

Oxford[®] ALLOYS, Inc.



PRODUCT CATALOG

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FLUX CORED

Nickel Alloys

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SAW & FLUX

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FLUX CORED

Oxford Alloy® 309LT1-1/4

AWS E309LT1-1/T1-4 • Stainless Steel

Key Features

- ◆ Designed for all-position welding
- ◆ For welding dissimilar metals - stainless, mild steel, or low alloy.
- ◆ Hermetically sealed packaging to ensure freshness.

Conformances
AWS/ASME SFA 5.22
E309LT1-1/T1-4
UNS W30935
ABS-Approved

Chemical Composition - As required per AWS 5.22						
C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5- 2.5	1.0 max	22.0- 25.0	12.0- 14.0	0.75 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22				
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) min	Not Specified	30 min	Not Specified
Typical Results - As welded	580 (84)	450 (65)	37	49 (36)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂



Diameter	Typical Welding Parameters							
	0.45 (1.14mm)			1/16" (1.6mm)				
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The E50 (Electrical Stick Out) is 1/4" - 1". DCIP (cathode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
0.45	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

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OXFORD ALLOYS, INC. PRODUCT CATALOG

+1-225-273-4800 USA +65-6933-3570 Singapore oxfordalloys.com

- Catalog Section** – Refer to the top of each page for a reference to the consumable section
- Product Name** – The name of each product appears in the top left or right corner of each page
- Product category within each section** – Each consumable section of the catalog has product categories to further define each product
- Classification** – AWS or EN Classification
- Key Features** – Product features and information
- Conformances** – Specifications and approvals to which the product is tested.
- Chemical Composition** – States the AWS chemical content requirements
- Mechanical properties** – Details the AWS mechanical properties requirements and typical test results.
- Shielding Gas** – Recommended shielding gas in order of performance and (where applicable).
- Typical Welding Parameters** – Recommended operating ranges and shielding gas (where applicable) for each product diameter
- Diameters & Packaging** – Diameters and standard packaging for each product

OXFORD AT A GLANCE

Oxford Alloys is one of the world's leading brands of high performance welding consumables. Headquartered in Baton Rouge, Louisiana USA, Oxford Alloys has 3 strategically located distribution centers in North America as well as a location in Singapore which maintains the largest stock of nickel base welding consumables in Asia.

Global Brand

Oxford Alloys brand corrosion resistant welding consumables are designed to meet the needs of consumers in the oil and gas, power generation, food processing, petrochemical and broad industrial markets. The Oxford Alloys team works closely with their worldwide network of leading distributors to make sure end-users in these critical industries have quick access to high quality filler metals on a consistent basis. With products approved by numerous industry governing bodies & key end-users, Oxford Alloys brand welding wire and electrodes are the preferred choice for welders around the world.

Quality Assurance

Oxford Alloys has built the most stringent internal processes to ensure that our products offer exceptional value to our distributors and end-user customers. Quality program is ISO 9001:2008 certified by TUV.

Oxford Alloys performs random sample testing on every heat of incoming product utilizing laboratory quality XRF instruments to validate the chemical composition is in accordance with AWS/ASME specifications as well as our own internal requirements.



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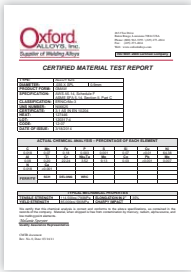
Oxford Alloys Asia Pacific Pte. Ltd.

6 Serangoon North Ave 5 #05-05, Singapore 554910

OXFORD ALLOYS is a registered trademark of Oxford Alloys, Inc.

PRODUCT CERTIFICATIONS

Oxford Alloys welding consumables are approved by numerous international standards, third parties, governing bodies, and end-users on a global basis. Oxford Alloys has developed the most stringent internal processes to ensure that our products offer exceptional value to our customers including random sample testing of every heat of incoming product utilizing laboratory quality XRF instruments to validate the chemical composition is in accordance with AWS/ASME specifications as well as our own internal requirements. To obtain further information on Oxford Alloys Product Certificates, please visit oxfordalloys.com or call +1-225-273-4800 (USA) +65-6933-3570 (Singapore)



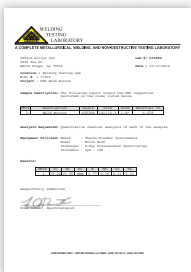
Certified Material Test Certificate (CMTR):

Assures that the product is in accordance to relevant Standards, Regulations and Specifications. The CMTR contains the actual chemical composition of the heat being supplied as well as its conformance to AWS/ASME Section II Part C. CMTR's are supplied for all Oxford Alloys products and are also now available for download at www.oxfordalloys.com.



Third Party Approvals:

Many Oxford Alloys brand welding consumables are approved by third parties such as the American Bureau of Shipping (ABS), Canadian Welding Bureau (CWB), and others. For further Information or to request third party approval Certificates for specific products please visit oxfordalloys.com or call +1-225-273-4800 (USA) +65-6933-3570 (Singapore)



Special Testing:




Includes results of tests carried out to relevant Standards and specific customer requirements. Tests can be quite extensive (eg. product for certain applications may require tests for weld metal composition, mechanical properties, diffusible hydrogen, x-ray soundness etc.) The "Fee charged" for a Special Test Report will depend on the specific tests carried out.






Safety Data Sheets (SDS):

Provides information on the products and the hazards associated with them to allow the safe handling and use of the products at work. The SDS describes the identity, physical and chemical properties and uses of the product, health hazard information, precautions for use and safe handling information. Oxford Alloys SDS are available for download at oxfordalloys.com or via fax request at +1-225-273-4814 (USA) +65-6484-5772 (Singapore)

Coated Electrodes

Hermetically Sealed Tube			Master Carton (3 tubes)		Electrode Marking		
							
USA Packaging Specifications				Asia Pacific Packaging Specifications			
Dia Inch	Length Inch	Tube QTY Lbs	Carton QTY Lbs	Dia mm	Length mm	Tube QTY Kgs	Carton QTY Kgs
3/32	12	10	30	2.6	300	4	12
1/8	14	10	30	3.2	350	5	15
5/32	14	10	30	4.0	350	5	15
3/16	14	10	30	5.0	350	5	15

TIG Wire

Plastic Tube		Master Carton (4 tubes)		TIG Wire Marking			
							
USA Packaging Specifications				Asia Pacific Packaging Specifications			
Dia Inch	Length Inch	Tube QTY Lbs	Carton QTY Lbs	Dia mm	Length mm	Tube QTY Kgs	Carton QTY Kgs
1/16	36	10	40	1.6	914	5	20
5/64	36	10	40	2.0	914	5	20
3/32	36	10	40	2.4	914	5	20
1/8	36	10	40	3.2	914	5	20
5/32	36	10	40	4.0	914	5	20

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PRODUCT PACKAGING

MIG & FCW Wire



USA Packaging Specifications					Asia Pacific Packaging Specifications				
Spool DIM	\$100 inch	\$200 inch	\$300 inch	\$350 inch	Spool DIM	\$100 mm	\$200 mm	\$300 mm	\$350 mm
Flange O.D.	4	8	12	14	Flange O.D.	102	203	305	355
Hub I.D.	0.63	2.03	2.03	2.03	Hub I.D.	16.5	50.5	50.5	50.5
Outer Width	1.75	2.16	4.0	4.0	Outer Width	45	55	103	103
STD QTY	1 lbs	10 lbs	33 lbs	55 lbs	STD QTY	1Kgs	5 Kgs	15 Kgs	25 Kgs

SAW Wire & Flux



USA Packaging Specifications			Asia Pacific Packaging Specifications	
Coil DIM inch	Flux		Coil DIM mm	Flux
Flange O.D.	16		400	
Hub I.D.	12		300	
Outer Width	4		100	
STD QTY	60 lbs		25 kgs	

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Nickel Alloys

Oxford Alloy A
Oxford Alloy C-276
Oxford Alloy 55
Oxford Alloy 59
Oxford Alloy 99
Oxford Alloy 112
Oxford Alloy 117
Oxford Alloy 122
Oxford Alloy 141
Oxford Alloy 182
Oxford Alloy 187
Oxford Alloy 190

Stainless Steel

Oxford Alloy 308/308H-16
Oxford Alloy 308/308L-16
Oxford Alloy 309/309H-16
Oxford Alloy 309/309L-16
Oxford Alloy 309LMO-16
Oxford Alloy 310-16
Oxford Alloy 312-16
Oxford Alloy 316/316H-16
Oxford Alloy 316/316L-16
Oxford Alloy 317L-16
Oxford Alloy 320LR-16
Oxford Alloy 330-16
Oxford Alloy 347-16
Oxford Alloy 385-16
Oxford Alloy 410-16
Oxford Alloy 410NiMo-16
Oxford Alloy 630-16

Duplex & Super Duplex

Oxford Alloy 2209-16
Oxford Alloy 2594-16

Chrome Moly

Oxford Alloy 8018-B2
Oxford Alloy 8018-B6
Oxford Alloy 8018-B8
Oxford Alloy 9015-B9
Oxford Alloy 9018-B3

Mild Steel

Oxford Alloy 7018
Oxford Alloy 7018-A1

COATED ELECTRODES

COATED ELECTRODES

Oxford Alloy® A

AWS ENiCrFe-2 • Nickel Alloys

Key Features

- ❖ Used for welding of nickel-chromium-iron alloys to themselves as well as for dissimilar welding between various nickel alloys to a steel or stainless steels.
- ❖ Overlay cladding where a similar composition is needed.
- ❖ Diverse applications ranging from cryogenic temperature up to 1500°F.

Conformances

AWS/ASME SFA 5.11
ENiCrFe-2
UNS W86133



Chemical Composition - As required per AWS 5.11

Ni	C	Mn	Fe	S	Si	Cu
62.0 min	0.10 max	1.0- 3.5	12.0 max	0.02 max	0.75 max	0.50 max
Cr	Nb+Ta	Mo	P	OET		
13.0- 17.0	0.5- 3.0	0.5- 2.5	0.03 max	0.50 max		

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	55 (80) min	Not Specified	30 min
Typical Results - As welded	610 (88)	500 (73)	36

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® C-276

AWS ENiCrMo-4 • Nickel Alloys



Key Features

- ❖ Used for welding materials of similar composition. This low carbon, nickel-chromium-molybdenum filler metal can also be used for dissimilar welding between nickel base alloys and stainless steels, as well as for surfacing and cladding.
- ❖ Due to high molybdenum content, this alloy offers excellent resistance to stress corrosion cracking and pitting and crevice corrosion.

Conformances

AWS/ASME SFA 5.11
ENiCrMo-4
UNS W80276

Chemical Composition - As required per AWS 5.11

C	Mn	Si	Fe	Mo	W	S
0.02 max	1.0 max	0.2 max	4.0- 7.0	15.0- 17.0	3.0- 4.5	0.03 max
P	Cr	Ni	Cu	V	Co	OET
0.04 max	14.5- 16.5	Bal	0.50 max	0.35 max	2.5 max	0.50 max

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	690 (100) min	Not Specified	25 min
Typical Results - As welded	730 (106)	540 (78)	39

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 55

AWS ENiFe-CI • Nickel Alloys

Key Features

- ❖ Used for welding of cast irons to other cast irons as well as for joining cast irons to mild steels.
- ❖ Readily used for the repair of castings. The welds are moderately hard and require carbide tipped tools for machining.
- ❖ A preheat and inter-pass temperature of not less than 350°F is required during welding to prevent cracking.

Conformances

AWS/ASME SFA 5.15

ENiFe-CI

UNS W82002

Chemical Composition - As required per AWS 5.15

Ni	C	Mn	Fe	S	Si	Cu
45.0-60.0	2.0 max	2.5 max	Bal	0.03 max	4.0 max	2.5 max
Al	OET					
1.0 max	1.0 max					

Mechanical Properties - As required by AWS 5.15

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	400-579 (58-84)	296-434 (43-63)	6-18
Typical Results - As welded	490 (71)	365 (53)	12



Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 59

AWS ENiCrMo-13 • Nickel Alloys



Key Features

- ❖ Nickel-chromium-molybdenum alloy with extra low carbon and silicon content.
- ❖ Excellent corrosion resistance and high mechanical strength. It is also resistant to attack by chloride ions in low PH media.
- ❖ Good choice for welding in corrosive environment of chemical processing plants.

Conformances

AWS/ASME SFA 5.11
ENiCrMo-13
UNS W86059

Chemical Composition - As required per AWS 5.11

Ni	C	Mn	Fe	S	Si	Cu
Bal	0.02 max	1.0 max	1.5 max	0.01 max	0.2 max	0.50 max
Cr	Mo	OET	P			
22.0-24.0	15.0-16.5	0.50 max	0.015 max			

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	690 (100) min	Not Specified	25 min
Typical Results - As welded	738 (107)	-	47

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 99

AWS ENi-CI • Nickel Alloys

Key Features

- ❖ Used for welding of cast irons to other cast irons as well as for joining cast irons to mild steels and stainless steels.
- ❖ It is also readily used for the repair of castings. The welds produced are generally more machinable than a Oxford Alloy® 55 deposit.
- ❖ A preheat and inter-pass temperature of not less than 350°F is required during welding to prevent cracking.

Conformances

AWS/ASME SFA 5.15

ENi-CI

UNS W82001



Chemical Composition - As required per AWS 5.15						
Ni	C	Mn	Fe	S	Si	Cu
85.0 min	2.0 max	2.5 max	8.0 max	0.03 max	4.0 max	2.5 max
Al	OET					
1.0 max	1.0 max					

Mechanical Properties - As required by AWS 5.15			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	276-448 (40-65)	262-414 (38-60)	3-6
Typical Results - As welded	362 (53)	338 (49)	5

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 112

AWS ENiCrMo-3 • Nickel Alloys



Key Features

- ❖ Weld nickel-chromium-molybdenum alloys.
- ❖ Used extensively in overlay cladding where a similar chemical composition is required on the clad side.
- ❖ Dissimilar joints between nickel-chromium-molybdenum alloys to stainless steels, carbon or low alloy steels.
- ❖ These electrodes are used in applications where the temperature ranges from cryogenic up to 1800°F (982°C).

Conformances

AWS/ASME SFA 5.11
ENiCrMo-3
UNS W86112
ABS Approved

Chemical Composition - As required per AWS 5.11

Ni	C	Mn	Fe	S	Cu	Si
55.0 min	0.10 max	1.0 max	7.0 max	0.02 max	0.50 max	0.75 max
Cr	Nb+Ta	Mo	P	OET		
20.0- 23.0	3.15- 4.15	8.0- 10.0	0.03 max	0.50 max		

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	760 (110) min	Not Specified	30 min
Typical Results - As welded	790 (115)	620 (90)	34

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 117

AWS ENiCrCoMo-1 • Nickel Alloys

Key Features

- ❖ Used for welding of nickel-chromium-cobalt-molybdenum alloys.
- ❖ Also for overlay cladding where similar composition is required.
- ❖ The deposited weld metal provides optimum strength and oxidation resistance between 1500°F to 2100°F, especially when welding on base metals of nickel-iron-chromium alloys.

Conformances

AWS/ASME SFA 5.11
ENiCrCoMo-1
UNS W86117



Chemical Composition - As required per AWS 5.11						
Ni	Cr	Co	Mo	C	Fe	Mn
Bal	21.0-26.0	9.0-15.0	8.0-10.0	0.05-0.15	5.0 max	0.3-2.5
Nb+Ta	S	Si	Cu	P	OET	
1.0 max	0.015 max	0.75 max	0.50 max	0.03 max	0.50 max	

Mechanical Properties - As required by AWS 5.11			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	620 (90) min	Not Specified	25 min
Typical Results - As welded	760 (110)	600 (87)	26

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 122

AWS ENiCrMo-10 • Nickel Alloys



Key Features

- ❖ For welding of nickel-chromium-molybdenum alloys as well as for overlay cladding on carbon, low alloy or stainless steels. They are also used for dissimilar joints between nickel-chromium-molybdenum alloys and stainless, carbon or low alloy steels.
- ❖ Excellent corrosion resistance in oxidizing as well as reducing media in a wide variety of chemical process environments.

Conformances

AWS/ASME SFA 5.11
ENiCrMo-10
UNS W86022

Chemical Composition - As required per AWS 5.11

C	Mn	Si	Cr	Mo	W	S
0.02 max	1.0 max	0.2 max	20.0- 22.5	12.5- 14.5	2.5- 3.5	0.015 max
P	Ni	Fe	Cu	Co	V	OET
0.03 max	Bal	2.0- 6.0	0.50 max	2.5 max	0.35 max	0.50 max

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	690 (100) min	Not Specified	25 min
Typical Results - As welded	790 (115)	540 (78)	36

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 141

AWS ENi-1 • Nickel Alloys

Key Features

- ❖ Welding of cast and wrought forms of pure nickel alloys.
- ❖ These electrodes can also be used for surfacing as well as dissimilar welding between nickel or mild steel, and stainless steel.

Conformances

AWS/ASME SFA 5.11

ENi-1

UNS W82141

Chemical Composition - As required per AWS 5.11

Ni	C	Mn	Fe	S	Si	Cu
92.0 min	0.10 max	0.75 max	0.75 max	0.02 max	1.25 max	0.25 max
Al	Ti	P	OET			
1.0 max	1.0-4.0	0.03 max	0.50 max			

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	410 (60) min	Not Specified	20 min
Typical Results - As welded	500 (73)	400 (58)	26



Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy[®] 182

AWS ENiCrFe-3 • Nickel Alloys



Key Features

- ❖ Used for welding of nickel-chromium-iron alloys to themselves and for dissimilar welding between nickel-chromium-iron alloys to mild steels or stainless steels.
- ❖ High manganese of this weld deposit reduces the possibility of micro fissures but reduces creep strength which limits its usage up to 900° F (482°C).

Conformances

AWS/ASME SFA 5.11
ENiCrFe-3
UNS W86182

Chemical Composition - As required per AWS 5.11

Ni	C	Mn	Fe	S	Si	Cu
59.0 min	0.10 max	5.0-9.5	10.0 max	0.015 max	1.0 max	0.50 max
Cr	Ti	Nb+Ta	P	OET		
13.0-17.0	1.0 max	1.0-2.5	0.03 max	0.50 max		

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	Not Specified	30 min
Typical Results - As welded	590 (86)	360 (52)	38

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 187

AWS ECuNi • Nickel Alloys

Key Features

- ❖ Copper-nickel electrode for shielded metal arc welding of wrought or cast alloys of similar composition as well as 80/20 and 90/10 Cu/Ni alloys.
- ❖ Used for the clad side of copper-nickel clad steels. This filler metal is widely used in marine applications because of its good resistance to the corrosive effects of sea water.

Conformances

AWS/ASME SFA 5.6
ECuNi
UNS W60715

Chemical Composition - As required per AWS 5.6

Ni	Pb	Mn	Fe	Si	Cu+Ag	Ti
29.0-33.0	0.02 max	1.0-2.5	0.40-0.75	0.50 max	Bal	0.50 max
P	OET					
0.02 max	0.50 max					

Mechanical Properties - As required by AWS 5.6

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	350 (50) min	Not Specified	20 min
Typical Results - As welded	380 (55)	260 (38)	28



Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 190

AWS ENiCu-7 • Nickel Alloys



Key Features

- ❖ Used for welding nickel-copper alloys to themselves and to steel.
- ❖ Also can be used for overlay welding as well as for welding of clad steels where nickel-copper surfacing is required.
- ❖ Dissimilar applications include joining 200 series nickel alloys to copper-nickel alloys.

Conformances

AWS/ASME SFA 5.11
ENiCu-7
UNS W84190

Chemical Composition - As required per AWS 5.11

Ni	C	Mn	Fe	S	Si	Cu
62.0-69.0	0.15 max	4.0 max	2.5 max	0.015 max	1.5 max	Bal
Al	Ti	P	OET			
0.75 max	1.0 max	0.02 max	0.50 max			

Mechanical Properties - As required by AWS 5.11

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	480 (70) min	Not Specified	30 min
Typical Results - As welded	520 (74)	360 (52)	39

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 308/308H-16

AWS E308/308H-16 • Stainless Steel

Key Features

- ❖ Used to weld unstabilized austenitic stainless steels such as 302, 304H and 305.
- ❖ Provide a high carbon deposit (minimum of .04% carbon) for high temperature applications.

Conformances

AWS/ASME SFA 5.4
E308/308H-16
UNS W30810



Chemical Composition - As required per AWS 5.4						
C	Cr	Ni	Mn	Si	P	S
0.04-0.08	18.0-21.0	9.0-11.0	0.5-2.5	1.0 max	0.04 max	0.03 max
Cu	Mo					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.4			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	Not specified	35 min
Typical Results - As welded	580 (84)	410 (59)	46

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 308/308L-16

AWS E308/308L-16 • Stainless Steel



Key Features

- ❖ These electrodes provide a weld deposit, with reduced carbon levels (0.04% max), that offers increased resistance to inter-granular corrosion.
- ❖ Type 308L is ideal for welding Type 304L stainless steels.

Conformances

AWS/ASME SFA 5.4
E308/308L-16
UNS W30813
ABS Approved

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mn	Si	P	Cu
0.04 max	18.0- 21.0	9.0- 11.0	0.5- 2.5	1.0 max	0.04 max	0.75 max
Mo	S					
0.75 max	0.03 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	35 min
Typical Results - As welded	540 (78)	390 (57)	46

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 309/309H-16

AWS E309/309H-16 • Stainless Steel

Key Features

- ❖ Restricted weld metal carbon content to eliminate the lowest carbon levels.
- ❖ For welding type 309 base metal for all service temperatures designed for type 309. The Carbon content is 0.04% minimum.
- ❖ It can also be used to weld low alloy to stainless steel dissimilar joints where a lower ferrite content is desired and is acceptable.

Conformances

AWS/ASME SFA 5.4
E309/309H-16
UNS W30910



Chemical Composition - As required per AWS 5.4						
C	Cr	Ni	Mn	Si	P	S
0.04-0.15	22.0-25.0	12.0-14.0	0.5-2.5	1.0 max	0.04 max	0.03 max
Cu	Mo					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.4			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	Not specified	30 min
Typical Results - As welded	620 (90)	380 (55)	40

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 309/309L-16

AWS E309/309L-16 • Stainless Steel



Key Features

- ❖ Reduced carbon levels (0.04% max) that offer increased resistance to inter-granular corrosion.
- ❖ Type 309/309L is ideal for joining stainless steels to themselves or to carbon or low alloy steels, and can be used at temperatures of up to 700°F (371°C).
- ❖ Reduced carbon levels help prevent intergranular corrosion.

Conformances

AWS/ASME SFA 5.4
E309/309L-16
UNS W30913
ABS Approved

Chemical Composition - As required per AWS 5.4						
C	Cr	Ni	Mn	Si	P	S
0.04 max	22.0-25.0	12.0-14.0	0.5-2.5	1.0 max	0.04 max	0.03 max
Cu	Mo					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.4			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	550 (80)	410 (59)	45

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32"	(2.4)	SMAW	24-28	70-85	65-75
1/8"	(3.2)	SMAW	26-30	85-110	80-90
5/32"	(4.0)	SMAW	28-32	110-140	100-120
3/16"	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 309LMo-16

AWS E309LMo-16 • Stainless Steel

Key Features

- ❖ This electrode is designed for applications requiring molybdenum with a standard 309L analysis.
- ❖ Primarily for welding type 316L and 316 clad steels, or welding molybdenum containing austenitic stainless steel to carbon steel.

Conformances

AWS/ASME SFA 5.4
E309LMo-16
UNS W30923



Chemical Composition - As required per AWS 5.4						
C	Cr	Ni	Mn	Si	Mo	P
0.04 max	22.0-25.0	12.0-14.0	0.5-2.5	1.0 max	2.0-3.0	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.4			
	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	620 (90)	440 (64)	40

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 310-16

AWS E310-16 • Stainless Steel



Key Features

- ❖ Used for welding stainless steels of similar composition in cast and wrought forms.
- ❖ The weld deposit is fully austenitic, and as such, calls for minimal heat input during welding.

Conformances

AWS/ASME SFA 5.4
E310-16
UNS W31010

Chemical Composition - As required per AWS 5.4

C	Mn	Si	Cr	Ni	S	P
0.08-0.20	1.0-2.5	0.75 max	25.0-28.0	20.0-22.5	0.03 max	0.03 max
Cu	Mo					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	Not specified	30 min
Typical Results - As welded	590 (86)	410 (59)	38

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 312-16

AWS E312-16 • Stainless Steel

Key Features

- ❖ Used to weld cast and wrought alloys of similar compositions.
- ❖ Also be used for joining hard to weld materials and dissimilar metals. Applications should be limited to 800°F (420°C). The weld deposits exhibit high tensile strength and offer some resistance to abrasion.

Conformances

AWS/ASME SFA 5.4
E312-16
UNS W31310

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mn	Si	P	S
0.15 max	28.0-32.0	8.0-10.5	0.5-2.5	1.0 max	0.04 max	0.03 max
Mo	Cu					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	660 (95) min	Not specified	22 min
Typical Results - As welded	760 (110)	610 (88)	29



Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 316/316H-16

AWS E316/316H-16 • Stainless Steel



Key Features

- ❖ Restricted weld metal carbon content to eliminate the lowest carbon levels.
- ❖ Used in applications where type 316 stainless steel needs improved tensile strength at high temperatures.
- ❖ The Carbon range of 0.04 - 0.08 percent provides higher tensile and creep strengths at elevated temperatures.

Conformances

AWS/ASME SFA 5.4
E316/316H-16
UNS W31610

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mn	Si	P	S
0.04-0.08	17.0-20.0	11.0-14.0	0.5-2.5	1.0 max	0.04 max	0.03 max
Mo	Cu					
2.0-3.0	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	660 (96)	490 (71)	40

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 316/316L-16

AWS E316/316L-16 • Stainless Steel

Key Features

- ❖ For welding 316L base metals. The 2-3% molybdenum in the electrode improves pitting corrosion resistance of the weld deposit.
- ❖ Low carbon content reduces the possibility of carbide precipitation and intergranular corrosion.

Conformances

AWS/ASME SFA 5.4
E316/316L-16
UNS W31613
ABS Approved

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mo	Mn	Si	P
0.04 max	17.0-20.0	11.0-14.0	2.0-3.0	0.5-2.5	1.0 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	490 (70) min	Not specified	30 min
Typical Results - As welded	540 (78)	400 (58)	41



Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 317L-16

AWS E317L-16 • Stainless Steel



Key Features

- ❖ Has a weld deposit similar to 316L with a higher molybdenum content.
- ❖ Electrodes are used for welding alloys with similar compositions used in highly corrosive environments.

Conformances

AWS ASME SFA 5.4
E317L-16
UNS W31713

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mo	Mn	Si	P
0.04 max	18.0-21.0	12.0-14.0	3.0-4.0	0.5-2.5	1.0 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	540 (78)	430 (62)	42

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 320LR-16

AWS E320LR-16 • Stainless Steel

Key Features

❖ Oxford Alloy® 320LR electrodes are typically used for welding base metals with similar compositions including alloy 20.

Conformances

AWS/ASME SFA 5.4

E320LR-16

UNS W88022



Chemical Composition - As required per AWS 5.4						
C	Mn	Si	P	S	Cr	Ni
0.03 max	1.5-2.5	0.30 max	0.020 max	0.015 max	19.0-21.0	32.0-36.0
Cu	Mo	Nb+Ta				
3.0-4.0	2.0-3.0	8 x C min to 0.40 max				

Mechanical Properties - As required by AWS 5.4			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	590 (86)	390 (57)	34

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 330-16

AWS E330-16 • Stainless Steel



Key Features

- ❖ Used to weld wrought and cast forms of stainless steels of similar chemical compositions, which offer good heat and scale resistance to 1800°F (980°C).
- ❖ The heat input must be kept to a minimum during welding to avoid the possibility of micro-fissuring.

Conformances

AWS/ASME SFA 5.4
E330-16
UNS W88331

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mn	Si	P	S
0.18-0.25	14.0-17.0	33.0-37.0	1.0-2.5	1.0 max	0.04 max	0.03 max
Mo	Cu					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	580 (84)	390 (57)	36

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 347-16

AWS E347-16 • Stainless Steel

Key Features

- ❖ Electrodes are niobium stabilized stainless steel electrodes used for the welding of types 347 and 321 stainless and stainless clad steels.
- ❖ The addition of niobium reduces intergranular corrosion in severe operating conditions.

Conformances

AWS/ASME SFA 5.4
E347-16
UNS W34710



Chemical Composition - As required per AWS 5.4						
C	Cr	Ni	Nb+Ta	Mn	Si	P
0.08 max	18.0-21.0	9.0-11.0	8 x C min to 1.0 max	0.5-2.5	1.0 max	0.04 max
S	Mo	Cu				
0.03 max	0.75 max	0.75 max				

Mechanical Properties - As required by AWS 5.4			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	590 (86)	420 (61)	42

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 385-16

AWS E385-16 • Stainless Steel



Key Features

- ❖ For welding materials of similar chemical composition (Type 904L).
- ❖ These materials are used in fabrication of equipment and vessels for handling and storage of sulfuric acid and phosphoric acid.
- ❖ The weld metal is fully austenitic, and must be done with low heat input, using a stringer bead technique.

Conformances

AWS/ASME SFA 5.4
E385-16
UNS W88904

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mo	Mn	Si	P
0.03 max	19.5- 21.5	24.0- 26.0	4.2- 5.2	1.0- 2.5	0.9 max	0.03 max
S	Cu					
0.02 max	1.2- 2.0					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	610 (88)	450 (65)	32

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 410-16

AWS E410-16 • Stainless Steel

Key Features

- ❖ Designed to weld stainless steels of similar chemical composition as well as to overlay carbon steels to impart corrosion, erosion and abrasion resistance.
- ❖ This material, being an air-hardening type, calls for a pre-heat and inter-pass temperature of not less than 400°F (200°C) during welding.

Conformances

AWS ASME SFA 5.4
E410-16
UNS W41010

Chemical Composition - As required per AWS 5.4

C	Cr	Mn	Si	P	S	Ni
0.12 max	11.0-13.5	1.0 max	0.90 max	0.04 max	0.03 max	0.7 max
Mo	Cu					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	520 (75) min	Not specified	30 min
Typical Results - As welded	540 (78)	320 (46)	38



Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 410NiMo-16

AWS E410NiMo-16 • Stainless Steel



Key Features

- ❖ Designed to weld materials of similar chemical composition in cast and wrought forms.
- ❖ Also used to overlay mild and low alloy steels.
- ❖ Preheat and inter-pass temperatures of not less than 300°F (150°C) are recommended during welding.
- ❖ Post-weld heat treatment should not exceed 1150°F (620°C) as higher temperatures may result in hardening.

Conformances

AWS/ASME SFA 5.4
E410NiMo-16
UNS W41016

Chemical Composition - As required per AWS 5.4

C	Mn	Si	Cr	Ni	Mo	S
0.06 max	1.0 max	0.90 max	11.0-12.5	4.0-5.0	0.40-0.70	0.03 max
P	Cu					
0.04 max	0.75 max					

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	760 (110) min	Not specified	15 min
Typical Results - As welded	870 (126)	750 (109)	22

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 630-16

AWS E630-16 • Stainless Steel

Key Features

- ❖ A precipitation hardening stainless steel covered electrode used for welding materials of similar chemical composition such as 17-4 and 17-7.
- ❖ Can be used in the as welded condition or may be heat treated to obtain higher strength.
- ❖ Mechanical properties of the alloy are greatly influenced by the heat treatment.

Conformances

AWS/ASME SFA 5.4
E630-16
UNS W37410



Chemical Composition - As required per AWS 5.4						
C	Cr	Ni	Mn	Si	P	S
0.05 max	16.00- 16.75	4.5- 5.0	0.25- 0.75	0.75 max	0.04 max	0.03 max
Cu	Mo	Nb+Ta				
3.25- 4.00	0.75 max	0.15- 0.30				

Mechanical Properties - As required by AWS 5.4			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	930 (135) min	Not specified	7 min
Typical Results - As welded	1030 (149)	920 (133)	10

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 2209-16

AWS E2209-16 • Duplex



Key Features

- ❖ Used to weld duplex stainless steels such as (Type 2205).
- ❖ Offers excellent resistance to stress corrosion, cracking and pitting.
- ❖ The microstructure of the weld metal consists of austenite and ferrite.
- ❖ Welding of duplex stainless steels calls for controlled welding parameters to achieve specified mechanical and corrosion resistant properties.

Conformances

AWS ASME SFA 5.4
E2209-16
UNS W39209

Chemical Composition - As required per AWS 5.4

C	Mn	Si	Cr	Ni	Mo	S
0.04 max	0.5-2.0	1.0 max	21.5-23.5	8.5-10.5	2.5-3.5	0.03 max
P	Cu	N				
0.04 max	0.75 max	0.08-0.20				

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	690 (100) min	Not specified	20 min
Typical Results - As welded	860 (125)	650 (94)	32

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 2594-16

AWS E2594-16 • Super Duplex

Key Features

- ❖ A super-duplex grade electrode that provides matching chemistry and mechanical property characteristics to wrought super-duplex alloys such as 2507 and Zeron 100, as well as to super-duplex casting alloys (ATSM A890).
- ❖ The electrode is over-alloyed 2-3% in nickel to provide the optimum ferrite/austenite ratio in the finished weld.

Conformances

AWS/ASME SFA 5.4
E2594-16
UNS W39594

Chemical Composition - As required per AWS 5.4

C	Cr	Ni	Mo	Mn	Si	P
0.04 max	24.0-27.0	8.0-10.5	3.5-4.5	0.5-2.0	1.0 max	0.04 max
S	N	Cu				
0.03 max	0.20-0.30	0.75 max				

Mechanical Properties - As required by AWS 5.4

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	760 (110) min	Not specified	15 min
Typical Results - As welded	850 (123)	650 (94)	28



Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	24-28	70-85	65-75
1/8	(3.2)	SMAW	26-30	85-110	80-90
5/32	(4.0)	SMAW	28-32	110-140	100-120
3/16	(4.8)	SMAW	28-32	120-160	110-130

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 8018-B2

AWS E8018-B2 • Chrome Moly



Key Features

- ❖ Used for welding of ½% Cr - ½% Mo, 1% Cr - ½% Mo, and 1-¼% Cr - ½% Mo.
- ❖ Typical applications include power generation, pressure vessels, petrochemical, and process piping.

Conformances

AWS/ASME SFA 5.5
E8018-B2
UNS W52018

Chemical Composition - As required per AWS 5.5

C	Mn	Si	P	S	Cr	Mo
0.05-0.12	0.90 max	0.80 max	0.03 max	0.03 max	1.00-1.50	0.40-0.65

Mechanical Properties - As required by AWS 5.5

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	460 (67) min	19 min
Typical Results - As welded	670 (97)	590 (97)	25

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	21-25	65-80	65-75
1/8	(3.2)	SMAW	21-25	90-110	80-95
5/32	(4.0)	SMAW	21-26	135-160	120-140
3/16	(4.8)	SMAW	22-26	160-210	140-160

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 8018-B6

AWS E8018-B6 • Chrome Moly

Key Features

- ❖ Designed to weld 5% Chrome -1/2% Molybdenum creep resisting steels such as ASTM A387 Grade 5, A213-T5 and A335-P5.
- ❖ Typical applications include power generation, pressure vessels, petrochemical, and process piping.

Conformances

AWS ASME SFA 5.5
E8018-B6
UNS W50218



Chemical Composition - As required per AWS 5.5						
C	Mn	Si	P	S	Cr	Ni
0.05-0.10	1.0 max	0.90 max	0.03 max	0.03 max	4.0-6.0	0.40 max
Mo						
0.45-0.65						

Mechanical Properties - As required by AWS 5.5			
	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	550 (80) min	460 (67) min	19 min
Typical Results - As welded	670 (97)	590 (97)	25

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	21-25	65-80	65-75
1/8	(3.2)	SMAW	21-25	90-110	80-95
5/32	(4.0)	SMAW	21-26	135-160	120-140
3/16	(4.8)	SMAW	22-26	160-210	140-160

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 8018-B8

AWS E8018-B8 • Chrome Moly



Key Features

- ❖ Designed to weld 9% Chrome -1% Molybdenum creep resisting steels such as ASTM A213-T9 and A335-P9.
- ❖ Typical applications include power generation, pressure vessels, petrochemical, and process piping.

Conformances

AWS/ASME SFA 5.5
E8018-B8
UNS W50418

Chemical Composition - As required per AWS 5.5

C	Mn	Si	P	S	Ni	Cr
0.05-0.10	1.0	0.90 max	0.03 max	0.03 max	0.40 max	8.0-10.5
Mo						
0.85-1.20						

Mechanical Properties - As required by AWS 5.5

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	460 (67) min	19 min
Typical Results - As welded	670 (97)	590 (97)	25

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	21-25	65-80	65-75
1/8	(3.2)	SMAW	21-25	90-110	80-95
5/32	(4.0)	SMAW	21-26	135-160	120-140
3/16	(4.8)	SMAW	22-26	160-210	140-160

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 9015-B9

AWS E9015-B9 • Chrome Moly

Key Features

- ❖ A low hydrogen sodium coated electrode designed for out of position welding. This electrode is recommended for direct current, reversed polarity only.
- ❖ To weld the modified 9% Chromium - 1% Molybdenum steels such as P91, T91 and F91.
- ❖ Primarily used in heavy wall components such as main steam piping and turbine rotors in fossil fuelled power generating plants.

Conformances

AWS ASME SFA 5.5
E9015-B9
UNS W50425



Chemical Composition - As required per AWS 5.5

C	Mn	Si	P	S	Ni	Cr
0.08-0.13	1.20 max	0.30 max	0.01 max	0.01 max	0.8 max	8.0-10.5
Mo	V	Cu	Al	Nb	N	
0.85-1.20	0.15-0.30	0.25 max	0.04 max	0.02-0.10	0.02-0.07	

Mechanical Properties - As required by AWS 5.5

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	620 (90) min	530 (77) min	17 min
Typical Results - As welded	710 (103)	680 (99)	23

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	21-25	65-80	65-75
1/8	(3.2)	SMAW	21-25	90-110	80-95
5/32	(4.0)	SMAW	21-26	135-160	120-140
3/16	(4.8)	SMAW	22-26	160-210	140-160

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 9018-B3

AWS E9018-B3 • Chrome Moly



Key Features

- ❖ Used for welding 2-1/4% Cr - 1% Mo steels.
- ❖ Typical applications include power generation, pressure vessels, petrochemical, and process piping.

Conformances

AWS ASME SFA 5.5
E9018-B3
UNS W53018

Chemical Composition - As required per AWS 5.5						
C	Mn	Si	P	S	Cr	Mo
0.05-0.12	0.90 max	0.80 max	0.03 max	0.03 max	2.00-2.50	0.90-1.20

Mechanical Properties - As required by AWS 5.5			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	620 (90) min	530 (77) min	17 min
Typical Results - As welded	750 (109)	680 (99)	21

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	21-25	65-80	65-75
1/8	(3.2)	SMAW	21-25	90-110	80-95
5/32	(4.0)	SMAW	21-26	135-160	120-140
3/16	(4.8)	SMAW	22-26	160-210	140-160

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 7018

AWS E7018 • Mild Steel

Key Features

- ❖ All position iron powdered low hydrogen electrode which exhibits excellent mechanical properties, crack resistance and X-ray quality.
- ❖ Smooth, quiet arc, very low spatter and medium arc penetration.
- ❖ Easy strike and re-strike, effortless slag removal.

Conformances

AWS/ASME SFA 5.1
E7018
UNS W07018



Chemical Composition - As required per AWS 5.1						
C	Mn	Si	P	S	Ni	Cr
0.15 max	1.60 max	0.75 max	0.035 max	0.035 max	0.30 max	0.20 max
Mo	V	Combined Limit for Mn+Ni+Cr+Mo+V				
0.30 max	0.08 max	1.75 max				

Mechanical Properties - As required by AWS 5.1			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	490 (70) min	400 (58) min	22 min
Typical Results - As welded	585 (85)	520 (74)	29

Typical Welding Parameters					
Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	21-25	65-80	65-75
1/8	(3.2)	SMAW	21-25	90-110	80-95
5/32	(4.0)	SMAW	21-26	135-160	120-140
3/16	(4.8)	SMAW	22-26	160-210	140-160

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

COATED ELECTRODES

Oxford Alloy® 7018-A1 AWS E7018-A1 • Mild Steel



Key Features

- ❖ Recommended for welding low-alloy, high tensile steels of 50 ksi (345 MPa) minimum yield strength, and also the 0.50% Molybdenum steels.
- ❖ Commonly used in the fabrication and erection of boilers, pressure piping and tubing, and other pressure vessel applications.

Conformances

AWS ASME SFA 5.5
E7018-A1
UNS W17018

Chemical Composition - As required per AWS 5.5

C	Mn	Si	P	S	Mo
0.12 max	0.90 max	0.80 max	0.03 max	0.03 max	0.40-0.65

Mechanical Properties - As required by AWS 5.5

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	490 (70) min	390 (57) min	22 min
Typical Results - As welded	680 (99)	590 (86)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps (flat)	Amps (V/OH)
in	(mm)				
3/32	(2.4)	SMAW	21-25	65-80	65-75
1/8	(3.2)	SMAW	21-25	90-110	80-95
5/32	(4.0)	SMAW	21-26	135-160	120-140
3/16	(4.8)	SMAW	22-26	160-210	140-160

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Length (in)	Packaging (lbs)	Diameter (mm)	Length (mm)	Packaging (kgs)
3/32"	12	10 lb tube 30 lb carton	2.6	300	4 kg tube 12 kg carton
1/8"	14	10 lb tube 30 lb carton	3.2	350	5 kg tube 15 kg carton
5/32"	14	10 lb tube 30 lb carton	4.0	350	5 kg tube 15 kg carton
3/16"	14	10 lb tube 30 lb carton	5.0	350	5 kg tube 15 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.



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Nickel Alloys

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Stainless Steel

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Oxford Alloy 308/308L
Oxford Alloy 308LSi
Oxford Alloy 309/309L
Oxford Alloy 309LSi
Oxford Alloy 309LMo
Oxford Alloy 310
Oxford Alloy 312
Oxford Alloy 316/316H
Oxford Alloy 316/316L
Oxford Alloy 316LSi
Oxford Alloy 317L
Oxford Alloy 320LR
Oxford Alloy 330
Oxford Alloy 347
Oxford Alloy 385
Oxford Alloy 410
Oxford Alloy 410NiMo
Oxford Alloy 420
Oxford Alloy 630
Oxford Alloy 16-8-2

Duplex & Super Duplex

Oxford Alloy 2209
Oxford Alloy 2594

Chrome Moly

Oxford Alloy 80S-B2
Oxford Alloy 80S-B6
Oxford Alloy 80S-B8
Oxford Alloy 90S-B3
Oxford Alloy 90S-B9

Mild Steel

Oxford Alloy 70S-2
Oxford Alloy 70S-3
Oxford Alloy 70S-6
Oxford Alloy 80S-D2
Oxford Alloy 80S-Ni1
Oxford Alloy 80S-Ni2

Aluminum

Oxford Alloy 4043
Oxford Alloy 5183
Oxford Alloy 5356

Titanium & Zirconium

Oxford Alloy Ti-1
Oxford Alloy Ti-2
Oxford Alloy Ti-5
Oxford Alloy Ti-7
Oxford Alloy Zr2

Bronze Alloys

Oxford Alloy Alum Bronze A-2
Oxford Alloy Deox Copper
Oxford Alloy Low Fuming Bronze
Oxford Alloy Silicon Bronze

MIG & TIG

Oxford Alloy® C-276

AWS ERNiCrMo-4 • Nickel Alloys

Key Features

- ❖ For welding materials of similar composition. This low carbon, nickel-chromium-molybdenum filler metal can also be used for dissimilar welding between nickel base alloys and stainless steels, as well as for surfacing and cladding.
- ❖ Due to high molybdenum content, this alloy offers excellent resistance to stress corrosion cracking and pitting and crevice corrosion.

Conformances

AWS/ASME SFA 5.14
ERNiCrMo-4
UNS N10276

Chemical Composition - As required per AWS 5.14						
C	Mn	Si	Cr	Mo	W	S
0.02 max	1.0 max	0.08 max	14.5-16.5	15.0-17.0	3.0-4.5	0.03 max
P	V	Ni	Fe	Cu	Co	OET
0.04 max	0.35 max	Bal	4.0-7.0	0.50 max	2.5 max	0.50 max

Mechanical Properties - As required by AWS 5.14			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	690 (100) typical	Not Specified	Not Specified
Typical Results - As welded	730 (106)	540 (79)	39



Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 59

AWS ERNiCrMo-13 • Nickel Alloys



Key Features

- ❖ Nickel-chromium-molybdenum alloy with an extra low carbon and silicon content.
- ❖ Excellent corrosion resistance and high mechanical strength.
- ❖ Some typical base metals that this alloy is used on are ASTM and ASME B and SB 574, 575, 619, 622 and 626.

Conformances

AWS/ASME SFA 5.14
ERNiCrMo-13
UNS N06059

Chemical Composition - As required per AWS 5.14

C	Mn	Fe	P	S	Si	Ni
0.01 max	0.5 max	1.5 max	0.015 max	0.01 max	0.10 max	Bal
Co	Al	Cr	Mo	OET	Cu	
0.3 max	0.1-0.4	22.0-24.0	15.0-16.5	0.50 max	0.5 max	

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	760 (110) typical	Not Specified	Not Specified
Typical Results - As welded	700 (102)	400 (58)	30

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 60

AWS ERNiCu-7 • Nickel Alloys

Key Features

- ❖ Dissimilar welding applications include joining alloys to Nickel 200 and copper-nickel alloys.
- ❖ Widely used in marine applications because of its good resistance to the corrosive effects of seawater and brackish waters.
- ❖ Can be used for MIG overlay on steel after a first layer with nickel 208.

Conformances

AWS/ASME SFA 5.14
ERNiCu-7
UNS N04060

Chemical Composition - As required per AWS 5.14						
Ni	C	Mn	Fe	Si	Cu	Al
62.0-69.0	0.15 max	4.0 max	2.5 max	1.25 max	Bal	1.25 max
Ti	P	S	OET			
1.5-3.0	0.02 max	0.015 max	0.50 max			

Mechanical Properties - As required by AWS 5.14			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	480 (70) typical	Not Specified	Not Specified
Typical Results - As welded	530 (77)	360 (53)	34



Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 61

AWS ERNi-1 • Nickel Alloys



Key Features

- ❖ For welding of nickel 200 or 201.
- ❖ Also for overlay on steel as well as repairing cast iron castings.
- ❖ It can also be used for dissimilar joints between nickel or nickel alloys to stainless or ferritic steels.

Conformances

AWS/ASME SFA 5.14
ERNi-1
UNS N02061

Chemical Composition - As required per AWS 5.14

Ni	C	Mn	Fe	S	Si	Cu
93.0 min	0.15 max	1.0 max	1.0 max	0.015 max	0.75 max	0.25 max
Al	Ti	P	OET			
1.5 max	2.0-3.5	0.03 max	0.50 max			

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	380 (55) typical	Not Specified	Not Specified
Typical Results - As welded	460 (67)	260 (38)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 67

AWS ERCuNi • Nickel Alloys

Key Features

- ❖ For welding of 70/30, 80/20 and 90/10 copper-nickel alloys.
- ❖ Can be used for MIG overlay on steel after a first layer with Nickel 208.
- ❖ Dissimilar welding applications include joining copper-nickel alloys to Nickel 200 or nickel-copper alloys.

Conformances

AWS/ASME SFA 5.7

ERCuNi

UNS C71581

Chemical Composition - As required per AWS 5.7

Ni+Co	Mn	Fe	Si	Cu+Ag	Ti	Pb
29.0-32.0	1.0 max	0.40-0.75	0.25 max	Bal	0.20-0.50	0.02 max
OET	P					
0.50 max	0.02 max					

Mechanical Properties - As required by AWS 5.7

	Tensile Strength MPa (kpsi)	Yield Strength MPa (kpsi)	Elongation %
AWS Requirements	345 (50) min	Not Specified	Not Specified
Typical Results - As welded	360 (53)	140 (21)	32



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 82

AWS ERNiCr-3 • Nickel Alloys



Key Features

- ❖ For welding of base materials such as ASTM B163, B166, B167 and B168 – alloys which have UNS Number N06600.
- ❖ Suitable for applications ranging from cryogenic to high temperatures making this alloy one of the most used in the nickel family.
- ❖ Also be used for dissimilar welding applications between various nickel alloys and stainless or carbon steels, as well as for overlay.

Conformances

AWS/ASME SFA 5.14
ERNiCr-3
UNS N06082

Chemical Composition - As required per AWS 5.14

Ni	C	Mn	Fe	S	Si	Cr
67.0 min	0.10 max	2.5-3.5	3.0 max	0.015 max	0.50 max	18.0-22.0
Ti	P	Nb+Ta	Cu	OET		
0.75 max	0.03 max	2.0-3.0	0.50 max	0.50 max		

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) typical	Not Specified	Not Specified
Typical Results - As welded	460 (67)	260 (38)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 617

AWS ERNiCrCoMo-1 • Nickel Alloys

Key Features

- ❖ For welding of nickel-chrome-cobalt-molybdenum alloys to themselves as well as dissimilar metals such as stainless, carbon or low alloy steels.
- ❖ Also be used for overlay welding where similar chemical composition is desired.
- ❖ The weld metal provides optimum strength and oxidation resistance from 1500°F (815°C) up to 2100°F (1150°C).

Conformances

AWS/ASME SFA 5.14
ERNiCrCoMo-1
UNS N06617



Chemical Composition - As required per AWS 5.14

Ni	Cr	Co	Mo	Al	C	Fe
Bal	20.0-24.0	10.0-15.0	8.0-10.0	0.8-1.5	0.05-0.15	3.0 max
Mn	Si	S	Ti	Cu	P	OET
1.0 max	1.0 max	0.015 max	0.60 max	0.50 max	0.03 max	0.50 max

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	620 (90) typical	Not Specified	Not Specified
Typical Results - As welded	770 (112)	610 (89)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 622

AWS ERNiCrMo-10 • Nickel Alloys



Key Features

- ❖ A nickel based alloy with chromium, molybdenum, and tungsten as the principal alloying elements.
- ❖ Used to weld alloys of similar composition as well as dissimilar joints between nickel-chromium-molybdenum alloys and stainless or carbon or low alloy steels.
- ❖ For cladding overlay as well as thermal spray applications.
- ❖ It offers an outstanding resistance to stress corrosion cracking, pitting and crevice corrosion.

Conformances

AWS/ASME SFA 5.14
ERNiCrMo-10
UNS N06022

Chemical Composition - As required per AWS 5.14

C	Mn	Si	Fe	S	P	Cr
0.015 max	0.50 max	0.08 max	2.0-6.0	0.010 max	0.02 max	20.0-22.5
Mo	W	Ni	Cu	Co	V	OET
12.5-14.5	2.5-3.5	Bal	0.50 max	2.5 max	0.35 max	0.50 max

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	690 (100) typical	Not Specified	Not Specified
Typical Results - As welded	790 (115)	570 (82)	38

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 625

AWS ERNiCrMo-3 • Nickel Alloys

Key Features

- ❖ Contains low iron (Fe less than 1%) and is used for welding of nickel-chromium-molybdenum alloys.
- ❖ Also for cladding and welding dissimilar base metals such as Ni-Cr-Mo alloys to stainless and carbon steels.
- ❖ The Ni-Cr-Mo alloy system provides excellent resistance to oxidizing and reducing environments. The high molybdenum content provides good stress, pitting and crevice corrosion resistance.

Conformances

AWS/ASME SFA 5.14

ERNiCrMo-3

UNS N06625

ABS Approved



Chemical Composition - As required per AWS 5.14

Ni	C	Mn	Fe	S	Si	P
58.0 min	0.10 max	0.50 max	5.0 max	0.015 max	0.50 max	0.02 max
Cr	Al	Nb+Ta	Mo	Ti	Cu	OET
20.0-23.0	0.40 max	3.15-4.15	8.0-10.0	0.40 max	0.50 max	0.50 max

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	760 (110) typical	Not Specified	Not Specified
Typical Results - As welded	790 (115)	590 (85)	35

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 718

AWS ERNiFeCr-2 • Nickel Alloys



Key Features

- ❖ Used for welding alloys 718, 706 and X-750.
- ❖ Primarily for welding high strength aircraft components and liquid rocket components involving cryogenic temperatures.
- ❖ High heat input processes such as MIG welding often result in micro fissuring. This alloy can be age hardened to higher strengths.

Conformances

AWS/ASME SFA 5.14
ERNiFeCr-2
UNS N07718

Chemical Composition - As required per AWS 5.14

Ni	C	Mn	Fe	S	Si	Cu
50.0-55.0	0.08 max	0.35 max	Bal	0.015 max	0.35 max	0.30 max
Cr	Al	Ti	Nb+Ta	Mo	P	OET
17.0-21.0	0.20-0.80	0.65-1.15	4.75-5.50	2.80-3.30	0.015 max	0.50 max

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	1140 (165) typical	Not Specified	Not Specified
Typical Results - As welded	860 (125)	630 (91)	27

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 825

AWS ERNiFeCr-1 • Nickel Alloys

Key Features

- ❖ Used for welding of nickel-chromium-molybdenum-copper alloys.
- ❖ Also can be used to overlay cladding where similar chemical composition is required.

Conformances

AWS/ASME SFA 5.14

ERNiFeCr-1

UNS N08065

Chemical Composition - As required per AWS 5.14

Ni	C	Mn	Fe	S	Si	Cu
38.0-46.0	0.05 max	1.0 max	22.0 min	0.03 max	0.50 max	1.5-3.0
Cr	Al	Ti	Mo	P	OET	
19.5-23.5	0.20 max	0.60-1.20	2.50-3.50	0.03 max	0.50 max	

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) typical	Not Specified	Not Specified
Typical Results - As welded	550 (80)		25



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	26-29	150-190	Spray Transfer 100% Argon
.045	1.2	GMAW	28-32	180-220	
1/16	1.6	GMAW	29-33	200-250	
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 308/308H

AWS ER308/308H • Stainless Steel



Key Features

- ❖ Used to weld unstabilized austenitic stainless steels such as 302, 304H and 305.
- ❖ Provides a high carbon deposit (minimum of .04% carbon) for high temperature applications.

Conformances

AWS/ASME SFA 5.9
ER308/308H
UNS S30880

Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	S	P
0.04-0.08	1.0-2.5	0.30-0.65	19.5-22.0	9.0-11.0	0.03 max	0.03 max
Mo	Cu					
0.50 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	600 (87)	410 (59)	41

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 308/308L

AWS ER308/308L • Stainless Steel

Key Features

- ❖ Weld deposit with reduced carbon levels (0.04% max) that offers increased resistance to inter-granular corrosion.
- ❖ Type 308L is ideal for welding Type 304L stainless steels.

Conformances

AWS/ASME SFA 5.9
ER308/308L
UNS S30883



Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	S	P
0.03 max	1.0-2.5	0.30-0.65	19.5-22.0	9.0-11.0	0.03 max	0.03 max
Mo	Cu					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	580 (84)	400 (58)	42

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 308LSi

AWS ER308LSi • Stainless Steel



Key Features

- ❖ Primarily weld equipment made with 304 type stainless steel.
- ❖ Higher silicon content improves wetting of the weld metal, and potentially higher travel speeds compared to standard 308L products.

Conformances

AWS/ASME SFA 5.9
ER308LSi
UNS S30888

Chemical Composition - As required per AWS 5.9						
C	Cr	Ni	Mo	Mn	Si	P
0.03 max	19.5-22.0	9.0-11.0	0.75 max	1.0-2.5	0.65-1.00	0.03 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	580 (84)	400 (58)	41

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 309/309L

AWS ER309/309L • Stainless Steel

Key Features

- ◆ Reduced carbon levels (0.04% max) that offers increased resistance to inter-granular corrosion.
- ◆ Type 309/309L is ideal for joining stainless steels to themselves or to carbon or low alloy steels.
- ◆ Can be used at temperatures of up to 700°F (371°C).

Conformances

AWS/ASME SFA 5.9
ER309/309L
UNS S30983



Chemical Composition - As required per AWS 5.9

C	Cr	Ni	Mo	Mn	Si	P
0.03 max	23.0-25.0	12.0-14.0	0.75 max	1.0-2.5	0.30-0.65	0.03 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	590 (86)	400 (58)	40

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 309LSi

AWS ER309LSi • Stainless Steel



Key Features

- ❖ Same composition as Oxford Alloy® 309L, with higher silicon content to improve the bead appearance and increase welding ease.
- ❖ Used for mild steel to stainless joining applications. Excellent contour of the weld minimizes the need for grinding.

Conformances

AWS/ASME SFA 5.9
ER309LSi
UNS S30988

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	S	P
0.03 max	1.0-2.5	0.65-1.00	23.0-25.0	12.0-14.0	0.03 max	0.03 max
Mo	Cu					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	570 (83)	410 (60)	38

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 309LMo

ER309LMo • Stainless Steel

Key Features

- Similar to 309 with the exception for the addition of 2.0 - 3.0% molybdenum to increase its pitting corrosion resistance in halide-containing environments.
- Primary application for this filler metal is surfacing of base metals to improve their resistance to corrosion. The 309LMo is used to achieve a single-layer overlay with a chemical composition similar to that of a 316L stainless steel.
- Also used for the first layer of a multilayer overlays with filler metals such as 316L or 317L stainless steel.

Conformances

BS EN ISO 14343:2009 23 12 2L

Chemical Composition - As per typical heat						
C	Si	Cr	Ni	Mo	Mn	S
0.03 max	1.00 max	21.0-25.0	11.0-15.5	2.0-3.5	1.0-2.5	0.02 max
P	Cu	OET				
0.03 max	0.50 max	0.50 max				

Mechanical Properties - As per typical heat			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	620 (90)	440 (64)	42



Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 310

AWS ER310 • Stainless Steel



Key Features

- ❖ Used for welding stainless steels of similar composition in cast and wrought forms.
- ❖ The weld deposit is fully austenitic, and as such, calls for minimal heat input during welding.

Conformances

AWS/ASME SFA 5.9
ER310
UNS S31080

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	S	P
0.08-0.15	1.0-2.5	0.30-0.65	25.0-28.0	20.0-22.5	0.03 max	0.03 max
Mo	Cu					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	610 (88)	480 (70)	41

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 312

AWS ER312 • Stainless Steel

Key Features

- ❖ Used to weld cast and wrought alloys of similar compositions.
- ❖ Also be used for joining hard to weld materials and dissimilar metals.
- ❖ Applications should be limited to 800°F (420°C). The weld deposits exhibit high tensile strength and offer some resistance to abrasion.

Conformances

AWS/ASME SFA 5.9
ER312
UNS S31380

Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	S
0.15 max	1.0-2.5	0.30-0.65	28.0-32.0	8.0-10.5	0.75 max	0.03 max
P	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	710 (103)	590 (86)	40



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 316/316H

AWS ER316/316H • Stainless Steel



Key Features

- ❖ For welding 316H base metal. This filler metal is the same as Oxford Alloy® ER316, except that the allowable carbon content has been restricted to the higher portion of the 316 range.
- ❖ Carbon content in the range of 0.04 to 0.08 wt.% provides higher strength at elevated temperatures.

Conformances

AWS/ASME SFA 5.9
ER316/316H
UNS S31680

Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	S
0.04-0.08	1.0-2.5	0.30-0.65	18.0-20.0	11.0-14.0	2.0-3.0	0.03 max
P	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	580 (84)	400 (58)	38

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 316/316L

AWS ER316/316L • Stainless Steel

Key Features

- ❖ For welding 316L base metals.
- ❖ The 2-3% molybdenum in the electrode improves pitting corrosion resistance of the weld deposit.
- ❖ Low carbon content reduces the possibility of carbide precipitation and intergranular corrosion.

Conformances

AWS/ASME SFA 5.9
ER316/316L
UNS S31683



Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	S
0.03 max	1.0-2.5	0.30-0.65	18.0-20.0	11.0-14.0	2.0-3.0	0.03 max
P	Cu					
0.30 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	550 (80)	380 (55)	40

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 316LSi

AWS ER316LSi • Stainless Steel



Key Features

- ❖ Similar to 316L, with higher silicon content for optimum ease and speed in MIG welding and smooth bead appearance.
- ❖ This alloy is intended for joining 316 type stainless steels.

Conformances

AWS/ASME SFA 5.9
ER316LSi
UNS S31688

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	Mo	S
0.03 max	1.0-2.5	0.65-1.00	18.0-20.0	11.0-14.0	2.0-3.0	0.03 max
P	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	550 (80)	380 (55)	39

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 317L

AWS ER317L • Stainless Steel

Key Features

- ❖ Weld deposit similar to 316L with a higher molybdenum content.
- ❖ Used for welding alloys with similar compositions used in highly corrosive environments.

Conformances

AWS/ASME SFA 5.9

ER317L

UNS S31783

Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	S	P
0.03 max	1.0-2.5	0.30-0.65	18.5-20.5	13.0-15.0	0.03 max	0.03 max
Cu	Mo					
0.75 max	3.0-4.0					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	570 (83)	410 (60)	42



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 320LR

AWS ER320LR • Stainless Steel



Key Features

- ❖ Used for welding base metals with similar compositions including alloy 20.
- ❖ Typical applications include tanks, process piping, and heat exchangers.

Conformances

AWS/ASME SFA 5.9
ER320LR
UNS N08022

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	Mo	Nb+Ta
0.025 max	1.5-2.0	0.15 max	19.0-21.0	32.0-36.0	2.0-3.0	8 x C min / 0.40 max
S	P	Cu				
0.02 max	0.015 max	3.0-4.0				

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	590 (86)	400 (58)	35

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 330

AWS ER330 • Stainless Steel

Key Features

- ❖ Used to weld wrought and cast forms of stainless steels of similar chemical compositions, which offer good heat and scale resistance to 1800°F (980°C).
- ❖ High sulfur environments can adversely affect the high temperature performance.
- ❖ The heat input must be kept to a minimum during welding to avoid the possibility of micro-fissuring.

Conformances

AWS/ASME SFA 5.9
ER330
UNS N08331



Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	S
0.18-0.25	1.0-2.5	0.30-0.65	15.0-17.0	34.0-37.0	0.75 max	0.03 max
P	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	580 (84)	390 (57)	29

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 347

AWS ER347 • Stainless Steel



Key Features

- ❖ Niobium stabilized stainless steel used for the welding of types 347 and 321 stainless and stainless clad steels.
- ❖ The addition of niobium reduces intergranular corrosion in severe operating conditions.

Conformances

AWS/ASME SFA 5.9
ER347
UNS S34780

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	Mo	S
0.08 max	1.0-2.5	0.30-0.65	19.0-21.5	9.0-11.0	0.75 max	0.03 max
P	Cu	Nb+Ta				
0.03 max	0.75 max	10 X C min / 1.0 max				

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	620 (90)	450 (65)	41

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 385

AWS ER385 • Stainless Steel

Key Features

- ❖ For welding materials of similar chemical composition (Type 904L).
- ❖ Used in fabrication of equipment and vessels for handling and storage of sulfuric acid and phosphoric acid.
- ❖ The weld metal is fully austenitic, and must be done with low heat input, using a stringer bead technique.

Conformances

AWS/ASME SFA 5.9
ER385
UNS N08904

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	Cu	Mo
0.025 max	1.0- 2.5	0.50 max	19.5- 21.5	24.0- 26.0	1.2- 2.0	4.2- 5.2
S	P					
0.03 max	0.02 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	600 (87)	410 (59)	36



Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 410 AWS ER410 • Stainless Steel



Key Features

- ❖ Designed to weld stainless steels of similar chemical composition as well as to overlay carbon steels to impart corrosion, erosion and abrasion resistance.
- ❖ Being an air-hardening type, calls for a pre-heat and inter-pass temperature of not less than 400°F (200°C) during welding.

Conformances

AWS/ASME SFA 5.9
ER410
UNS S41080

Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Mo	S	P
0.12 max	0.6 max	0.5 max	11.5-13.5	0.75 max	0.03 max	0.03 max
Ni	Cu					
0.6 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	540 (78)	340 (49)	25

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 410NiMo

AWS ER410NiMo • Stainless Steel

Key Features

- ❖ Designed to weld materials of similar chemical composition in cast and wrought forms as well as to overlay mild and low alloy steels.
- ❖ Preheat and inter-pass temperatures of not less than 300°F (150°C) are recommended during welding. Post-weld heat treatment should not exceed 1150°F (620°C) as higher temperatures may result in hardening.

Conformances

AWS/ASME SFA 5.9
ER410NiMo
UNS S41086



Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	Mo	S
0.06 max	0.6 max	0.5 max	11.0-12.5	4.0-5.0	0.4-0.7	0.03 max
P	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	820 (119)	630 (91)	20

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 420

AWS ER420 • Stainless Steel



Key Features

- ❖ Used for surfacing applications that call for superior resistance to abrasion.
- ❖ Similar to the Oxford Alloy ER410, except for the higher carbon content.
- ❖ Requires preheat and interpass temperatures of not less than 400°F, followed by slow cooling.

Conformances

AWS/ASME SFA 5.9
ER420
UNS S42080

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Mo	S	P
0.25-0.40	0.6 max	0.5 max	12.0-14.0	0.75 max	0.03 max	0.03 max
Ni	Cu					
0.6 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	1,000 (145)	830 (120)	45

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 630

AWS ER630 • Stainless Steel

Key Features

- ❖ Precipitation hardening stainless steel used for welding materials of similar chemical composition such as 17-4 and 17-7.
- ❖ Can be used in the as welded condition or may be heat treated to obtain higher strength.
- ❖ Mechanical properties of the alloy are greatly influenced by the heat treatment.

Conformances

AWS/ASME SFA 5.9
ER630
UNS S17480



Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	Cu
0.05 max	0.25-0.75	0.75 max	16.0-16.75	4.5-5.0	0.75 max	3.25-4.00
Nb+Ta	S	P				
0.15-0.30	0.03 max	0.03 max				

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	990 (144)	850 (123)	10

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 16-8-2

AWS ER16-8-2 • Stainless Steel



Key Features

- ❖ With molybdenum specifically at the lower limit 16-8-2, it is essentially a dilute hybrid between E308H and E316H. Rather than matching any single parent material, it has applications for welding all the '3XXH' series of stainless steels with 0.04-0.10% carbon, which combine creep, oxidation and general corrosion resistance.
- ❖ A low total Cr+Mo with controlled carbon and ferrite content ensures high resistance to thermal embrittlement by intermetallic phases.

Conformances

AWS/ASME SFA 5.9
ER16-8-2
UNS S16880

Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	Cu
0.10 max	1.0- 2.0	0.30- 0.65	14.5- 16.5	7.5- 9.5	1.0- 2.0	0.75 max
S	P					
0.03 max	0.03 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	620(90)		37

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 2209

AWS ER2209 • Duplex

Key Features

- ❖ Used to weld duplex stainless steels such as (Type 2205).
- ❖ The welds offer excellent resistance to stress corrosion, cracking and pitting. The microstructure of the weld metal consists of austenite and ferrite.
- ❖ Welding of duplex stainless steels calls for controlled welding parameters to achieve specified mechanical and corrosion resistant properties.

Conformances

AWS/ASME SFA 5.9
ER2209
UNS S39209



Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	S
0.03 max	0.50 -2.0	0.90 max	21.5- 23.5	7.5- 9.5	2.5- 3.5	0.03 max
P	Cu	N				
0.03 max	0.75 max	0.08- 0.20				

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	720 (104)	560 (81)	26

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 ½ % Argon / 2 ½ CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 2594 AWS ER2594 • Super Duplex



Key Features

- ❖ Super-duplex grade that provides matching chemistry and mechanical property characteristics to wrought super-duplex alloys such as 2507 and Zeron 100, as well as to super-duplex casting alloys (ATSM A890).
- ❖ Over-alloyed 2-3% in nickel to provide the optimum ferrite/austenite ratio in the finished weld. This structure results in high tensile and yield strengths and superior resistance to stress corrosion cracking (SCC) and pitting corrosion.

Conformances

AWS/ASME SFA 5.9
ER2594
UNS S32750

Chemical Composition - As required per AWS 5.9

C	Cr	Ni	Mo	Mn	Si	P
0.03 max	24.0-27.0	8.0-10.5	2.5-4.5	2.5 max	1.0 max	0.03 max
S	N	Cu	W			
0.02 max	0.20-0.30	1.5 max	1.0 max			

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	850 (123)	650 (94)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-23	180-210	Spray Transfer 98% Argon / 2% Oxygen
.045	1.2	GMAW	23-25	195-260	
1/16	1.6	GMAW	25-28	260-390	
.035	0.9	GMAW	19-23	55-170	Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂
.045	1.2	GMAW	19-23	100-185	
1/16	1.6	GMAW			
1/16	1.6	GTAW	14-18	90-130	100% Argon
3/32	2.4	GTAW	15-20	120-175	100% Argon
1/8	3.2	GTAW	15-20	150-220	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 80S-B2

AWS ER80S-B2 • Chrome Moly

Key Features

- ◆ Designed for welding on 1-1/4 Cr / 1/2 Mo steels, which are used for high temperature service.
- ◆ Preheating and interpass temperatures of not less than 300°F must be used during welding.

Conformances

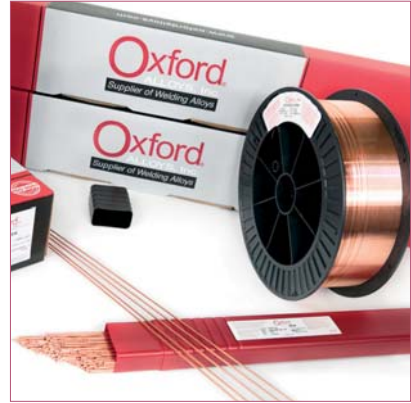
AWS/ASME SFA 5.28
ER80S-B2
UNS K20900

Chemical Composition - As required per AWS 5.28

C	Mn	Si	Cr	Mo	P	S
0.07-0.12	0.40-0.70	0.40-0.70	1.20-1.50	0.40-0.65	0.025 max	0.025 max
Cu	Ni	OET				
0.35 max	0.20 max	0.50 max				

Mechanical Properties - As required by AWS 5.28

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	515 (75) min	470 (68) min	19 min
Typical Results ⁽⁹⁾ - As welded	590 (86)	500 (73)	26



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

⁽⁹⁾ Typical Results are based on Preheat, Interpass, and PWHT temperatures per AWS 5.28. Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 80S-B6

AWS ER80S-B6 • Chrome Moly



Key Features

- ❖ Designed for welding of materials of similar composition, for high temperature service conditions.
- ❖ Air-hardening material therefore calls for preheat and interpass temperatures of 350°F minimum during welding.
- ❖ Typical applications include power generation, pressure vessels, petrochemical, and process piping.

Conformances

AWS/ASME SFA 5.28
ER80S-B6
UNS S50280

Chemical Composition - As required per AWS 5.28

C	Mn	Si	Cr	Mo	S	P
0.10 max	0.40- 0.70	0.50 max	4.50- 6.00	0.45- 0.65	0.025 max	0.025 max
Ni	Cu	OET				
0.6 max	0.35 max	0.50 max				

Mechanical Properties - As required by AWS 5.28

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	470 (68) min	17 min
Typical Results ^(a) - As welded	630 (91)	480 (70)	25

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

^(a) Typical Results are based on Preheat, Interpass, and PWHT temperatures per AWS 5.28. Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 80S-B8

AWS ER80S-B8 • Chrome Moly

Key Features

- ❖ Designed for welding materials of similar composition.
- ❖ Air hardening type that calls for preheat and interpass temperatures of not less than 350°F during welding.
- ❖ Typical applications include power generation, pressure vessels, petrochemical, and process piping.

Conformances

AWS/ASME SFA 5.28
ER80S-B8
UNS S50480

Chemical Composition - As required per AWS 5.28

C	Mn	Si	Cr	Mo	S	P
0.10 max	0.40-0.70	0.50 max	8.00-10.5	0.8-1.2	0.025 max	0.025 max
Ni	Cu	OET				
0.5 max	0.35 max	0.50 max				

Mechanical Properties - As required by AWS 5.28

	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	550 (80) min	470 (68) min	17 min
Typical Results ⁽⁹⁾ -As welded	640 (93)	490 (71)	30



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

⁽⁹⁾ Typical Results are based on Preheat, Interpass, and PWHT temperatures per AWS 5.28. Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 90S-B3

AWS ER90S-B3 • Chrome Moly



Key Features

- ❖ Designed for welding 2-1/4 Cr / 1 Mo steels, which are used for high temperature applications.
- ❖ A preheat and interpass temperature of not less than 350°F should be maintained during welding.
- ❖ Typical applications include power generation, pressure vessels, petrochemical, and process piping.

Conformances

AWS/ASME SFA 5.28
ER90S-B3
UNS K30960

Chemical Composition - As required per AWS 5.28

C	Mn	Si	Cr	Mo	P	S
0.07-0.12	0.40-0.70	0.40-0.70	2.30-2.70	0.90-1.20	0.025 max	0.025 max
Cu	Ni	OET				
0.35 max	0.20 max	0.50 max				

Mechanical Properties - As required by AWS 5.28

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	620 (90) min	540 (78) min	17 min
Typical Results ^(a) - As welded	670 (97)	550 (80)	26

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

^(a) Typical Results are based on Preheat, Interpass, and PWHT temperatures per AWS 5.28. Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 90S-B9

AWS ER90S-B9 • Chrome Moly

Key Features

- ❖ Designed to weld high temperature steels for hot hydrogen service.
- ❖ Suitable for 9% Chromium steels such as P91, T91 and F91.
- ❖ Applications include steam generation and petrochemical equipment. Preheat and interpass is required.

Conformances

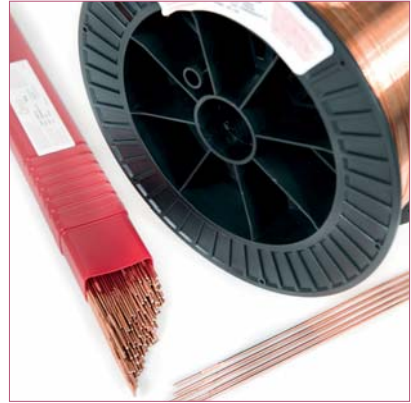
AWS/ASMS SFA 5.28
ER90S-B9
UNS S50482

Chemical Composition - As required per AWS 5.28

C	Mn	Si	Cr	Ni	Mo	Cu
0.07-0.13	1.20 max	0.15-0.50	8.0-10.50	0.80 max	0.85-1.20	0.20 max
V	P	S	Al	OET		
0.15-0.30	0.010 max	0.010 max	0.04 max	0.50 max		

Mechanical Properties - As required by AWS 5.28

	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	620 (90) min	410 (60) min	16 min
Typical Results ⁽⁹⁾ -As welded	750 (109)	650 (94)	18



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

⁽⁹⁾ Typical Results are based on Preheat, Interpass, and PWHT temperatures per AWS 5.28. Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 70S-2

AWS ER70S-2 • Mild Steel



Key Features

- ❖ Triple deoxidized (aluminum, titanium, zirconium) welding wire designed for welding over rust and mill scale.
- ❖ The less fluid weld puddle of Oxford Alloy ER70S-2 makes it easier to control when used out of position.
- ❖ This wire is preferred for all position welding of small diameter pipe.

Conformances

AWS/ASME SFA 5.18
ER70S-2
UNS K10726

Chemical Composition - As required per AWS 5.18

C	Mn	Si	P	S	Ni	Cr
0.07 max	0.90- 1.40	0.40- 0.70	0.025 max	0.035 max	0.15 max	0.15 max
Mo	V	Al	Zr	Ti	Cu	
0.15 max	0.03 max	0.05- 0.15	0.02- 0.12	0.05- 0.15	0.50 max	

Mechanical Properties - As required by AWS 5.18

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	480 (70) min	400 (58) min	22 min
Typical Results - As welded	550 (80)	490 (71)	29

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas	
in	(mm)					
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂	
.045	1.2	GMAW	30-34	180-220		
1/16	1.6	GMAW	30-34	230-260		
.035	0.9	GMAW	22-25	100-140		Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150		
1/16	1.6	GMAW	23-26	160-200		
1/16	1.6	GTAW	12-15	100-125	100% Argon	
3/32	2.4	GTAW	15-20	125-175	100% Argon	
1/8	3.2	GTAW	15-20	175-250	100% Argon	

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 70S-3

AWS ER70S-3 • Mild Steel

Key Features

- ❖ Silicon and manganese deoxidized wire used for mild and low alloy steel general purpose fabrication.
- ❖ Produces quality welds with rimmed steels, better welds on semi-deoxidized steels and excellent welds on fully deoxidized steels.
- ❖ Some typical applications include earthmoving and farm equipment, automobile frames, sheet metal, ships and barges, railcars, abcd trailers.

Conformances

AWS/ASME SFA 5.18
ER70S-3
UNS K11022



Chemical Composition - As required per AWS 5.18

C	Mn	Si	P	S	Ni	Cr
0.06-0.15	0.90-1.40	0.45-0.75	0.025 max	0.035 max	0.15 max	0.15 max
Mo	V	Cu				
0.15 max	0.03 max	0.50 max				

Mechanical Properties - As required by AWS 5.18

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	480 (70) min	400 (58) min	22 min
Typical Results - As welded	520 (75)	430 (62)	33

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.035	0.9	GMAW	22-25	100-140	
.045	1.2	GMAW	23-26	120-150	100% Argon
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 70S-6

AWS ER70S-6 • Mild Steel



Key Features

- ❖ Contains high levels of manganese and silicon for stronger deoxidizing power where stringent cleaning procedures are not possible.
- ❖ The high silicon content increases the fluidity of the weld pool, creating a smoother bead appearance and resulting in minimal post-weld grinding.
- ❖ Designed to provide X-ray quality porosity-free welds and the highest tensile strength (as welded) of the plain carbon steel wires.

Conformances

AWS/ASME SFA 5.18
ER70S-6
UNS K11140

Chemical Composition - As required per AWS 5.18

C	Mn	Si	P	S	Ni	Cr
0.06-0.15	1.40-1.85	0.80-1.15	0.025 max	0.035 max	0.15 max	0.15 max
Mo	V	Cu				
0.15 max	0.03 max	0.50 max				

Mechanical Properties - As required by AWS 5.18

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	480 (70) min	400 (58) min	22 min
Typical Results - As welded	550 (80)	450 (65)	30

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 80S-D2

AWS ER80S-D2 • Mild Steel

Key Features

- ❖ Low alloy steel wire with 2% manganese and 0.5% molybdenum as alloying elements.
- ❖ The weld deposits of this wire have moderately high strength with adequate low temperature toughness.
- ❖ A pre-heat and interpass temperature of not less than 300°F is required during welding.

Conformances

AWS/ASME SFA 5.28
ER80S-D2
UNS K10945



Chemical Composition - As required per AWS 5.28						
C	Mn	Si	Mo	P	S	Cu
0.07-0.12	1.60-2.10	0.50-0.80	0.40-0.60	0.025 max	0.025 max	0.50 max
Ni	OET					
0.15 max	0.50 max					

Mechanical Properties - As required by AWS 5.28			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	470 (68) min	17 min
Typical Results - As welded	640 (93)	590 (86)	22

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 80S-Ni1

AWS ER80S-Ni1 • Mild Steel



Key Features

- ❖ Used for welding low alloy high strength steels requiring good toughness at temperatures as low as -40°F (-40°C).

Conformances

AWS/ASME SFA 5.28
ER80S-Ni1
UNS K11260

Chemical Composition - As required per AWS 5.28

C	Mn	Si	P	S	Ni	Cr
0.12 max	1.25 max	0.40-0.80	0.025 max	0.025 max	0.80-1.10	0.15 max
Mo	V	Cu	OET			
0.35 max	0.05 max	0.35 max	0.50 max			

Mechanical Properties - As required by AWS 5.28

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	470 (68) min	24 min
Typical Results - As welded	600 (87)	530 (77)	26

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 80S-Ni2

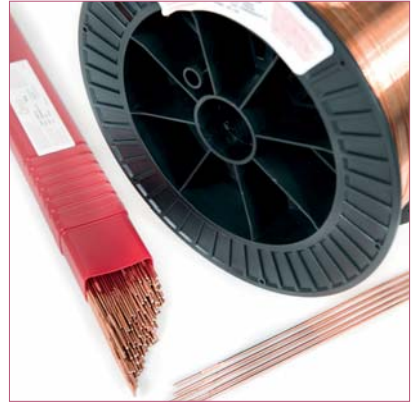
AWS ER80S-Ni2 • Mild Steel

Key Features

- Used for welding 2-1/2 percent nickel steels and other materials requiring a tensile strength of 80 ksi (550 MPa) and good toughness at temperatures as low as -80°F (-62°C).

Conformances

AWS/ASME SFA 5.28
ER80S-Ni2
UNS K21240



Chemical Composition - As required per AWS 5.28						
C	Mn	Si	P	S	Ni	Cu
0.12 max	1.25 max	0.40-0.80	0.025 max	0.025 max	2.00-2.75	0.35 max
OET						
0.50 max						

Mechanical Properties - As required by AWS 5.28			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) min	470 (68) min	24 min
Typical Results - As welded	620 (90)	530 (77)	26

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	28-32	165-200	Spray Transfer 98% Argon + 2% Oxygen or 75% Argon + 25% CO ₂
.045	1.2	GMAW	30-34	180-220	
1/16	1.6	GMAW	30-34	230-260	
.035	0.9	GMAW	22-25	100-140	Short Circuiting Transfer 100% CO ₂ or 75% Argon + 25% CO ₂
.045	1.2	GMAW	23-26	120-150	
1/16	1.6	GMAW	23-26	160-200	
1/16	1.6	GTAW	12-15	100-125	100% Argon
3/32	2.4	GTAW	15-20	125-175	100% Argon
1/8	3.2	GTAW	15-20	175-250	100% Argon

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 4043 AWS ER4043 • Aluminum



Key Features

- ❖ A 5% silicon aluminum recommended for welding 3003, 3004, 5052, 6061, 6063 and casting alloys 43, 355, 356 and 214.
- ❖ Has a melting range of 1065 - 1170°F and a density of .097 lbs./cu. in. The post-anodizing color tint of the weld area is gray.

Conformances

AWS/ASME SFA 5.10
ER4043
UNS A94043

Chemical Composition - As required per AWS 5.10

Si	Fe	Cu	Mn	Mg	Zn	Ti
4.5-6.0	0.8 max	0.30 max	0.05 max	0.05 max	0.10 max	0.20 max
OEE	OET	Al				
0.05 max	0.15 max	Bal				

Mechanical Properties - As required by AWS 5.10

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	190 (27)	125 (18)	8

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-28	100-175	Spray Transfer 100% Argon
.045	1.2	GMAW	22-28	120-210	
1/16	1.6	GMAW	24-30	160-300	
.035	0.9	GMAW	17-19	50-150	Short Circuiting Transfer 100% Argon
.045	1.2	GMAW	16-20	60-175	
1/16	1.6	GMAW	16-20	60-175	
1/16	1.6	GTAW		60-100	100% Argon
3/32	2.4	GTAW		125-160	100% Argon
1/8	3.2	GTAW		180-240	100% Argon

Diameters & Packaging

Oxford Alloys USA				Oxford Alloys Asia Pacific			
Diameter (in)	Form	Quantity (lbs)	Spool Dimension	Diameter (mm)	Form	Quantity (kgs)	Spool Dimension
.035	GMAW	16 lb	12 inch	0.9	GMAW	7 kg	300mm
.045	GMAW	16 lb	12 inch	1.2	GMAW	7 kg	300mm
1/16	GMAW	16 lb	12 inch	1.6	GMAW	7 kg	300mm
.035	GMAW	1 lb	4 inch	0.9	GMAW	0.5 kg	100mm
.045	GMAW	1 lb	4 inch	1.2	GMAW	0.5 kg	100mm
1/16	GMAW	1 lb	4 inch	1.6	GMAW	0.5 kg	100mm
1/16	GTAW	10 lb tube		1.6	GTAW	5 kg tube	
3/32	GTAW	10 lb tube		2.4	GTAW	5 kg tube	
1/8	GTAW	10 lb tube		3.2	GTAW	5 kg tube	

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® 5183

AWS ER5183 • Aluminum

Key Features

- ❖ Used for joining and overlay processing of similar grades containing 4.5% magnesium.
- ❖ Common uses include pressure vessels, ship building, and boilers. The post-anodizing color tint of the weld area is gray.

Conformances

AWS/ASME SFA 5.10
ER5183
UNS A95183



Chemical Composition - As required per AWS 5.10						
Si	Fe	Cu	Mn	Mg	Cr	Zn
0.40 max	0.40 max	0.10 max	0.05-1.0	4.30-5.20	0.05-0.25	0.25 max
Al	Ti	OEE	OET			
Bal	0.15 max	0.05 max	0.15 max			

Mechanical Properties - As required by AWS 5.10			
	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	275 (40)	125 (18)	17

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-28	100-175	Spray Transfer 100% Argon
.045	1.2	GMAW	22-28	120-210	
1/16	1.6	GMAW	24-30	160-300	
.035	0.9	GMAW	17-19	50-150	Short Circuiting Transfer 100% Argon
.045	1.2	GMAW	16-20	60-175	
1/16	1.6	GMAW	16-20	60-175	
1/16	1.6	GTAW		60-100	100% Argon
3/32	2.4	GTAW		125-160	100% Argon
1/8	3.2	GTAW		180-240	100% Argon

Diameters & Packaging							
Oxford Alloys USA				Oxford Alloys Asia Pacific			
Diameter (in)	Form	Quantity (lbs)	Spool Dimension	Diameter (mm)	Form	Quantity (kgs)	Spool Dimension
.035	GMAW	16 lb	12 inch	0.9	GMAW	7 kg	300mm
.045	GMAW	16 lb	12 inch	1.2	GMAW	7 kg	300mm
1/16	GMAW	16 lb	12 inch	1.6	GMAW	7 kg	300mm
.035	GMAW	1 lb	4 inch	0.9	GMAW	0.5 kg	100mm
.045	GMAW	1 lb	4 inch	1.2	GMAW	0.5 kg	100mm
1/16	GMAW	1 lb	4 inch	1.6	GMAW	0.5 kg	100mm
1/16	GTAW	10 lb tube		1.6	GTAW	5 kg tube	
3/32	GTAW	10 lb tube		2.4	GTAW	5 kg tube	
1/8	GTAW	10 lb tube		3.2	GTAW	5 kg tube	

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 5356

AWS ER5356 • Aluminum



Key Features

- ❖ A 5% magnesium aluminum filler metal commonly used on base metals 5050, 5052, 5083, 5356, 5454 and 5456.
- ❖ The weld deposit of this filler metal offers good corrosion resistance when exposed to salt water.
- ❖ The post-anodizing color tint of the weld area is white.

Conformances

AWS/ASME SFA 5.10
ER5356
UNS A95356

Chemical Composition - As required per AWS 5.10

Si	Fe	Cu	Mn	Mg	Cr	Zn
0.25 max	0.40 max	0.10 max	0.05-0.20	4.5-5.5	0.05-0.20	0.10 max
Ti	Al	OEE	OET			
0.06-0.20	Bal	0.05 max	0.15 max			

Mechanical Properties - As required by AWS 5.10

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	270 (39)	130 (19)	17

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	22-28	100-175	Spray Transfer 100% Argon
.045	1.2	GMAW	22-28	120-210	
1/16	1.6	GMAW	24-30	160-300	
.035	0.9	GMAW	17-19	50-150	Short Circuiting Transfer 100% Argon
.045	1.2	GMAW	16-20	60-175	
1/16	1.6	GMAW	16-20	60-175	
1/16	1.6	GTAW		60-100	100% Argon
3/32	2.4	GTAW		125-160	100% Argon
1/8	3.2	GTAW		180-240	100% Argon

Diameters & Packaging

Oxford Alloys USA				Oxford Alloys Asia Pacific			
Diameter (in)	Form	Quantity (lbs)	Spool Dimension	Diameter (mm)	Form	Quantity (kgs)	Spool Dimension
.035	GMAW	16 lb	12 inch	0.9	GMAW	7 kg	300mm
.045	GMAW	16 lb	12 inch	1.2	GMAW	7 kg	300mm
1/16	GMAW	16 lb	12 inch	1.6	GMAW	7 kg	300mm
.035	GMAW	1 lb	4 inch	0.9	GMAW	0.5 kg	100mm
.045	GMAW	1 lb	4 inch	1.2	GMAW	0.5 kg	100mm
1/16	GMAW	1 lb	4 inch	1.6	GMAW	0.5 kg	100mm
1/16	GTAW	10 lb tube		1.6	GTAW	5 kg tube	
3/32	GTAW	10 lb tube		2.4	GTAW	5 kg tube	
1/8	GTAW	10 lb tube		3.2	GTAW	5 kg tube	

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® Ti-1

AWS ERTi-1 • Titanium

Key Features

- ❖ Commercially Pure Titanium with good balance of strength, formability and weldability.
- ❖ Typical applications include cryogenic and petrochemical applications such as chemical process heat exchangers, pressure vessels and piping systems, pulp bleaching systems, electro chemical and chemical storage tanks.

Conformances

AWS/ASME SFA 5.16

ERTi-1

UNS R50100

Chemical Composition - As required per AWS 5.16

C	O	H	N	Fe	Ti	
0.03 max	0.03-0.10	0.005 max	0.012 max	0.08 max	Bal	

Mechanical Properties - As required by AWS 5.16

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	240 (35)	170 (25)	24



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
1/16	1.6	GTAW	16	180	100% Argon
3/32	2.4	GTAW	17	190	100% Argon
1/8	3.2	GTAW	19	205	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
1/16	GTAW	5 lb tube 20 lb carton	1.6	GTAW	2 kg tube 8 kg carton
3/32	GTAW	5 lb tube 20 lb carton	2.4	GTAW	2 kg tube 8 kg carton
1/8	GTAW	5 lb tube 20 lb carton	3.2	GTAW	2 kg tube 8 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® Ti-2

AWS ERTi-2 • Titanium



Key Features

- ❖ Commercially Pure Titanium with good balance of strength, formability and weldability.
- ❖ Typical applications include cryogenic and petrochemical applications such as chemical process heat exchangers, pressure vessels and piping systems, pulp bleaching systems, electro chemical and chemical storage tanks.

Conformances

AWS/ASME SFA 5.16
ERTi-2
UNS R50120

Chemical Composition - As required per AWS 5.16

C	O	H	N	Fe	Ti	
0.03 max	0.08-0.16	0.008 max	0.015 max	0.12 max	Bal	

Mechanical Properties - As required by AWS 5.16

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	345 (50)	275 (40)	20

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
1/16	1.6	GTAW	16	180	100% Argon
3/32	2.4	GTAW	17	190	100% Argon
1/8	3.2	GTAW	19	205	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
1/16	GTAW	5 lb tube 20 lb carton	1.6	GTAW	2 kg tube 8 kg carton
3/32	GTAW	5 lb tube 20 lb carton	2.4	GTAW	2 kg tube 8 kg carton
1/8	GTAW	5 lb tube 20 lb carton	3.2	GTAW	2 kg tube 8 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® Ti-5

AWS ERTi-5 • Titanium

Key Features

- ❖ Used for welding 6% Aluminum – 4% Vanadium alloys. Commonly referred to as 6AL/4V
- ❖ The weld deposits of exhibit high fatigue strength, toughness, ductility and are heat treatable.
- ❖ Widely used in the cryogenic, petrochemical and aircraft industry.

Conformances

AWS/ASME SFA 5.16
ERTi-5
UNS R56402

Chemical Composition - As required per AWS 5.16

C	O	H	N	Al	V	Fe
0.05 max	0.12- 0.20	0.015 max	0.03 max	5.5- 6.75	3.5- 4.5	0.22 max
Ti						
Bal						

Mechanical Properties - As required by AWS 5.16

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	895 (130)	830 (120)	10



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
1/16	1.6	GTAW	16	180	100% Argon
3/32	2.4	GTAW	17	190	100% Argon
1/8	3.2	GTAW	19	205	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
1/16	GTAW	5 lb tube 20 lb carton	1.6	GTAW	2 kg tube 8 kg carton
3/32	GTAW	5 lb tube 20 lb carton	2.4	GTAW	2 kg tube 8 kg carton
1/8	GTAW	5 lb tube 20 lb carton	3.2	GTAW	2 kg tube 8 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® Ti-7 AWS ERTi-7 • Titanium



Key Features

- ❖ Titanium grade 7 has outstanding corrosion resistance and useful strength at low density.
- ❖ A small addition of palladium has been made to this alloy for a substantial increase in corrosion resistance.
- ❖ Typical applications include reactor autoclaves, piping and fittings, valves, heat exchangers and condensers.

Conformances

AWS/ASME SFA 5.16
ERTi-7
UNS R52401

Chemical Composition - As required per AWS 5.16

C	O	H	N	Fe	Pd	Ti
0.03 max	0.08- 0.16	0.008 max	0.015 max	0.12 max	0.12- 0.25	Bal

Mechanical Properties - As required by AWS 5.16

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	345 (50)	275 (40)	20

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
1/16	1.6	GTAW	16	180	100% Argon
3/32	2.4	GTAW	17	190	100% Argon
1/8	3.2	GTAW	19	205	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
1/16	GTAW	5 lb tube 20 lb carton	1.6	GTAW	2 kg tube 8 kg carton
3/32	GTAW	5 lb tube 20 lb carton	2.4	GTAW	2 kg tube 8 kg carton
1/8	GTAW	5 lb tube 20 lb carton	3.2	GTAW	2 kg tube 8 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy[®] Zr2

AWS ERZr2 • Zirconium

Key Features

- ❖ Excellent corrosion resistance to many chemical solutions.
- ❖ Typical applications include heat exchangers, stripper columns, reactor vessels, pumps, valves, and corrosive media piping.
- ❖ Can be machined, welded and fabricated using the same equipment and processes used in fabrication of stainless steel, nickel-based alloys and titanium.

Conformances

AWS/ASME SFA 5.24

ERZr2

UNS R60702

Chemical Composition - As required per AWS 5.24

Zr+Hf	Hf	Fe+Cr	H	N	C	O
99.0 min	4.5 max	0.20 max	0.005 max	0.015 max	0.03 max	0.11- 0.15

Mechanical Properties - As required by AWS 5.24

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	380 (55)	210 (30)	16



Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
1/16	1.6	GTAW	12-15	80-150	100% Argon
3/32	2.4	GTAW	12-15	130-200	100% Argon
1/8	3.2	GTAW	112-15	180-225	100% Argon

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
1/16	GTAW	5 lb tube 20 lb carton	1.6	GTAW	2 kg tube 8 kg carton
3/32	GTAW	5 lb tube 20 lb carton	2.4	GTAW	2 kg tube 8 kg carton
1/8	GTAW	5 lb tube 20 lb carton	3.2	GTAW	2 kg tube 8 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] Aluminum Bronze A-2

AWS ERCuAl-A2 • Bronze Alloys



Key Features

- ❖ Used to weld and join many ferrous and nonferrous metals and combinations of dissimilar metals.
- ❖ Contains an additive to inhibit inter-granular stress corrosion cracking. This is particularly important when welding on C61300 and C61400 base metal.
- ❖ Some applications include building up bearing surfaces, joining and fabricating copper alloys, overlaying for resistance to corrosion and erosion.

Conformances

AWS/ASME SFA 5.7
ERCuAl-A2
UNS C61800

Chemical Composition - As required per AWS 5.7

Cu+Ag	Al	Fe	Si	Zn	Pb	OET
Bal	8.5-11.0	0.5-1.5	0.10 max	0.02 max	0.02 max	0.50 max

Mechanical Properties - As required by AWS 5.7

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	415 (60) min	Not Specified	Not Specified
Typical Results - As welded	545 (79)	240 (35)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	20-26	100-200	100% Argon
.045	1.2	GMAW	22-28	100-250	
1/16	1.6	GMAW	29-32	250-400	
1/16	1.6	GTAW		70-120	100% Argon
3/32	2.4	GTAW		120-160	
1/8	3.2	GTAW		170-230	

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy® Deox Copper

AWS ERCu • Bronze Alloys

Key Features

- ❖ Developed to provide dense, high quality deposits with relatively high electrical conductivity for use in joining and overlay with the inert-gas processes.
- ❖ Primarily used to fabricate deoxidized copper and to weld repair copper castings. It may also be used to weld galvanized steel and deoxidized copper to mild steel where high strength joints are not required.

Conformances

AWS/ASME SFA 5.7

ERCu

UNS C18980



Chemical Composition - As required per AWS 5.7

Cu+Ag	P	Sn	Pb	Mn	Si	Al
98.0 min	0.15 max	1.0 max	0.02 max	0.50 max	0.50 max	0.01 max
OET						
0.50 max						

Mechanical Properties - As required by AWS 5.7

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	170 (25) min	Not Specified	Not Specified
Typical Results - As welded	200 (29)	55 (8)	29

Typical Welding Parameters

Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	20-26	100-200	100% Argon
.045	1.2	GMAW	22-28	100-250	
1/16	1.6	GMAW	29-32	250-400	
1/16	1.6	GTAW		70-120	100% Helium
3/32	2.4	GTAW		120-160	
1/8	3.2	GTAW		170-230	

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® Low Fuming Bronze

AWS RBCuZn-C • Bronze Alloys



Key Features

- ❖ General purpose brazing rod used for steel, copper alloys, cast iron, nickel alloys and stainless steel.
- ❖ Low silicon content, which keep fumes to a minimum.

This alloy also is available in a flux coated tig.

Conformances

AWS/ASME SFA 5.8
RBCuZn-C
UNS C68100

Chemical Composition - As required per AWS 5.8						
Cu	Mn	Sn	Pb	Fe	Si	Zn
56.0-60.0	0.01-0.50	0.80-1.10	0.05 max	0.25-1.20	0.04-0.15	Bal
Al	OET					
0.01 max	0.50 max					

Mechanical Properties - As required by AWS 5.8			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	390 (56)		

Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
1/16	1.6	GTAW		70-120	100% Helium
3/32	2.4	GTAW		120-160	
1/8	3.2	GTAW		170-230	

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.

MIG & TIG

Oxford Alloy[®] Silicon Bronze

AWS ERCuSi-A • Bronze Alloys

Key Features

- ❖ Used for the welding of copper, copper-silicon, and copper-zinc base metals to themselves
- ❖ Can also be used to surface areas subject to corrosion.

Conformances

AWS/ASME SFA 5.7
ERCuSi-A
UNS C65600

Chemical Composition - As required per AWS 5.7						
Cu+Ag	Zn	Sn	Mn	Fe	Si	Al
Bal	1.0 max	1.0 max	1.5 max	0.50 max	2.8-4.0	0.01 max
Pb	OET					
0.02 max	0.50 max					

Mechanical Properties - As required by AWS 5.7			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	345 (50) min	Not Specified	Not Specified
Typical Results - As welded	350 (51)		



Typical Welding Parameters					
Diameter		Process	Volt	Amps	Shielding Gas
in	(mm)				
.035	0.9	GMAW	20-26	100-200	100% Argon
.045	1.2	GMAW	22-28	100-250	
1/16	1.6	GMAW	29-32	250-400	
1/16	1.6	GTAW		70-120	100% Helium
3/32	2.4	GTAW		120-160	
1/8	3.2	GTAW		170-230	

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
.035	GMAW	33 lb spool 1980 lb pallet	0.9	GMAW	15 kg spool 900 kg pallet
.045	GMAW	33 lb spool 1980 lb pallet	1.2	GMAW	15 kg spool 900 kg pallet
1/16	GMAW	33 lb spool 1980 lb pallet	1.6	GMAW	15 kg spool 900 kg pallet
1/16	GTAW	10 lb tube 40 lb carton	1.6	GTAW	5 kg tube 20 kg carton
3/32	GTAW	10 lb tube 40 lb carton	2.4	GTAW	5 kg tube 20 kg carton
1/8	GTAW	10 lb tube 40 lb carton	3.2	GTAW	5 kg tube 20 kg carton

Actual test results may vary. Refer test result disclaimer on page 160.



Oxford
ALLOYS, Inc.

Supplier of Welding Alloys

www.oxfordalloys.com

Oxford
ALLOYS, Inc.

E316LT0 - 1/4

CLASS: E316LT0 - 1/4 DIA: 1.28MM (0.047)

SPEC: AWS/AASME SFA 5.22 QTY: 15 WOB (0.57 LBS)

HEAT: 3R222 LOT: 62521100 PH

COOK: 00 - 302

Oxford
ALLOYS, Inc.

Supplier of Welding Alloys



Nickel Alloys

- Oxford Alloy 82T-1
- Oxford Alloy 625T-1

Duplex & Super Duplex

- Oxford Alloy 2209T1-1/4
- Oxford Alloy 2594T1-1/4

Stainless Steel

- Oxford Alloy 308HT1-1/4
- Oxford Alloy 308LT0-1/4
- Oxford Alloy 308LT1-1/4
- Oxford Alloy 309LT0-1/4
- Oxford Alloy 309LT1-1/4
- Oxford Alloy 316LT0-1/4
- Oxford Alloy 316LT1-1/4
- Oxford Alloy 317LT0-1/4
- Oxford Alloy 317LT1-1/4
- Oxford Alloy 347T0-1/4
- Oxford Alloy 347T1-1/4

Chrome Moly

- Oxford Alloy 81T1-B2
- Oxford Alloy 91T1-B3

Mild Steel

- Oxford Alloy 71T-1M

FLUX CORED

FLUX CORED

Oxford Alloy® 82T-1

AWS ENiCr3T1-1/T1-4 • Nickel Alloys

Key Features

- ❖ Gas shielded all position flux cored wire
- ❖ Typical applications include joining nickel-chromium-iron alloys, surfacing steel with nickel-chromium-iron weld metal, joining alloys 600, 601 and alloy 800 to themselves or to stainless and carbon steels.
- ❖ Also used to clad the side of joints in steels that have been clad with nickel-chromium-iron weld metal.

Conformances

AWS/ASME SFA 5.34
ENiCr3T1-1/T1-4
UNS W86082

Chemical Composition - As required per AWS 5.34						
C	Mn	Si	Cr	Fe	Nb	S
0.10 max	2.5- 3.5	0.50 max	18.0- 22.0	3.0 max	2.0- 3.0	0.015 max
Ti	P	Ni	Cu	OET		
0.75 max	0.03 max	67.0 min	0.50 max	0.50 max		

Mechanical Properties - As required by AWS 5.34				
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -196 °C (-320°F)
AWS Requirements	550 (80) min	Not Specified	25 min	Not Specified
Typical Results - As welded	620 (90)	400 (58)	27	109 (78)



Typical Welding Parameters

Diameter		Process	Wire Feed Speed (ipm)	Wire Ext.	Volt	Amps	Shielding Gas
in	(mm)						
.045	1.2	FCAW	290-400	½ in. (12mm)	25-26	150-200	75% Ar / 25% CO ₂ or 100% CO ₂
1/16	1.6	FCAW	190-275	½ in. (12mm)	26-27	200-250	

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 625T-1

AWS ENiCrMo3T1-1/T1-4 • Nickel Alloys



Key Features

- ❖ Gas shielded all position flux cored wire
- ❖ Typical applications include joining nickel-chromium-molybdenum alloys, surfacing steel with nickel-chromium-molybdenum weld metal, joining steels to nickel based alloys.
- ❖ Also used to clad the side of joints in steels that have been clad with nickel-chromium-molybdenum.

Conformances

AWS/ASME SFA 5.34
ENiCrMo3T1-1/T1-4
UNS W86625

Chemical Composition - As required per AWS 5.34

C	Mn	Si	Cr	Mo	Fe	Nb
0.1 max	0.5 max	0.5 max	20.0-23.0	8.0-10.0	5.0 max	3.15-4.15
Ti	S	P	Ni	Cu	OET	
0.4 max	0.015 max	0.02 max	58.0 min	0.5 max	0.5 max	

Mechanical Properties - As required by AWS 5.34

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -196 °C (-320°F)
AWS Requirements	690 (100) min	Not Specified	25 min	Not Specified
Typical Results - As welded	770 (112)	500 (72)	38	67 (48)

Typical Welding Parameters

Diameter		Process	Wire Ext.	Volt	Amps	Shielding Gas
in	(mm)					
.045	1.2	FCAW	½ in	25-26	150-200	75% Ar / 25% CO ₂ or 100% CO ₂
1/16	1.6	FCAW	½ in	26-27	200-250	

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 308HT1-1/4

AWS E308HT1-1/T1-4 • Stainless Steel

Key Features

- ❖ Designed for all-position welding
- ❖ Carbon content is controlled between .04 -08 % and Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E308HT1-1/T1-4
UNS W30831

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Mo	P
0.04-0.08	0.5-2.5	1.0 max	18.0-21.0	9.0-11.0	0.75 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	550 (80) min	Not Specified	30 min	Not Specified
Typical Results - As welded	610 (89)	460 (67)	40	51 (38)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂



Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	25	26	28	30	25	27	28	29
Voltage	227	341	445	567	154	193	243	321
Wire Feed speed (in/min)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
Deposition rate (lbs/hr)	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0
% Efficiency								

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 308LT0-1/4

AWS E308LT0-1/TO-4 • Stainless Steel



Key Features

- ❖ Designed for flat and horizontal welding positions
- ❖ Carbon content is below .04 % and Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E308LT0-1/TO-4
UNS W30835
ABS Approved

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.5	1.0 max	18.0-21.0	9.0-11.0	0.75 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) Min	Not Specified	30 min	Not Specified
Typical Results - As welded	580 (84)	460 (67)	38	51 (38)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)				
	Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29	
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321	
Deposition rate (lbs/hr)	4.25	6.14	8.08		5.34	6.89	8.57	11.43	
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0	

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 308LT1-1/4

AWS E308LT1-1/T1-4 • Stainless Steel

Key Features

- ❖ Designed for all-position welding
- ❖ Carbon content is below .04 % and Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E308LT1-1/T1-4
UNS W30835
ABS Approved

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.5	1.0 max	18.0-21.0	9.0-11.0	0.75 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) min	Not Specified	30 min	Not Specified
Typical Results - As welded	580 (84)	460 (67)	38	61 (45)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂



Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	25	26	28	30	25	27	28	29
Voltage	227	341	445	567	154	193	243	321
Wire Feed speed (in/min)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
Deposition rate (lbs/hr)	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0
% Efficiency								

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 309LT0-1/4

AWS E309LT0-1/T0-4 • Stainless Steel



Key Features

- ◆ Designed for flat and horizontal welding positions
- ◆ For welding dissimilar metals – stainless, mild steel, or low alloy.
- ◆ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E309LT0-1/T0-4
UNS W30935
ABS Approved

Chemical Composition - As required per AWS 5.22.

C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5- 2.5	1.0 max	22.0- 25.0	12.0- 14.0	0.75 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (kSI)	Yield Strength MPa (kSI)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) min	Not Specified	30 min	Not Specified
Typical Results - As welded	580 (84)	450 (65)	37	60 (44)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 309LT1-1/4

AWS E309LT1-1/T1-4 • Stainless Steel

Key Features

- ❖ Designed for all-position welding
- ❖ For welding dissimilar metals – stainless, mild steel, or low alloy.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E309LT1-1/T1-4
UNS W30935
ABS Approved



Chemical Composition - As required per AWS 5.22						
C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.5	1.0 max	22.0-25.0	12.0-14.0	0.75 max	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22				
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) min	Not Specified	30 min	Not Specified
Typical Results - As welded	580 (84)	450 (65)	37	49 (36)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Diameter	Typical Welding Parameters							
	.045 (1.14mm)				1/16" (1.6mm)			
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08	8.08	5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 316LT0-1/4

AWS E316LT0-1/T0-4 • Stainless Steel



Key Features

- ❖ Designed for flat and horizontal welding positions
- ❖ Carbon content is below .04 % and Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E316LT0-1/T0-4
UNS W31635
ABS Approved

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.5	1.0 max	17.0-20.0	11.0-14.0	2.0-3.0	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	485 (70) min	Not Specified	30 min	Not Specified
Typical Results - As welded	560 (84)	460 (67)	38	55 (41)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 316LT1-1/4

AWS E316LT1-1/T1-4 • Stainless Steel

Key Features

- ❖ Designed for all-position welding
- ❖ Carbon content is below .04 % and Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E316LT1-1/T1-4
UNS W31635
ABS Approved

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.5	1.0 max	17.0-20.0	11.0-14.0	2.0-3.0	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	485 (70) min	Not Specified	30 min	Not Specified
Typical Results - As welded	560 (84)	460 (67)	38	55 (41)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂



Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08	8.08	5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 317LT0-1/4

AWS E317LT0-1/TO-4 • Stainless Steel



Key Features

- ❖ Designed for flat and horizontal welding positions
- ❖ Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E317LT0-1/TO-4
UNS W31735

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.5	1.0 max	18.0-21.0	12.0-14.0	3.0-4.0	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (kSI)	Yield Strength MPa (kSI)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) min	Not Specified	20 min	Not Specified
Typical Results - As welded	630 (91)	470 (68)	33	49 (36)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08	8.08	5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 317LT1-1/4

AWS E317LT1-1/T1-4 • Stainless Steel

Key Features

- ❖ Designed for all-position welding
- ❖ Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E317LT1-1/T1-4
UNS W31735



Chemical Composition - As required per AWS 5.22						
C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.5	1.0 max	18.0-21.0	12.0-14.0	3.0-4.0	0.04 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.22				
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) min	Not Specified	20 min	Not Specified
Typical Results - As welded	630 (91)	470 (68)	33	49 (36)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Diameter	Typical Welding Parameters							
	.045 (1.14mm)				1/16" (1.6mm)			
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08	8.08	5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 347T0-1/4

AWS E347T0-1/T0-4 • Stainless Steel



Key Features

- ❖ Designed for flat and horizontal welding positions
- ❖ Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E347T0-1/T0-4
UNS W34731

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Nb+Ta	Mo
0.08 max	0.5-2.5	1.0 max	18.0-21.0	9.0-11.0	8 x C min/ 1.0 max	0.75 max
P	S	Cu				
0.04 max	0.03 max	0.75 max				

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	520 (75) min	Not Specified	30 min	Not Specified
Typical Results - As welded	650 (94)	480 (70)	34	61 (45)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 347T1-1/4

AWS E347T1-1/T1-4 • Stainless Steel

Key Features

- ❖ Designed for all-position welding
- ❖ Provides superior weld performance and enhanced operator appeal.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.22
E347T1-1/T1-4
UNS W34731



Chemical Composition - As required per AWS 5.22						
C	Mn	Si	Cr	Ni	Nb+Ta	Mo
0.08 max	0.5-2.5	1.0 max	18.0-21.0	9.0-11.0	8 x C min / 1.0 max	0.75 max
P	S	Cu				
0.04 max	0.03 max	0.75 max				

Mechanical Properties - As required by AWS 5.22				
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68 °F)
AWS Requirements	520 (75) min	Not Specified	30 min	Not Specified
Typical Results - As welded	650 (94)	480 (70)	34	61 (45)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

	Typical Welding Parameters							
	.045 (1.14mm)				1/16" (1.6mm)			
Diameter								
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 2209T1-1/4 AWS E2209T1-1/T1-4 • Duplex



Key Features

- ❖ Designed for all-position welding
- ❖ Designed for the welding of 22Cr-5Ni-2Mo-0.15N duplex stainless steel (UNS S31803), commonly known as 2205.
- ❖ Also used for welding on stainless structures where a particularly high strength is required.

Conformances

AWS/ASME SFA 5.22
E2209T1-1/T1-4
UNS W39239

Chemical Composition - As required per AWS 5.22

C	Mn	Si	Cr	Ni	Mo	P
0.04 max	0.5-2.0	1.0 max	21.0-24.0	7.5-10.0	2.5-4.0	0.04 max
S	Cu	N				
0.03 max	0.75 max	0.08-0.20				

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ 20 °C (68°F)
AWS Requirements	690 (100) min	Not Specified	20 min	Not Specified
Typical Results - As welded	820 (119)	685 (99)	27	60 (44)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	Amperage	130	165	190	220	170	210	250
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08		5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 2594T1-1/4

AWS E2594T1-1/T1-4 • Super Duplex

Key Features

- ❖ Designed for all-position welding
- ❖ The sum of the Cr + 3.3 (Mo + 0.5W) + 16N, known as the Pitting Resistance Equivalent Number (PREN), is at least 40.
- ❖ Designed for the welding of super duplex stainless steels UNS S32750 and S32760 (wrought) and for UNS J93380 and J93404 (cast).

Conformances

AWS/ASME SFA 5.22
E2594T1-1/T1-4
UNS W39594

Chemical Composition - As required per AWS 5.22

C	Mn	Si	P	N	W	Cr
0.04 max	0.5 - 2.5	1.0 max	0.04 max	0.20-0.30	1.0 max	24.0-27.0
Ni	Mo	S	Cu			
8.0-10.5	2.5-4.5	0.03 max	1.5 max			

Mechanical Properties - As required by AWS 5.22

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -40 °C (-40 °F)
AWS Requirements	760 (110) min	Not Specified	15 min	Not Specified
Typical Results - As welded	870 (126)	680 (99)	25	37 (27)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂



Typical Welding Parameters

Diameter	.045 (1.14mm)				1/16" (1.6mm)			
	130	165	190	220	170	210	250	300
Amperage	130	165	190	220	170	210	250	300
Voltage	25	26	28	30	25	27	28	29
Wire Feed speed (in/min)	227	341	445	567	154	193	243	321
Deposition rate (lbs/hr)	4.25	6.14	8.08	8.08	5.34	6.89	8.57	11.43
% Efficiency	84.0	83.0	84.0	84.0	83.0	82.5	83.0	83.0

The ESO (Electrical Stick Out) is 1/2" - 1". DCEP (electrode positive) is specified. When using 75% Argon / 25% CO₂ mixture, decrease voltage by as much as 2 volts.

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 81T1-B2

AWS E81T1-B2 • Chrome Moly



Key Features

- ❖ Designed for all-position welding
- ❖ For welding 1-14 % Cr 1/2% Mo steels.
- ❖ The weld metal analysis is similar to an E8018-B2 electrode.
- ❖ Hermetically sealed packaging to ensure freshness.

Conformances

AWS/ASME SFA 5.29
E81T1-B2
UNS W52031

Chemical Composition - As required per AWS 5.29

C	Mn	Si	P	S	Cr	Mo
0.05-0.12	1.25 max	0.80 max	0.03 max	0.03 max	1.00-1.50	0.40-0.65

Mechanical Properties - As required by AWS 5.29

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	PWHT (Stress Relieved)
AWS Requirements	550 - 690 (80-100)	470 (68) min	19 min	1 Hr @ 690+/-15°C (1275+/- 25°F)
Typical Results - As welded	600 (87)	530 (77)	25	

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter		Process	Flat		Vertical-Up		Overhead	
in	(mm)		Volt	Amps	Volt	Amps	Volt	Amps
.035	(1.9)	FCAW	20-30	130-250	16-23	90-180	20-28	130-240
.045	(1.14)	FCAW	23-30	150-280	22-26	150-250	24-29	150-250
1/16	(1.6)	FCAW	25-34	180-400	21-27	180-300	24-30	180-310

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.035	12	33 lb spool	0.9	300	15 kg spool
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

FLUX CORED

Oxford Alloy® 91T1-B3

AWS E91T1-B3 • Chrome Moly

Key Features

- ❖ Designed for all-position welding
- ❖ For welding 2-1/4 % Cr 1% Mo steels.
- ❖ The weld metal analysis is similar to an E9018-B3 electrode.
- ❖ Designed for single or multiple pass welding.

Conformances

AWS/ASME SFA 5.29
E91T1-B3
UNS W53031

Chemical Composition - As required per AWS 5.29

C	Mn	Si	P	S	Cr	Mo
0.05-0.12	1.25 max	0.80 max	0.03 max	0.03 max	2.00-2.50	0.90-1.20

Mechanical Properties - As required by AWS 5.29

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	PWHT (Stress Relieved)
AWS Requirements	620 - 760 (90-110)	540 (78) min	17 min	1 Hr @ 690+/-15°C (1275+/- 25°F)
Typical Results - As welded	680 (99)	630 (91)	24	

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂



Typical Welding Parameters

Diameter		Process	Flat		Vertical-Up		Overhead	
in	(mm)		Volt	Amps	Volt	Amps	Volt	Amps
.035	(1.9)	FCAW	20-30	130-250	16-23	90-180	20-28	130-240
.045	(1.14)	FCAW	23-30	150-280	22-26	150-250	24-29	150-250
1/16	(1.6)	FCAW	25-34	180-400	21-27	180-300	24-30	180-310

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.035	12	33 lb spool	0.9	300	15 kg spool
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] 71T-1M

AWS E71T-1/1M • Mild Steel



Key Features

- ◆ Designed for all-position welding
- ◆ Produces fillet welds with little spatter. Cleaning time is reduced because the slag cover is complete and can be easily removed.
- ◆ Designed for welding mild and medium-carbon steels.

Conformances

AWS ASME SFA 5.20
E71T-1/1M
UNS W07601
ABS Approved

Chemical Composition - As required per AWS 5.20

C	Mn	Si	P	S	Cr	Ni
0.12 max	1.75 max	0.90 max	0.03 max	0.03 max	0.20 max	0.50 max
Mo	V	Al	Cu			
0.30 max	0.08 max	-	0.35 max			

Mechanical Properties - As required by AWS 5.20

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -18 °C (0°F)
AWS Requirements	(70-95)	(58) min	22 min	27 (20) min
Typical Results - As welded	520 (76)	500 (73)	28	65-120 (48-89)

Recommended Shielding Gas

100% CO₂
75% Argon / 25% CO₂

Typical Welding Parameters

Diameter		Process	Flat		Vertical-Up		Overhead	
in	(mm)		Volt	Amps	Volt	Amps	Volt	Amps
.035	(1.9)	FCAW	20-30	130-250	16-23	90-180	20-28	130-240
.045	(1.14)	FCAW	23-30	150-280	22-26	150-250	24-29	150-250
1/16	(1.6)	FCAW	25-34	180-400	21-27	180-300	24-30	180-310

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Spool Dimension (in)	Spool Weight (lbs)	Diameter (mm)	Spool Dimension (mm)	Spool Weight (kgs)
.035	12	33 lb spool	0.9	300	15 kg spool
.045	12	33 lb spool	1.2	300	15 kg spool
1/16	12	33 lb spool	1.6	300	15 kg spool

Actual test results may vary. Refer test result disclaimer on page 160.



Nickel Alloys

Oxford Alloy 60
Oxford Alloy 82
Oxford Alloy 625

Duplex & Super Duplex

Oxford Alloy 2209
Oxford Alloy 2594

Stainless Steel

Oxford Alloy 308/308H
Oxford Alloy 308/308L
Oxford Alloy 309/309L
Oxford Alloy 309LMO
Oxford Alloy 316/316L
Oxford Alloy 317L
Oxford Alloy 347

Chrome Moly

Oxford Alloy EB2
Oxford Alloy EB3
Oxford Alloy EB6
Oxford Alloy EB8

Flux

Oxford Alloy NI-Flux
Oxford Alloy OXF300 Flux

SAW & FLUX

SAW & FLUX

Oxford Alloy® 60

AWS ERNiCu-7 • Nickel Alloys

Key Features

- ❖ Dissimilar welding applications include joining alloys to Nickel 200 and copper-nickel alloys.
- ❖ Widely used in marine applications because of its good resistance to the corrosive effects of seawater and brackish waters.

Conformances

AWS/ASME SFA 5.14
ERNiCu-7
UNS N04060

Chemical Composition - As required per AWS 5.14						
Ni	C	Mn	Fe	Si	Cu	Al
62.0-69.0	0.15 max	4.0 max	2.5 max	1.25 max	Bal	1.25 max
Ti	P	S	OET			
1.5-3.0	0.02 max	0.015 max	0.50 max			

Mechanical Properties - As required by AWS 5.14			
	Tensile Strength MPa (kst)	Yield Strength MPa (kst)	Elongation %
AWS Requirements	480 (70) typical	Not Specified	Not Specified
Typical Results - As welded	530 (77)	360 (53)	34



Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	Suitable Flux
1/8	3.2	SAW	29-32	350-450	NiCrW

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 82

AWS ERNiCr-3 • Nickel Alloys



Key Features

- ❖ For welding of base materials such as ASTM B163, B166, B167 and B168 – alloys which have UNS Number N06600.
- ❖ Suitable for applications ranging from cryogenic to high temperatures making this alloy one of the most used in the nickel family.
- ❖ Also be used for dissimilar welding applications between various nickel alloys and stainless or carbon steels, as well as for overlay.

Conformances

AWS/ASME SFA 5.14
ERNiCr-3
UNS N06082

Chemical Composition - As required per AWS 5.14

Ni	C	Mn	Fe	S	Si	Cr
67.0 min	0.10 max	2.5-3.5	3.0 max	0.015 max	0.50 max	18.0-22.0
Ti	P	Nb+Ta	Cu	OET		
0.75 max	0.03 max	2.0-3.0	0.50 max	0.50 max		

Mechanical Properties - As required by AWS 5.14

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	550 (80) typical	Not Specified	Not Specified
Typical Results - As welded	460 (67)	260 (38)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	Suitable Flux
1/8	3.2	SAW	29-32	350-450	NiCrW

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

SAW & FLUX

Oxford Alloy® 625

AWS ERNiCrMo-3 • Nickel Alloys

Key Features

- ❖ Contains low iron (Fe less than 1%) and is used for welding of nickel-chromium-molybdenum alloys.
- ❖ Also for cladding and welding dissimilar base metals such as Ni-Cr-Mo alloys to stainless and carbon steels.
- ❖ The Ni-Cr-Mo alloy system provides excellent resistance to oxidizing and reducing environments. The high molybdenum content provides good stress, pitting and crevice corrosion resistance.

Conformances

AWS/ASME SFA 5.14
ERNiCrMo-3
UNS N06625
ABS Approved



Chemical Composition - As required per AWS 5.14						
Ni	C	Mn	Fe	S	Si	P
58.0 min	0.10 max	0.50 max	5.0 max	0.015 max	0.50 max	0.02 max
Cr	Al	Nb+Ta	Mo	Ti	Cu	OET
20.0-23.0	0.40 max	3.15-4.15	8.0-10.0	0.40 max	0.50 max	0.50 max

Mechanical Properties - As required by AWS 5.14			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	760 (110) typical	Not Specified	Not Specified
Typical Results - As welded	790 (115)	590 (85)	35

Typical Welding Parameters					
Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	NiCrW
1/8	3.2	SAW	29-32	350-450	Ni-Flux

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 308/308H

AWS ER308/308H • Stainless Steel



Key Features

- ❖ Used to weld unstabilized austenitic stainless steels such as 302, 304H and 305.
- ❖ Provides a high carbon deposit (minimum of .04% carbon) for high temperature applications.

Conformances

AWS/ASME SFA 5.9
ER308/308H
UNS S30880

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	S	P
0.04-0.08	1.0-2.5	0.30-0.65	19.5-22.0	9.0-11.0	0.03 max	0.03 max
Mo	Cu					
0.50 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	600 (87)	410 (59)	41

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	OXF 300
1/8	3.2	SAW	29-32	350-450	OXF 300

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

SAW & FLUX

Oxford Alloy® 308/308L

AWS ER308/308L • Stainless Steel

Key Features

- ❖ Weld deposit with reduced carbon levels (0.04% max) that offers increased resistance to inter-granular corrosion.
- ❖ Type 308L is ideal for welding Type 304L stainless steels.

Conformances

AWS/ASME SFA 5.9
ER308/308L
UNS S30883

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	S	P
0.03 max	1.0-2.5	0.30-0.65	19.5-22.0	9.0-11.0	0.03 max	0.03 max
Mo	Cu					
0.75 max	0.75 max					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	580 (84)	400 (58)	42



Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	OXF 300
1/8	3.2	SAW	29-32	350-450	OXF 300

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 309/309L

AWS ER309/309L • Stainless Steel



Key Features

- ❖ Reduced carbon levels (0.04% max) that offers increased resistance to inter-granular corrosion.
- ❖ Type 309/309L is ideal for joining stainless steels to themselves or to carbon or low alloy steels.
- ❖ Can be used at temperatures of up to 700°F (371°C).

Conformances

AWS/ASME SFA 5.9
ER309/309L
UNS S30983

Chemical Composition - As required per AWS 5.9

C	Cr	Ni	Mo	Mn	Si	P
0.03 max	23.0-25.0	12.0-14.0	0.75 max	1.0-2.5	0.30-0.65	0.03 max
S	Cu					
0.03 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	590 (86)	400 (58)	40

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	OXF 300
1/8	3.2	SAW	29-32	350-450	OXF 300

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 309LMo

ER309LMo • Stainless Steel

Key Features

- Similar to 309 with the exception for the addition of 2.0 - 3.0% molybdenum to increase its pitting corrosion resistance in halide-containing environments.
- Primary application for this filler metal is surfacing of base metals to improve their resistance to corrosion. The 309LMo is used to achieve a single-layer overlay with a chemical composition similar to that of a 316L stainless steel.
- Also used for the first layer of a multilayer overlays with filler metals such as 316L or 317L stainless steel.

Conformances

BS EN ISO 14343:2009 23 12 2L

Chemical Composition - As per typical heat						
C	Si	Cr	Ni	Mo	Mn	S
0.03 max	1.00 max	21.0-25.0	11.0-15.5	2.0-3.5	1.0-2.5	0.02 max
P	Cu	OET				
0.03 max	0.50 max	0.50 max				

Mechanical Properties - As per typical heat			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	620 (90)	440 (64)	42



Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	OXF 300
1/8	3.2	SAW	29-32	350-450	OXF 300

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 316/316L

AWS ER316/316L • Stainless Steel



Key Features

- ❖ For welding 316L base metals.
- ❖ The 2-3% molybdenum in the electrode improves pitting corrosion resistance of the weld deposit.
- ❖ Low carbon content reduces the possibility of carbide precipitation and intergranular corrosion.

Conformances

AWS/ASME SFA 5.9
ER316/316L
UNS S31683

Chemical Composition - As required per AWS 5.9

C	Mn	Si	Cr	Ni	Mo	S
0.03 max	1.0-2.5	0.30-0.65	18.0-20.0	11.0-14.0	2.0-3.0	0.03 max
P	Cu					
0.30 max	0.75 max					

Mechanical Properties - As required by AWS 5.9

	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	550 (80)	380 (55)	40

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	OXF 300
1/8	3.2	SAW	29-32	350-450	OXF 300

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

SAW & FLUX

Oxford Alloy® 317L

AWS ER317L • Stainless Steel

Key Features

- ❖ Weld deposit similar to 316L with a higher molybdenum content.
- ❖ Used for welding alloys with similar compositions used in highly corrosive environments.

Conformances

AWS/ASME SFA 5.9

ER317L

UNS S31783



Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	S	P
0.03 max	1.0-2.5	0.30-0.65	18.5-20.5	13.0-15.0	0.03 max	0.03 max
Cu	Mo					
0.75 max	3.0-4.0					

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	570 (83)	410 (60)	42

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	OXF 300
1/8	3.2	SAW	29-32	350-450	OXF 300

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 347

AWS ER347 • Stainless Steel



Key Features

- ❖ Niobium stabilized stainless steel used for the welding of types 347 and 321 stainless and stainless clad steels.
- ❖ The addition of niobium reduces intergranular corrosion in severe operating conditions.

Conformances

AWS/ASME SFA 5.9
ER347
UNS S34780

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	Mo	S
0.08 max	1.0-2.5	0.30-0.65	19.0-21.5	9.0-11.0	0.75 max	0.03 max
P	Cu	Nb+Ta				
0.03 max	0.75 max	10 X C min / 1.0 max				

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	620 (90)	450 (65)	41

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	OXF 300
1/8	3.2	SAW	29-32	350-450	OXF 300

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

SAW & FLUX

Oxford Alloy® 2209

AWS ER2209 • Duplex

Key Features

- ❖ Used to weld duplex stainless steels such as (Type 2205).
- ❖ The welds offer excellent resistance to stress corrosion, cracking and pitting. The microstructure of the weld metal consists of austenite and ferrite.
- ❖ Welding of duplex stainless steels calls for controlled welding parameters to achieve specified mechanical and corrosion resistant properties.

Conformances

AWS/ASME SFA 5.9
ER2209
UNS S39209

Chemical Composition - As required per AWS 5.9						
C	Mn	Si	Cr	Ni	Mo	S
0.03 max	0.50-2.0	0.90 max	21.5-23.5	7.5-9.5	2.5-3.5	0.03 max
P	Cu	N				
0.03 max	0.75 max	0.08-0.20				

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	720 (104)	560 (81)	26



Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	Suitable Flux
1/8	3.2	SAW	29-32	350-450	Suitable Flux

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® 2594

AWS ER2594 • Super Duplex



Key Features

- ❖ Super-duplex grade that provides matching chemistry and mechanical property characteristics to wrought super-duplex alloys such as 2507 and Zeron 100, as well as to super-duplex casting alloys (ATSM A890).
- ❖ Over-alloyed 2-3% in nickel to provide the optimum ferrite/austenite ratio in the finished weld. This structure results in high tensile and yield strengths and superior resistance to stress corrosion cracking (SCC) and pitting corrosion.

Conformances

AWS/ASME SFA 5.9
ER2594
UNS S32750

Chemical Composition - As required per AWS 5.9						
C	Cr	Ni	Mo	Mn	Si	P
0.03 max	24.0-27.0	8.0-10.5	2.5-4.5	2.5 max	1.0 max	0.03 max
S	N	Cu	W			
0.02 max	0.20-0.30	1.5 max	1.0 max			

Mechanical Properties - As required by AWS 5.9			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
AWS Requirements	Not Specified		
Typical Results - As welded	650 (94)	850 (123)	28

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-30	275-350	Suitable Flux
1/8	3.2	SAW	29-32	350-450	Suitable Flux

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

SAW & FLUX

Oxford Alloy® EB2

AWS EB2 • Chrome Moly

Key Features

- ❖ A 1-1/4 Cr / .5 Mo wire for submerged arc welding applications of steels with similar chemical composition.
- ❖ A preheat and interpass temperature of not less than 300°F should be maintained during welding.
- ❖ Sometimes referred to as 515.

Conformances

AWS/ASME SFA 5.23
EB2
UNS K11172

Chemical Composition - As per AWS 5.23

C	Mn	Si	Cr	Mo	S	P
0.07-0.15	0.45-1.00	0.05-0.30	1.00-1.75	0.45-0.65	0.025 max	0.025 max
Cu						
0.35 max						

Mechanical Properties

- As per typical heat with suitable flux

	Tensile Strength MPa (ksti)	Yield Strength MPa (ksti)	Elongation %
Typical Results - As welded	580 (85)	490 (71)	22



Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-32	250-400	Suitable Flux
1/8	3.2	SAW	30-34	400-600	Suitable Flux

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

SAW & FLUX

Oxford Alloy® EB3

AWS EB3 • Chrome Moly



Key Features

- ❖ A 2-1/2 Cr / 1 Mo wire for submerged arc welding applications of steels with similar chemical composition.
- ❖ A preheat and interpass temperature of not less than 350°F should be maintained during welding.
- ❖ Sometimes referred to as 521.

Conformances

AWS/ASME SFA 5.23
EB3
UNS K31115

Chemical Composition - As per AWS 5.23						
C	Mn	Si	Cr	Mo	P	S
0.05-0.15	0.40-0.80	0.05-0.30	2.25-3.0	0.90-1.10	0.025 max	0.025 max
Cu						
0.35 max						

Mechanical Properties			
- As per typical heat with suitable flux			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
Typical Results - As welded	650 (95)	560 (81)	19

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-32	250-400	Suitable Flux
1/8	3.2	SAW	30-34	400-600	Suitable Flux

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

SAW & FLUX

Oxford Alloy® EB6

AWS EB6 • Chrome Moly

Key Features

- ❖ Designed for submerged arc welding applications of materials of similar composition, for high temperature service conditions.
- ❖ This is an air-hardening material and as such calls for preheat and interpass temperatures of 350°F minimum during welding.
- ❖ Sometimes referred to as 502.

Conformances

AWS/ASME SFA 5.23

EB6

UNS S50280



Chemical Composition – As per AWS 5.23						
C	Mn	Si	Cr	Mo	P	S
0.10 max	0.35-0.70	0.05-0.50	4.50-6.50	0.45-0.70	0.025 max	0.025 max
Cu						
0.35 max						

Mechanical Properties			
- As per typical heat with suitable flux			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
Typical Results - As welded	540 (79)	420 (61)	32

Typical Welding Parameters					
Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-32	250-400	Suitable Flux
1/8	3.2	SAW	30-34	400-600	Suitable Flux

Diameters & Packaging					
Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® EB8

AWS EB8 • Chrome Moly



Key Features

- ❖ Designed for submerged arc welding applications of materials of similar composition.
- ❖ This alloy, being an air-hardening type, calls for preheat and interpass temperatures of not less than 350°F during welding.
- ❖ Sometimes referred to as 505.

Conformances

AWS/ASME SFA 5.23
EB8
UNS S50480

Chemical Composition - As per AWS 5.23						
C	Mn	Si	Cr	Mo	P	S
0.10 max	0.30- 0.65	0.05- 0.50	8.0- 10.50	0.80- 1.20	0.025 max	0.025 max
Cu						
0.35 max						

Mechanical Properties			
- As per typical heat with suitable flux			
	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
Typical Results - As welded	550 (79)	430 (63)	30

Typical Welding Parameters

Diameter		Process	Volt	Amps	SAW Flux
in	(mm)				
3/32	2.4	SAW	28-32	250-400	Suitable Flux
1/8	3.2	SAW	30-34	400-600	Suitable Flux

Diameters & Packaging

Oxford Alloys USA			Oxford Alloys Asia Pacific		
Diameter (in)	Form	Packaging (lbs)	Diameter (mm)	Form	Packaging (kgs)
3/32	SAW	60 lb Coil 1800 lb pallet	2.4	SAW	25 kg Coil 750 kg pallet
1/8	SAW	60 lb Coil 1800 lb pallet	3.2	SAW	25 kg Coil 750 kg pallet

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy[®] NI-Flux

Flux

Key Features

- ❖ Fused submerged Arc welding flux designed for wire welding with corrosion resistant nickel-chromium-molybdenum alloys such as Alloy 625 (ERNiCrMo-3) and Alloy C-276 (ERNiCrMo-4)
- ❖ Often used for groove welding of 9% nickel steels in the production of LNG storage tanks.
- ❖ Can also be used for groove and overlay welding using austenitic stainless steels and low alloy chromium-molybdenum alloys.

Characteristics

Bulk Density 1.5 kg / dm³
 Basicity Index 1.3 (Boniszewski)
 Particle size 1-20 (EN760) 10 x 150 (Tyler Mesh)

Conformances

EN 760
 SF CS 2 DC
 SF CS 1 63 DC

Application

Flux for groove and overlay welding with the following SAW wires:

ERNiCrMo-3 ERNiCrMo-4
 EB2 EB3 EB6 EB8



Deposit Chemical Composition

- Typical with combination of listed SAW wire

SAW Wire	C	Si	Mn	Cr	Ni	Mo
ERNiCrMo-3	0.04	0.60	0.50	20.0-22.5	58.0	8.0-10.0
ERNiCrMo-4	0.03	0.40	1.00	14.5-16.0	50.0	15.0-17.0

Mechanical Properties

- Typical with combination of listed SAW wire

SAW Wire	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
ERNiCrMo-3	740 (107)	440 (64)	30
ERNiCrMo-4	700 (102)	400 (58)	35

Typical Welding Parameters

Groove and overlay welding using DCEP current and stringer beads

Diameter	Amperage	Voltage	Travel Speed	Extension	Flux Depth
3/32" (2.4mm)	250-300	30-33	8-11 inch/min	7/8-1 inch	3/4-1 inch
			200-280 mm/min	22-25 mm	19-25 mm

Overlay welding with Oscillation using DCEN current and Oscillation frequency of 35-60 cycles/min.

3/32" (2.4mm)	300-400	34-37	4 inch/min	7/8-1 inch	3/4-1 1/4 inch
			100 mm/min	22-25 mm	19-32 mm

Diameters & Packaging

Oxford Alloys USA		Oxford Alloys Asia Pacific	
Form	Packaging (lbs)	Form	Packaging (kgs)
FLUX	44 lb Polyethylene Bags	FLUX	20 kg Polyethylene Bags

Flux Care: See page 157 for important information on flux storage and handling

Actual test results may vary. Refer test result disclaimer on page 160.

Oxford Alloy® OXF300 Flux

Flux



Key Features

- ❖ Designed for welding mild and medium-carbon steels.
- ❖ Basic non-alloyed agglomerated flux.
- ❖ General purpose flux designed for butt welding with standard Cr-Ni and Cr-Ni-Mo fillers
- ❖ Also be used for cladding unalloyed or low-alloy steel.
- ❖ Provides neat weld surfaces, very good welding properties and easy slag removal.

Characteristics

Bulk Density 1.1 kg / dm
 Basicity index 2.7 (Boniszewski)
 Flux consumption 0.5 kg flux / kg wire (26V)

Conformance

EN ISO 14174
 EN 760
 SA FB 2 64 DC

Application

Flux for welding with stainless steel subarc arc wire including the following grades:

ER308L ER309L ER309LMO ER316L
 ER317L ER347 ER2209 ER2594

Deposit Chemical Composition

- typical with combination of listed SAW wire

SAW WIRE	C	Cr	Ni	Mn	Si	Mo
308L	0.02	19.5	10.0	1.2	0.6	
316L	0.02	18.5	12.0	1.2	0.6	2.6

Mechanical Properties

- Typical with combination of listed SAW wire

SAW Wire	Tensile Strength MPa (ksi)	Yield Strength MPa (ksi)	Elongation %
ER308L	550 (80)	380 (55)	40
ER316L	540 (78)	380 (55)	40

Typical Welding Parameters

Diameter	Amperage	Voltage	Speed (Cm/Min)
3/32" (2.4mm)	300 - 400	29 - 33	40 - 60
1/8" (3.2mm)	350 - 500	29 - 33	40 - 60
5/32" (4.0mm)	400 - 600	30 - 36	40 - 60

Diameters & Packaging

Oxford Alloys USA		Oxford Alloys Asia Pacific	
Form	Packaging (lbs)	Form	Packaging (kgs)
FLUX	50 lb Buckets	FLUX	25 kg Buckets

Flux Care: See page 157 for important information on flux storage and handling

Actual test results may vary. Refer test result disclaimer on page 160.



Product Cross
Reference

Safety
Guidelines

Storage &
Handling

Metric-Imperial
Conversions

Welding Term
Conversions

Disclaimer

REFERENCE

PRODUCT CROSS REFERENCE

Oxford Alloys Designation	AWS Specification	AWS Classification	EN/ISO Standard	EN/ISO Classification	UNS No.	Page No.
COATED ELECTRODES						
Nickel Alloys						
Oxford Alloy A	5.11	ENiCrFe-2	14172	ENi6092 (ENiCr16Fe9NbMo)	W86133	10
Oxford Alloy C-276	5.11	ENiCrMo-4	14172	ENi6276 (ENiCr15Mo15Fe6W)	W80276	11
Oxford Alloy 55	5.15	ENiFe-Cl	1071	E C NiFe-Cl	W82002	12
Oxford Alloy 59	5.11	ENiCrMo-13	14172	ENi6059 (ENiCr23Mo16)	W86059	13
Oxford Alloy 99	5.15	ENi-Cl	1071	E C Ni-Cl	W82001	14
Oxford Alloy 112	5.11	ENiCrMo-3	14172	ENi6625 (ENiCr22Mo9Nb)	W86112	15
Oxford Alloy 117	5.11	ENiCrCoMo-1	14172	ENi6617 (ENiCr22Co12Mo)	W86117	16
Oxford Alloy 122	5.11	ENiCrMo-10	14172	ENi6022 (ENiCr21Mo13W3)	W86022	17
Oxford Alloy 141	5.11	ENi-1	14172	ENi2061 (ENiTi-3)	W82141	18
Oxford Alloy 182	5.11	ENiCrFe-3	14172	ENi6182 (ENiCr15Fe6Mn)	W86182	19
Oxford Alloy 187	5.6	ECuNi	N/A	N/A	W60715	20
Oxford Alloy 190	5.11	ENiCu-7	14172	ENi4060 (ENiCu30Mn3Ti)	W84190	21
Stainless Steel						
Oxford Alloy 308/308H-16	5.4	E308/308H-16	3581A	E19 9 H	W30810	22
Oxford Alloy 308/308L-16	5.4	E308/308L-16	3581A	E19 9 L	W30813	23
Oxford Alloy 309/309H-16	5.4	E309/309H-16	3581A	E23 12 H	W30910	24
Oxford Alloy 309/309L-16	5.4	E309/309L-16	3581A	E23 12 L	W30913	25
Oxford Alloy 309LMo-16	5.4	E309LMo-16	3581A	E23 12 2 L	W30923	26
Oxford Alloy 310-16	5.4	E310-16	3581A	E25 20	W31010	27
Oxford Alloy 312-16	5.4	E312-16	3581A	E29 9	W31310	28
Oxford Alloy 316/316H-16	5.4	E316/316H-16	3581A	E19 12 2	W31610	29
Oxford Alloy 316/316L-16	5.4	E316/316L-16	3581A	E19 12 3 L	W31613	30
Oxford Alloy 317L-16	5.4	E317L-16	3581A	E19 13 4 N L	W31713	31
Oxford Alloy 320LR-16	5.4	E320LR-16	3581B	ES320LR	W88022	32
Oxford Alloy 330-16	5.4	E330-16	3581A	E18 36	W88331	33
Oxford Alloy 347-16	5.4	E347-16	3581A	E19 9 Nb	W34710	34
Oxford Alloy 385-16	5.4	E385-16	3581A	E20 25 5 Cu N L	W88904	35
Oxford Alloy 410-16	5.4	E410-16	3581A	E13	W41010	36
Oxford Alloy 410NiMo-16	5.4	E410NiMo-16	3581A	E13 4	W41016	37
Oxford Alloy 630-16	5.4	E630-16	3581B	ES630	W37410	38
Duplex & Super Duplex						
Oxford Alloy 2209-16	5.4	E2209-16	3581A	E22 9 3 N L	W39209	39
Oxford Alloy 2594-16	5.4	E2594-16	3581A	E25 9 4 N L	W39594	40
Chrome Moly						
Oxford Alloy 8018-B2	5.5	E8018-B2	3580A	ECrMo1x	W52018	41
Oxford Alloy 8018-B6	5.5	E8018-B6	3580A	ECrMo5x	W50218	42
Oxford Alloy 8018-B8	5.5	E8018-B8	3580A	ECrMo9x	W50418	43
Oxford Alloy 9015-B9	5.5	E9015-B9	3580A	ECrMo91x	W50425	44
Oxford Alloy 9018-B3	5.5	E9018-B3	3580A	ECrMo2x	W53018	45
Mild Steel						
Oxford Alloy 7018	5.1	E7018	2560A	E42 3 B 32	W07018	46
Oxford Alloy 7018-A1	5.5	E7018-A1	3580A	EMo x	W17018	47

PRODUCT CROSS REFERENCE

Oxford Alloys Designation	AWS Specification	AWS Classification	EN/ISO Standard	EN/ISO Classification	UNS No.	Page No.
MIG & TIG						
Nickel Alloys						
Oxford Alloy C-276	5.14	ERNiCrMo-4	18274	SNi6276 (NiCr15Mo16Fe6W4)	N10276	50
Oxford Alloy 59	5.14	ERNiCrMo-13	18274	SNi16059 (NiCr23Mo16)	N06059	51
Oxford Alloy 60	5.14	ERNiCu-7	18274	SNi4060 (NiCu30Mn3Ti)	N04060	52
Oxford Alloy 61	5.14	ERNi-1	18274	SNi2061 (NiTi3)	N02061	53
Oxford Alloy 67	5.7	ERCuNi	N550	SCu7158 (CuNi30)	C71581	54
Oxford Alloy 82	5.14	ERNiCr-3	18274	SNi6082 (NiCr20Mn3Nb)	N06082	55
Oxford Alloy 617	5.14	ERNiCrCoMo-1	18274	SNi6617 (NiCr22Co12Mo9)	N06617	56
Oxford Alloy 622	5.14	ERNiCrMo-10	18274	SNi6022 (NiCr21Mo13Fe4W3)	N06022	57
Oxford Alloy 625	5.14	ERNiCrMo-3	18274	SNi6625 (NiCr22Mo9Nb)	N06625	58
Oxford Alloy 718	5.14	ERNiFeCr-2	18274	SNi7718 (NiFe19Cr19Nb5Mo3)	N07718	59
Oxford Alloy 825	5.14	ERNiFeCr-1	18274	SNi8065 (NiFe30Cr21Mo3)	N08065	60
Stainless Steel						
Oxford Alloy 308/308H	5.9	ER308/308H	14343A	19 9 H	S30880	61
Oxford Alloy 308/308L	5.9	ER308/308L	14343A	19 9 L	E30883	62
Oxford Alloy 308LSi	5.9	ER308LSi	14343A	19 9 LSi	S30888	63
Oxford Alloy 309/309L	5.9	ER309/309L	14343A	23 12 L	S30983	64
Oxford Alloy 309LSi	5.9	ER309LSi	14343A	23 12 LSi	S30988	65
Oxford Alloy 309LMo	N/A	N/A	14343A	23 12 2 L	N/A	66
Oxford Alloy 310	5.9	ER310	14343A	25 20	S31080	67
Oxford Alloy 312	5.9	ER312	14343A	29 9	S31380	68
Oxford Alloy 316/316H	5.9	ER316/316H	14343A	19 12 3 H	S31680	69
Oxford Alloy 316/316L	5.9	ER316/316L	14343A	19 12 3 L	S31683	70
Oxford Alloy 316LSi	5.9	ER316LSi	14343A	19 12 3 LSi	S31688	71
Oxford Alloy 317L	5.9	ER317L	14343A	19 13 4 L	S31783	72
Oxford Alloy 320LR	5.9	ER320LR	14343B	SS320LR	N08022	73
Oxford Alloy 330	5.9	ER330	14343A	18 36 H	N08331	74
Oxford Alloy 347	5.9	ER347	14343A	19 9 Nb	S34780	75
Oxford Alloy 385	5.9	ER385	14343A	20 25 5 CuL	N08904	76
Oxford Alloy 410	5.9	ER410	14343A	13	S41080	77
Oxford Alloy 410NiMo	5.9	ER410NiMo	14343A	13 4	S41086	78
Oxford Alloy 420	5.9	ER420	14343B	SS420	S42080	79
Oxford Alloy 630	5.9	ER630	14343B	SS630	S17480	80
Oxford Alloy 16-8-2	5.9	ER16-8-2	14343A	16 8 2	S16880	81
Duplex & Super Duplex						
Oxford Alloy 2209	5.9	ER2209	13434A	22 9 3 N L	S39209	82
Oxford Alloy 2594	5.9	ER2594	13434A	25 9 4 N L	S32750	83
Chrome Moly						
Oxford Alloy 80S-B2	5.28	ER80S-B2	12070	GCrMo1Si	K20900	84
Oxford Alloy 80S-B6	5.28	ER80S-B6	12070	GCrMo5	S50280	85
Oxford Alloy 80S-B8	5.28	ER80S-B8	12070	GCrMo9Si	S50480	86
Oxford Alloy 90S-B3	5.28	ER90S-B3	12070	GCrMo2Si	K30960	87
Oxford Alloy 90S-B9	5.28	ER90S-B9	12070	GCrMo91	S50482	88

PRODUCT CROSS REFERENCE

Oxford Alloys Designation	AWS Specification	AWS Classification	EN/ISO Standard	EN/ISO Classification	UNS No.	Page No.
Mild Steel						
Oxford Alloy 70S-2	5.18	ER70S-2	CD636B	SW2	K10726	89
Oxford Alloy 70S-3	5.18	ER70S-3	CD636B	SW3	K11022	90
Oxford Alloy 70S-6	5.18	ER70S-6	CD636B	SW6	K11140	91
Oxford Alloy 80S-D2	5.28	ER80S-D2	14341A	G4Mo	K10945	92
Oxford Alloy 80S-Ni1	5.28	ER80S-Ni1	14341B	SGN2	K11260	93
Oxford Alloy 80S-Ni2	5.28	ER80S-Ni2	14341B	SGN5	K21240	94
Aluminum						
Oxford Alloy 4043	5.10	ER4043	18273	Al4043 (AlSi5)	A94043	95
Oxford Alloy 5183	5.10	ER5183	18273	Al5183 (AlMg4.5MnO.7-A)	A95183	96
Oxford Alloy 5356	5.10	ER5356	18273	Al5356 (AlMg5Cr-A)	A95356	97
Titanium & Zirconium						
Oxford Alloy Ti-1	5.16	ERTi-1	N/A	STi 0100 (Ti99,8)	R50100	98
Oxford Alloy Ti-2	5.16	ERTi-2	N/A	STi 0120 (Ti99,6)	R50120	99
Oxford Alloy Ti-5	5.16	ERTi-5	N/A	STi 6400 (TiAl6V4)	R56400	100
Oxford Alloy Ti-7	5.16	ERTi-7	N/A	STi 2401 (TiPdO,2A)	R52401	101
Oxford Alloy Zr-2	5.24	ERZr-2	N/A	N/A	R60702	102
Bronze Alloys						
Oxford Alloy Alum Bronze A-2	5.7	ERCuAl-A2	N550	SCu 6180 (CuAl10)	C61800	103
Oxford Alloy Deox Copper	5.7	ERCu	N550	SCu 1898 (CuSn1)	C18980	104
Oxford Alloy Low Fuming Bronze	5.8	RBCuZn-C	N550	SCu 6810 (CuZn40SnSi)	C68100	105
Oxford Alloy Silicon Bronze	5.7	ERCuSi-A	N550	SCu 6560 (CuSi3Mn1)	C65600	106

PRODUCT CROSS REFERENCE

Oxford Alloys Designation	AWS Specification	AWS Classification	EN/ISO Standard	EN/ISO Classification	UNS No.	Page No.
FLUX CORED						
Nickel Alloys						
Oxford Alloy 82T-1	5.34	ENiCr3Ti-1/T1-4	N/A	TNi 6082-xy	W86082	108
Oxford Alloy 625T-1	5.34	ENiCrMo3Ti-1/T1-4	N/A	TNi 6625-xy	W86625	109
Stainless Steel						
Oxford Alloy 308HT1-1/4	5.22	E308HT1-1/T1-4	17633A	T 19 9 H P C(M)	W30831	110
Oxford Alloy 308LT0-1/4	5.22	E308LT0-1/T0-4	17633A	T 19 9 L R C(M)	W30835	111
Oxford Alloy 308LT1-1/4	5.22	E308LT1-1/T1-4	17633A	T 19 9 L P C(M)	W30835	112
Oxford Alloy 309LT0-1/4	5.22	E309LT0-1/T0-4	17633A	T23 12 L R C(M)	W30935	113
Oxford Alloy 309LT1-1/4	5.22	E309LT1-1/T1-4	17633A	T23 12 L P C(M)	W30935	114
Oxford Alloy 316LT0-1/4	5.22	E316LT0-1/T0-4	17633A	T19 12 3L R C(M)	W31635	115
Oxford Alloy 316LT1-1/4	5.22	E316LT1-1/T1-4	17633A	T19 12 3L P C(M)	W31635	116
Oxford Alloy 317LT0-1/4	5.22	E317LT0-1/T0-4	17633A	T19 13 4 L R C(M)	W31735	117
Oxford Alloy 317LT1-1/4	5.22	E317LT1-1/T1-4	17633A	T19 13 4 L P C(M)	W31735	118
Oxford Alloy 347T0-1/4	5.22	E347T0-1/T0-4	17633A	T19 9Nb R C(M)	W34731	119
Oxford Alloy 347T1-1/4	5.22	E347T1-1/T1-4	17633A	T19 9Nb P C(M)	W34731	120
Duplex & Super Duplex						
Oxford Alloy 2209T1-1/4	5.22	E2209T1-1/T1-4	17633A	T22 9 3 NL P C(M)	W39239	121
Oxford Alloy 2594T1-1/4	5.22	E2594T1-1/T1-4	17633A	T25 9 4 NL P C(M)	W39594	122
Chrome Moly						
Oxford Alloy 81T1-B2	5.29	E81T1-B2	17634A	TCrMo1 P C(M)	W52031	123
Oxford Alloy 91T1-B3	5.29	E91T1-B3	17634A	TCrMo2 P C(M)	W53031	124
Mild Steel						
Oxford Alloy 71T-1M	5.20	E71T-1/1M	17632A	T46 2 P C(M)	W07601	125

PRODUCT CROSS REFERENCE

Oxford Alloys Designation	AWS Specification	AWS Classification	EN/ISO Standard	EN/ISO Classification	UNS No.	Page No.
SAW & FLUX						
Nickel Alloys						
Oxford Alloy 60	5.14	ERNiCu-7	18274	SNi4060 (NiCu30Mn3Ti)	N04060	128
Oxford Alloy 82	5.14	ERNiCr-3	18274	SNi6082 (NiCr20Mn3Nb)	N06082	129
Oxford Alloy 625	5.14	ERNiCrMo-3	18274	SNi6625 (NiCr22Mo9Nb)	N06625	130
Stainless Steel						
Oxford Alloy 308/308H	5.9	ER308/308H	14343A	19 9 H	S30880	131
Oxford Alloy 308/308L	5.9	ER308/308L	14343A	19 9 L	E30883	132
Oxford Alloy 309/309L	5.9	ER309/309L	14343A	23 12 L	S30983	133
Oxford Alloy 309LMo	N/A	N/A	14343A	23 12 2 L	N/A	134
Oxford Alloy 316/316L	5.9	ER316/316L	14343A	19 12 3 L	S31683	135
Oxford Alloy 317L	5.9	ER317L	14343A	19 13 4 L	S31783	136
Oxford Alloy 347	5.9	ER347	14343A	19 9 Nb	S34780	137
Duplex & Super Duplex						
Oxford Alloy 2209	5.9	ER2209	14343A	22 9 3 N L	S39209	138
Oxford Alloy 2594	5.9	ER2594	14343A	25 9 4 N L	S32750	139
Chrome Moly						
Oxford Alloy EB2	5.23	EB2	ENi2070	SCrMo1	K11172	140
Oxford Alloy EB3	5.23	EB3	ENi2070	SCrMo2	K31115	141
Oxford Alloy EB6	5.23	EB6	ENi2070	SCrMo5	S50280	142
Oxford Alloy EB8	5.23	EB8	ENi2070	SCrMo9	S50480	143
Flux						
Oxford Alloy Ni-Flux	N/A	N/A	EN 760	SF CS 2 DC	N/A	144
Oxford Alloy OXF300 Flux	N/A	N/A	EN 760	SA FB 2 64 DC	N/A	145

⚠ WARNING



FUMES & GASES can be dangerous to your health

- Keep fumes and gases from your breathing zone and general area.
- Keep your head out of the fumes.
- Use enough ventilation or exhaust at the arc, or both, to keep fumes and gases from your breathing zone and general area.

Fumes and Gases

Because of the variables involved in fume and gas generation from arc welding, cutting and allied processes (such as the welding process and electrode, the base metal, coatings on the base metal, and other possible contaminants in the air), we'll have to treat the subject in a rather general way, lumping all but the more hazardous situations together. The precautions we describe will hold true for all arc welding processes.

The fume plume contains solid particles from the consumables, base metal, and base metal coating. For common mild steel arc welding, depending on the amount and length of exposure to these fumes, most immediate or short term effects are temporary, and include symptoms of burning eyes and skin, dizziness, nausea, and fever. For example, zinc fumes can cause metal fume fever, a temporary illness that is similar to the flu.

Long-term exposure to welding fumes can lead to siderosis (iron deposits in the lungs) and may affect pulmonary function. Bronchitis and some lung fibrosis have been reported.

Some consumables contain certain compounds in amounts which may require special ventilation and/or exhaust. These Special Ventilation products can be identified by reading the labels on the package. If Special Ventilation products are used indoors, use local exhaust. If Special Ventilation products are used outdoors, a respirator may be required. Various compounds, some of which may be in welding fume, and reported health effects, in summary, are:

Barium: Soluble barium compounds may cause severe stomach pain, slow pulse rate, irregular heart beat, ringing of the ears, convulsions and muscle spasms. In extreme cases can cause death.

Cadmium also requires extra precautions. This toxic metal can be found on some steel and steel fasteners as a plating, or in silver solder. Cadmium fumes can be fatal even under brief overexposures, with symptoms much like those of metal fume fever. These two conditions should not be confused. Overexposure to cadmium can be enough to cause fatalities, with symptoms appearing quickly, and, in some circumstances, death a few days later.

Chromium: Chromium is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists chromium as posing a carcinogenic risk to humans. Fumes from the use of stainless steel, hardfacing and other types of consumables contain chromium and/ or nickel. Some forms of these metals are known or suspected to cause lung cancer in processes other than welding and asthma has been reported. Therefore, it is recommended that precautions be taken to keep exposures as low as possible. OSHA recently adopted a lower PEL (Permissible Exposure Limit) for chromium (see Supplement 3). The use of local exhaust and/or an approved respirator may be required to avoid overexposure.

Coatings on the metal to be welded, such as paint, may also contain toxic substances, such as lead, chromium and zinc. In general, it is always best to remove coatings from the base metal before welding or cutting.

Cobalt: Exposure to cobalt can cause respiratory disease and pulmonary sensitization. Cobalt in metallic form has been reported to cause lung damage.

Copper: Prolonged exposure to copper fume may cause skin irritation or discoloration of the skin and hair.

Manganese: Manganese overexposure may affect the central nervous system, resulting in poor coordination, difficulty in speaking, and tremor of arms or legs. This condition is considered irreversible.

Nickel: Nickel and its compounds are on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a carcinogenic risk to humans.

Silica: Crystalline silica is present in respirable dust form submerged arc flux. Overexposure can cause severe lung damage (silicosis).

Zinc: Overexposure to zinc (from galvanized metals) may cause metal fume fever with symptoms similar to the common flu.

SAFETY GUIDELINES

The gases that result from an arc welding process also present potential hazard. Most of the shielding gases (argon, helium, and carbon dioxide) are non-toxic, but, as they are released, they displace oxygen in your breathing air, causing dizziness, unconsciousness, and death, the longer your brain is denied the oxygen it needs. Carbon monoxide can also be developed and may pose a hazard if excessive levels are present.

The heat and UV radiation can cause irritation to the eyes and lungs. Some degreasing compounds such as trichlorethylene and perchlorethylene can decompose from the heat and ultraviolet radiation of an arc. Because of the chemical breakdown of vapor-degreasing materials under ultraviolet radiation, arc welding should not be done in the vicinity of a vapor-degreasing operation. Carbon-arc welding, gas tungsten-arc welding and gas metal arc welding should be especially avoided in such areas, because they emit more ultraviolet radiation than other processes. Also, keep in mind that ozone and nitrogen oxides are formed when UV radiation passes through the air. These gases cause headaches, chest pains, irritation of the eyes, and an itchiness in the nose and throat.

There is one easy way to reduce the risk of exposure to hazardous fumes and gases: keep your head out of the fume plume! As obvious as this sounds, the failure to follow this advice is a common cause of fume and gas overexposure because the concentration of fume and gases is greatest in the plume. Keep fumes and gases from your breathing zone and general area using natural ventilation, mechanical ventilation, fixed or moveable exhaust hoods or local exhaust at the arc. Finally, it may be necessary to wear an approved respirator if adequate ventilation cannot be provided.

As a rule of thumb, for many mild steel electrode, if the air is visibly clear and you are comfortable, then the ventilation is generally adequate for your work. The most accurate way to determine if the worker exposure does not exceed the applicable exposure limit for compounds in the fumes and gases is to have an industrial hygienist take and analyze a sample of the air you are breathing. This is particularly important if you are welding with stainless, hardfacing or Special Ventilation products. All Oxford Alloys SDS have a maximum fume guideline number. If exposure to total fume is kept below that number, exposure to all fume from the electrode (not coatings or plating on the work) will be below the TLV.

There are also steps that you can take to identify hazardous substances in your welding environment. First, read the product label and safety data sheet for the electrode posted in the work place or in the electrode or flux container to see what fumes can be reasonably expected from use of the product and to determine if

special ventilation is needed. Secondly, know what the base metal is, and determine if there is any paint, plating, or coating that could expose you to toxic fumes and/or gases. Remove it from the metal being welded, if possible. If you start to feel uncomfortable, dizzy or nauseous, there is a possibility that you are being overexposed to fumes and gases, or suffering from oxygen deficiency. Stop welding and get some fresh air immediately. Notify your supervisor and co-workers so the situation can be corrected and other workers can avoid the hazard. Be sure you are following these safe practices, the consumable labeling and SDS and improve the ventilation in your area. Do not continue welding until the situation has been corrected.

NOTE: The SDS for all Oxford Alloys consumables is available on Oxford Alloys' website:
www.oxfordalloys.com

Before we turn to the methods available to control welding fume exposure, you should understand a few basic terms:

Natural Ventilation is the movement of air through the workplace caused by natural forces. Outside, this is usually the wind. Inside, this may be the flow of air through open windows and doors.

Mechanical Ventilation is the movement of air through the workplace caused by an electrical device such as a portable fan or permanently mounted fan in the ceiling or wall.

Source Extraction (Local Exhaust) is a mechanical device used to capture welding fume at or near the arc and filter contaminants out of the air.

The ventilation or exhaust needed for your application depends upon many factors such as:

- Workspace volume
- Workspace configuration
- Number of welders
- Welding process and current
- Consumables used (mild steel, hardfacing, stainless, etc.)
- Allowable levels (TLV, PEL, etc.)
- Material welded (including paint or plating)
- Natural airflow

Your work area has adequate ventilation when there is enough ventilation and/or exhaust to control worker exposure to hazardous materials in the welding fumes and gases so the applicable limits for those materials is not exceeded. See the SDS for the legal limits, the OSHA PEL (Permissible Exposure Limit), and the recommended guideline, the ACGIH TLV (Threshold Limit Value), for many compounds found in welding fume.

Ventilation

There are many methods which can be selected by the user to provide adequate ventilation for the specific application. The following section provides general information which may be helpful in evaluating what type of ventilation equipment may be suitable for your application. When ventilation equipment is installed, you should confirm worker exposure is controlled within applicable OSHA PEL and/or ACGIH TLV. According to OSHA regulations, when welding and cutting (mild steels), natural ventilation is usually considered sufficient to meet requirements, provided that:

1. The room or welding area contains at least 10,000 cubic feet (about 22 in x 22 in x 22 in) for each welder.
2. The ceiling height is not less than 16 feet.
3. Cross ventilation is not blocked by partitions, equipment, or other structural barriers.
4. Welding is not done in a confined space.

Spaces that do not meet these requirements should be equipped with mechanical ventilating equipment that exhausts at least 2000 CFM of air for each welder, except where local exhaust hoods or booths, or air-line respirators are used.

Important Safety Note:

When welding with electrodes which require special ventilation such as stainless or hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce hazardous fumes, keep exposure as low as possible and below exposure limit values (PEL and TLV) for materials in the fume using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, for example outdoors, a respirator may be required if exposure cannot be controlled to the PEL or TLV. (See SDS) Additional precautions are also required when welding on galvanized steel.

Electric Shock Can Kill You

Do not touch live electrical parts. To avoid electric shock, follow the recommended practices listed below. Faulty installation, improper grounding, and incorrect operation and maintenance of electrical equipment can be sources of danger.

1. Ground all electrical equipment and the work piece. Prevent accidental electrical shocks. Connect power supply, control cabinets, and work piece, to an approved electrical ground. The work lead is not a ground lead. It is used to complete the welding circuit. A separate connection is required to ground the work, or the work lead terminal on the power supply may be connected to ground. Do not mistake the work lead for a ground connection.
2. Use the correct cable size. Sustained over-loading will cause cable failure and result in possible electrical shock or fire hazard. Work cable should be the same rating as the torch cable.
3. Make sure all electrical connections are tight, clean and dry. Poor electrical connections can become over heated and even melt. They can also cause poor welds and produce dangerous arcs and sparks. Do not allow water, grease or dirt to accumulate on plugs, sockets or electrical units.
4. Moisture and water can conduct electricity. To prevent shock, it is advisable to keep work areas, equipment and clothing dry at all times. Fix water leaks immediately. Make sure that you are well insulated. Wear dry gloves, rubber-soled shoes, or stand on a dry board or platform.
5. Keep cables and connectors in good condition. Improper or worn electrical connections can cause short circuits and can increase the chance of an electrical shock. Do not use worn, damaged or bare cables.
6. Avoid open-circuit voltage. Open circuit voltage can cause electric shock. When several welders are working with arcs of different polarities or when using multiple alternating current machines, the open-circuit voltages can be additive. The added voltages increase the severity of the shock hazard.
7. Wear insulated gloves when adjusting equipment. Power should be shut off and insulated gloves should be worn when making any equipment adjustment to assure shock protection.
8. Follow recognized safety standards. Follow the recommendations in American National Standard Z49.1, Safety in Welding and Cutting, available from the American Welding Society, 550 N. W. LeJeune Road, Miami, FL 33126, and also the National Electrical Code, NFPA No. 70, which is available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.
9. Cylinders must be kept out of the welding circuit to prevent arc burns on the cylinder.

STORAGE & HANDLING

Coated Electrodes

STORING COATED ELECTRODES

Oxford Alloy® coated electrodes may be stored for several years in their original hermetically sealed packaging provided the packages remain unopened and are stored in a dry area at room temperature (72°F; 22°C) minimum. Once the container is opened and electrodes used for a time period less than several hours, the container should be stored in a dry rod oven maintained at a temperature range of 300°F to 400°F (150-205°C). Once left out of a controlled environment, the electrode flux may absorb moisture at an uneven rate, leading to finger nailing or uneven burn-off of the electrode during use. Reconditioning will restore optimal welding characteristics to the electrodes.

RECONDITIONING OF COATED ELECTRODES

Condition	Pre-drying Temperature ⁽¹⁾	Final Re-drying Temperature
Electrodes exposed to air for less than one week; no direct contact with water.	-	370° - 430°C (700° - 800°F)
Electrodes which have come in direct contact with water or which have been exposed to high humidity.	80 - 105°C (180° - 220°F)	370° - 430°C (700° - 800°F)

⁽¹⁾Pre-dry for 1-2 hours.

MIG & TIG

STORING MIG & TIG

Oxford Alloy® bare wire for GMAW process is packed by sealing in plastic bags then boxed. Bare wires for GTAW process are packed in sealed tubes, and then boxed. The packaged wire should be stored in a dry area at room temperature (72°F; 22°C) minimum. If TIG & MIG filler metals are stored in their original packaging with no breach of the protection, the storage time may be several years.

Note: If the above conditions are not met, the storage time is reduced to no more than 6 months.

Handling of Wires out of the Package

The following minimum precautions should be taken to safeguard the wire after opening the original package:

1. It is recommended to use wires within one week of opening the original package.
2. Open wires should not be exposed to damp moisture conditions or extremes in temperature and/or humidity where surface condensation can occur.
3. When not in use, wires should be placed in original packaging and sealed as best as possible.

Special Precautions for copper coated MIG & TIG

It is advisable to dispose of any wire that has visible signs of rust on the wire where the package integrity has been compromised. When proper storage procedures are not followed, consumables may show signs of high moisture. High moisture can result in rough bead surface or slag that is unusually difficult to remove. In addition, it can also result in visible and/or internal porosity in the weld deposit, increase spatter, and decreased puddle control which can increase chances of slag entrapment. Oxidation (rust) of either the surface of the wire or internal fluxing agents increases the oxygen content of the wire that can lead to changes in alloy recovery. This, in turn, can deteriorate the mechanical properties of the weld metal.

Flux core wire

STORING FLUX CORE WIRE

Flux core wire should be stored in the original, unopened packaging until ready to use. To maintain the integrity of these products, flux core wire must be protected from the atmosphere. All flux cored wire, regardless of package, should be protected from condensation, including rain or snow. To ensure that condensation does not form on the product, it is recommended that the electrode be stored in an environment that is kept above the dew point temperature for a given relative humidity. Minimizing temperature variation will also help to protect the electrode from moisture condensation. It is advisable to maintain turnover in inventory to ensure the product is as close to the manufactured condition as possible.

As a general rule maximum storage time for welding consumables is estimated to be 3 years. This estimate is for material in the original, undamaged packages that is stored indoors at up to ~70% relative humidity and that are protected from the weather or other adverse conditions. Packages should be stored under conditions that minimize the likelihood of temperature variations that cause moisture condensation on the consumables.

These estimates are based on what we know about the packaging materials and the frequency of product improvements. Since actual storage conditions vary widely across geographical regions and from one customer to another, it is not possible to be more specific. For packages that are not hermetically sealed, a shorter storage time is advisable under sustained severe humidity conditions but is not possible to estimate. Note that product stored for longer than 3 years, may still be suitable for use. It depends on the product and the condition it is in.

SAW Wire and Flux

STORAGE FOR SUBMERGED ARC FLUX

Flux Package Type ⁽¹⁾	Flux Storage Conditions for General Welding Applications
Plastic or Multi-Wall Plastic/Paper Bag	Store indoors at < 90% RH. Protect from condensation
Bulk Bag with Liner	Store indoors at < 90% RH. Protect from condensation
Steel Drum	Protect from rain or snow
Plastic Pail	Protect from rain or snow

STORAGE FOR SUBARC WIRES

Wire Package Type ⁽¹⁾	Wire Storage Conditions for All Welding Applications
Any Type	Protect from rain or snow. Protect from condensation. Do not use wire with visible signs of rust.

⁽¹⁾For other package types, consult your Technical Representative.

Re-Drying & Recycling Flux

Oxford Alloys submerged arc welding flux can be used directly from its original, undamaged package, if it has been stored according to the conditions listed in the chart above.

When proper procedures are not followed, flux may show signs of moisture. These can include porosity, a rough bead surface or slag that is unusually difficult to remove. In many instances these fluxes can be re-dried in general welding applications.

Re-Drying Flux

To re-dry fluxes

- Remove flux from its original packaging and place in a clean oven set between 260°-480°C (500°-900°F).
- Leave in oven long enough to raise the temperature of the entire bulk of flux to your set temperature for a minimum of one hour.
- For ovens in which heating rods are inserted into the flux, do not let the temperature of flux adjacent to the rods exceed 480°C (900°F).

Recycling Flux

Non-consumed flux may be collected from the finished weld and recycled. To do so, please follow these procedures:

- Remove slag, metal, mill scale, and any other contaminants from the flux.
- Prevent damage to the flux from heavy impingement in flux transport systems.
- Avoid the separation of different sized particles in cyclones or "dead" corners.
- Remove excess fines from recycled fluxes.
- For optimal welding characteristics, it is recommended to add at least 20% new flux by weight to recycled flux.

METRIC-IMPERIAL CONVERSIONS

IF YOU HAVE	MULTIPLY BY	TO CONVERT TO
U.S. Units		Metric Equivalents
Inches	25.4	Millimeters
Inches	2.54	Centimeters
Feet	30.48	Centimeters
Feet	0.3048	Meters
Yards	0.9144	Meters
Square Inches	6.4516	Square Centimeters
Square Feet	0.0929	Square Meters
Square Yards	0.8361	Square Meters
Acres	0.4047	Hectares
Cubic Inches	16.387	Cubic Centimeters
Cubic Feet	0.0283	Cubic Meters
Cubic Feet	28.316	Liters
Cubic Yards	0.7646	Cubic Meters
Cubic Yards	764.55	Liters
To convert readings in degrees Fahrenheit (°F) to degrees Celsius (°C), subtract 32, then multiply by 5/19		

IF YOU HAVE	MULTIPLY BY	TO CONVERT TO
Metric Units		U.S. Equivalents
Millimeters	0.0394	Inches
Centimeters	0.3937	Inches
Centimeters	0.0328	Feet
Meters	3.2808	Feet
Meters	1.0936	Yards
Square Centimeters	0.1550	Square Inches
Square Meters	10.764	Square Feet
Square Meters	1.1960	Square Yards
Hectares	2.4711	Acres
Cubic Centimeters	0.0610	Cubic Inches
Cubic Meters	35.315	Cubic Feet
Liters	0.0353	Cubic Feet
Cubic Meters	1.308	Cubic Yards
Liters	0.0013	Cubic Yards
To convert readings in degrees Celsius (°C) to degrees Fahrenheit (°F), multiply by 9/5, then add 32		

WELDING TERM CONVERSIONS

PROPERTY	TO CONVERT	FROM TO	MULTIPLY BY
area dimensions (mm ²)	in. ²	mm ²	6.451 600x 10 ²
	mm ²	in. ²	1.550 003 x 10 ⁻³
current density	A/in. ²	A/mm ²	1.550 003 x 10 ⁻³
	A/mm ²	A/in. ²	6.451 600 x 10 ²
deposition rate (approximate conversion)	lb/h	kg/h	0.45
electrode force	pound-force	N	4.448 222
	kilogram-force	N	9.806 650
	N	lbf	2.248 089 x 10 ⁻¹
flow rate (L/min)	ft ³ /h	L/min	4.719 475 x 10 ⁻¹
	gallon per hour	L/min	6.309 020 x 10 ⁻²
	gallon per minute	L/min	3.785 412
	L/min	ft ³ /h	2.118 880
heat input	J/in.	J/m	3.937 008 x 10
	J/m	J/in.	2.540 000 x 10 ⁻²
impact energy	foot pound force	J	1.355 818
linear measurements	in.	mm	2.540 000 x 10
	ft	mm	3.048 000 x 10 ²
	mm	in.	3.937 008 x 10 ⁻²
	mm	ft	3.280 840 x 10 ⁻³
power density	W/in. ²	W/m ²	1.550 003 x 10 ³
pressure (gas and liquid)	W/mm ²	W/m ²	6.451 600 x 10 ⁻⁴
	psi	Pa	6.894 757 x 10 ⁻³
	lb/ft ²	Pa	4.788 026 x 10
	N/mm ²	Pa	1.000 000 x 10 ⁶
	kPa	psi	1.450 377 x 10 ⁻¹
	kPa	lb/ft ²	2.088 543 x 10
	kPa	N/mm ²	1.000 000 x 10 ⁻³
	torr (mm Hg at 0°C)	kPa	1.333 22 x 10 ⁻¹
	Micron (µm Hg at 0°C)	kPa	1.333 22 x 10 ⁻⁴
	kPa	torr	7.500 64 x 10
tensile strength (MPa)	psi	kPa	6.894 757
	lb/ft ²	kPa	4.788 026 x 10 ⁻²
	N/mm ²	MPa	1.000 000
	MPa	psi	1.450 377 x 10 ²
	MPa	lb/ft ²	2.088 543 x 10 ⁴
	MPa	N/mm ²	1.000 000
thermal conductivity (W/(m · K))	Cal/(cm · s · °C)	W/(m · K)	4.184 000 x 10 ²
travel speed, wire feed speed (mm/s)	in./mm	mm/s	4.233 333 x 10 ⁻¹
	mm/s	in./min	2.362 205

DISCLAIMER

Test Results

Test results for mechanical properties, deposit or electrode composition were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

Customer Assistance Policy

Oxford Alloys supplies high quality welding consumables. Our goal is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Oxford Alloys for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Oxford Alloys does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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Important Information On Our Website

Actual Product Test Certificates:

www.oxfordalloys.com/content.aspx?file=customerpages/mtrsearch.htm

Safety Data Sheets (SDS):

www.oxfordalloys.com/content.aspx?file=customerpages/downloads.htm

ANSI Z49.1, E205 Safety in Welding:

www.oxfordalloys.com/contentonly.aspx?file=pdf/AWS%20Z49%201%20SAFETY%20IN%20WELDING.pdf

Terms of Sale:

www.oxfordalloys.com/content.aspx?file=customerpages/terms.htm#terms



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