3	"	ER70S-3
Select ER70S-6	"	ER70S-6



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 **April 2, 2008**. 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.	0.07	1.19	0.46	0.014	0.016
.045" dia.	0.05	1.33	0.35	0.007	0.008

RADIOGRAPHIC TESTS

Met requirements

FILLET WELD TESTS

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in):	3/32	.045
Amperage:	390	240
Arc Voltage:	30	28
Current Polarity:	DCEP	DCEP
Electrical Extension (in):	1	3/4
Shielding Gas:	CO ₂	CO ₂
No. of Passes/Layers:	14/7	10/5
Interpass Temperature (°F):	300 +/-25	300 +/-25

TEST RESULTS:

	Requirements	Actual Results-3/32"	Actual Results-.045"
Tensile Strength (psi):	70-95,000 min.	86,700	81,600
Yield Strength (psi):	58,000 min.	69,400	66,300
Elongation (%):	22 min.	24	29
Charpy V-notch Impact:		22,27,17,28,19	20,22,27,24,16
ft•lb f @ -20°F	20 min. avg.	22 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:

Ronald B. Smith, 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 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 **April 24, 2008**. 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.	0.04	1.63	0.26	0.010	0.013	0.30
.045" dia.	0.03	1.16	0.27	0.007	0.012	0.34

RADIOGRAPHIC TESTS

Met requirements

FILLET WELD TESTS

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in):	3/32	.045
Amperage:	390	230
Arc Voltage:	30	28
Current Polarity:	DCEP	DCEP
Electrical Extension (in):	1	3/4
Shielding Gas:	CO ₂	CO ₂
No. of Passes/Layers:	14/7	10/5
Interpass Temperature (°F):	300 +/-25	300 +/-25

TEST RESULTS:

	Requirements	Actual Results-3/32"	Actual Results-.045"
Tensile Strength (psi):	70-95,000 min.	78,600	74,200
Yield Strength (psi):	58,000 min.	63,600	62,500
Elongation (%):	22 min.	25	30
Charpy V-notch Impact:		34,23,27.5,23,37	62,52,17,26,17
ft•lb f @ -20°F	20 min. avg.	22 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:

Ronald B. Smith, 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 720** electrode, classification **E71T-1M, T-1MJ, T-9M, T-9MJ**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **February 13, 2008**. 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:	0.18 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.07	1.55	0.49	0.003	0.013

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 275
 Arc Voltage: 27.5
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: Ar-25% CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	87,600
Yield Strength (psi):	58,000 min.	73,000
Elongation (%):	22 min.	28
Charpy V-notch Impact: ft•lb f @ -40°F	20 min. avg.	51,53,48,34,32 44 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: 
 Ronald B. Smith 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-1C, T-1CJ, T-9C, T-9CJ, T12C, T-12CJ**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used testing on **February 13, 2008**. 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:	0.18 max.	1.60 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16" dia.	0.06	1.32	0.39	0.005	0.015

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 275
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70-90,000 min.	81,100
Yield Strength (psi):	58,000 min.	68,500
Elongation (%):	22 min.	32
Charpy V-notch Impact: ft•lb f @ -40°F	20 min. avg.	45,52,47,20,35 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: 

Ronald B. Smith 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-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 **February 13, 2008**. 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:	0.18 max.	1.75 max.	0.90 max.	0.03 max.	0.03 max.
Deposit Analysis: 1/16” dia.	0.07	1.55	0.49	0.003	0.013

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 275
 Arc Voltage: 27.5
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: Ar-25% CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	87,600
Yield Strength (psi):	58,000 min.	73,000
Elongation (%):	22 min.	28
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	51,73,52,60,72 61 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:

Ronald B. Smith 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-1C, T-9C, T-12C, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on February 13, 2008. 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, Deposit Analysis, Carbon, Manganese, Silicon, Sulphur, Phosphorus. Values include 0.18 max., 1.60 max., 0.90 max., 0.03 max., 0.03 max., 0.06, 1.32, 0.39, 0.005, 0.015.

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED [X]

STRESS RELIEVED (hr @ °F) []

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
Amperage: 275
Arc Voltage: 28
Current Polarity: DCEP
Electrical Extension (in): 3/4
Shielding Gas: CO2
No. of Passes/Layers: 12/6
Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

Table with 3 columns: Requirements, Actual Results. Rows include Tensile Strength (70-90,000 min. / 81,000), Yield Strength (58,000 min. / 68,500), Elongation (22 min. / 32), Charpy V-notch Impact (20 min. avg. / 54,60,42,63,30).

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]
Ronald B. Smith 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-Ni1M**, 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 21, 2008**. 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.	0.07	1.10	0.34	0.010	0.010	1.03	0.03	<0.01	0.018

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

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
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 15/7
 Preheat /Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	82,100
Yield Strength (psi):	68,000 min.	69,800
Elongation (%):	19 min.	28
Charpy V-notch Impact:		58,64,58,62,52
ft•lb f @ -20°F	20 min. avg.	59 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: _____
 Ronald B. Smith, 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-Ni1C**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **May 8, 2008**. 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	0.79	0.19	0.01	0.01	1.01	0.03	<0.01	0.015

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 250
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: CO₂
 No. of Passes/Layers: 18/8
 Preheat /Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	81,100
Yield Strength (psi):	68,000 min.	68,800
Elongation (%):	19 min.	28
Charpy V-notch Impact:		20,20,26,20,21
ft•lb f @ -20°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: _____
Ronald B. Smith, 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**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **February 15, 2008**. 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.	0.06	1.16	0.44	0.005	0.011	2.36

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 270
 Arc Voltage: 27
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 14/7
 Preheat /Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	97,700
Yield Strength (psi):	68,000 min.	85,700
Elongation (%):	19 min.	28
Charpy V-notch Impact: ft•lb f @ -40°F	20 min. avg.	36,33,30,25,30 31 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: _____
 Ronald B. Smith, 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, 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 18, 2008. 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.	0.07	0.76	0.24	0.008	0.015	2.38

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 280
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: CO₂
 No. of Passes/Layers: 17/8
 Preheat /Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	90,300
Yield Strength (psi):	68,000 min.	79,700
Elongation (%):	19 min.	27
Charpy V-notch Impact: ft•lb f @ -40°F	20 min. avg.	66,62,60,62,58 61 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: _____
 Ronald B. Smith, Technical Director



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 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**, as supplied on the above order number, is of the same classification, manufacturing process and material requirements as the electrode used for testing on **September 10, 2008**. 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.	0.06	1.06	0.51	0.008	0.006	0.65	0.59	0.39

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 270
 Arc Voltage: 27
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: 75Ar-25CO₂
 No. of Passes/Layers: 15/8
 Preheat/Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	99,400
Yield Strength (psi):	68,000 min.	86,100
Elongation (%):	19 min.	25
Charpy V-notch Impact:		21,27,24,24,18
ft•lb f @ -20°F	20 min. avg.	23 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: _____

Ronald B. Smith, 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 **April 22, 2008**. 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.	0.06	1.00	0.47	0.010	0.012	0.72	0.59	0.44

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 270
 Arc Voltage: 27.5
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: CO₂
 No. of Passes/Layers: 16/8
 Preheat/Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	99,000
Yield Strength (psi):	68,000 min.	86,800
Elongation (%):	19 min.	23
Charpy V-notch Impact:		20,20.5,21,20,20
ft•lb f @ -20°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: _____

Ronald B. Smith, 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-Ni1M**, 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 14, 2008**. 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.	0.04	1.31	0.45	0.009	0.013	0.97	0.03	0.01	0.021

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 260
 Arc Voltage: 27
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: Ar-25%CO₂
 No. of Passes/Layers: 12/6
 Preheat /Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	84,600
Yield Strength (psi):	68,000 min.	72,500
Elongation (%):	19 min.	28
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	73,78,78,68,72 74 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: _____
 Ronald B. Smith, 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-Ni1C**, 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 31, 2008**. 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.	0.04	1.13	0.34	0.007	0.012	0.94	0.04	0.02	0.017

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

Met requirements

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): 1/16
 Amperage: 240
 Arc Voltage: 28
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: CO₂
 No. of Passes/Layers: 18/9
 Preheat /Interpass Temp (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	80-100,000	84,000
Yield Strength (psi):	68,000 min.	74,900
Elongation (%):	19 min.	31
Charpy V-notch Impact:		118,105,93,109,72
ft•lb f @ -20°F	20 min. avg.	102 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: _____
Ronald B. Smith, 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-3** electrode, classification **E70C-3M**, 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 21, 2008**. 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.	0.05	1.12	0.35	0.008	0.010	0.03	0.04	<0.01	0.002	0.05

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 260
 Arc Voltage: 29
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: 75Ar/25CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	72,600
Yield Strength (psi):	58,000 min.	58,400
Elongation (%):	22 min.	36
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	75,117,143,126,50 106 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:

Ronald B. Smith, 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 14, 2008**. 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.	0.06	1.44	0.70	0.015	0.014	0.04	0.04	0.01	0.001	0.09

RADIOGRAPHIC TEST

FILLET WELD TEST

Met requirements

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)


WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 245
 Arc Voltage: 28.5
 Current Polarity: DCEP
 Electrical Extension (in): 3/4
 Shielding Gas: 75Ar/25CO₂
 No. of Passes/Layers: 10/5
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	76,400
Yield Strength (psi):	58,000 min.	59,300
Elongation (%):	22 min.	35
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	25,38,30,13,15 23 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: 
 Ronald B. Smith, 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 13, 2008**. 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	1.44	0.64	0.015	0.014	0.40	0.05	0.01	0.003	0.09

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

WELD METAL DIFFUSIBLE HYDROGEN (mL/100g) by Gas Chromatography method per AWS A4.3-93

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: 12/6
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	80,700
Yield Strength (psi):	58,000 min.	66,200
Elongation (%):	22 min.	30
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	27,25,46,53,45 39 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: 
 Ronald B. Smith, 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-3** electrode, classification **ER70S-3**, 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, 2008**. 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	0.90-1.40	0.45-0.75	0.035 max.	0.025 max.	0.15 max.	0.15 max.	0.15 max.	0.03 max.	0.50 max.
Electrode Analysis:	0.07	1.09	0.57	0.009	0.009	0.01	0.01	<0.01	<0.01	0.16

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 260
 Arc Voltage: 30
 Current Polarity: DCEP
 Shielding Gas: CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	74,500
Yield Strength (psi):	58,000 min.	59,200
Elongation (%):	22 min.	32
Charpy V-notch Impact: ft•lb f @ 0°F	20 min. avg.	84,94,86,107,104 94 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: _____
 Ronald B. Smith, 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 **March 18, 2008**. 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:	0.084	1.469	0.87	0.011	0.010	0.00	0.01	0.008	0.003	0.16

RADIOGRAPHIC TEST

Met requirements

FILLET WELD TEST

MECHANICAL PROPERTIES

AS WELDED

STRESS RELIEVED (hr @ °F)

WELDING PARAMETERS:

Electrode Diameter (in): .045
 Amperage: 260
 Arc Voltage: 30
 Current Polarity: DCEP
 Shielding Gas: CO₂
 No. of Passes/Layers: 12/6
 Interpass Temperature (°F): 300 +/-25

TEST RESULTS:

	<u>Requirements</u>	<u>Actual Results</u>
Tensile Strength (psi):	70,000 min.	77,700
Yield Strength (psi):	58,000 min.	61,600
Elongation (%):	22 min.	33
Charpy V-notch Impact: ft•lb f @ -20°F	20 min. avg.	62,69,72,50,52 61 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: _____

Ronald B. Smith, Technical Director