



#### **Nickel Alloys**

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Oxford Alloy 59  
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#### **Stainless Steel**

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Oxford Alloy 9015-B9  
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#### **Mild Steel**

Oxford Alloy 7018  
Oxford Alloy 7018-A1

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## 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<sup>®</sup> 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.

# COATED ELECTRODES

## 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.