

AFM E308-16

AWS/SFA A5.4

AFM E308-16 is used for welding austenitic stainless of 18/8 types such as AISI 201, 202, 204, 301, 302, 304, 305, and 308.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.08	Si	0.90
Cr	18.0-21.0	P	0.04
Ni	9.0-11.0	S	0.03
Mo	0.75	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	80,000
MPa	550
Elongation, (%)	35

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E308H-16

AWS/SFA A5.4

AFM E308H-16 is the same as **AFM E308-16** except that the allowable carbon content has been restricted to the higher portion of the E308 range. Carbon content in the range of 0.04 – 0.08 provides higher tensile and creep strengths at elevated temperatures. **AFM E308H-16** is used for welding Type 304H base metal.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04-0.08	Si	0.90
Cr	18.0-21.0	P	0.04
Ni	9.0-11.0	S	0.03
Mo	0.75	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	80,000
MPa	550
Elongation, (%)	35

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E308L-16

AWS/SFA A5.4

AFM E308L-16 has the same composition of the weld metal of **AFM E308-16**, except for the restricted carbon content. The 0.04 percent maximum carbon content of weld metal deposited by **AFM E308L-16** reduces the possibility of intergranular carbide precipitation and thereby increases the resistance to intergranular corrosion without the use of stabilizers such as columbium (niobium) or titanium. A carbon content of 0.04 percent maximum has been shown to be adequate in weld metal, even though it is recognized that similar base metal specifications require a 0.03 percent limitation. This low carbon alloy, however, is not as strong at elevated temperature as the columbium-stabilized alloys or 304H.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04	Si	0.90
Cr	18.0-21.0	P	0.04
Ni	9.0-11.0	S	0.03
Mo	0.75	Cu	0.75
Mn	0.5-2.5		

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	35

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E309-16

AWS/SFA A5.4

AFM E309-16 is commonly used for welding similar alloys in wrought or cast form. It is used for welding dissimilar metals, such as joining Type 304 to carbon steel, welding the clad side of Type 304 clad steels, and applying stainless steel sheet linings to carbon steel shells. Occasionally, **AFM E309-16** is used to weld Type 304 and similar base metals where severe corrosion conditions exist requiring higher alloy weld metal.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.15	Si	0.90
Cr	22.0-25.0	P	0.04
Ni	12.0-14.0	S	0.03
Mo	0.75	Cu	0.75
Mn	0.5-2.5		

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	80,000
MPa	550
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E309L-16

AWS/SFA A5.4

AFM E309L-16 has the same composition of weld metal deposited by **AFM E309-16** electrodes, except for the restricted carbon content. The 0.04 percent maximum carbon content of these weld deposits reduces the possibility of intergranular carbide precipitation and thereby increases the resistance to intergranular corrosion without the use of stabilizers such as columbium (niobium) and titanium. **AFM E309L-16** is not as strong at elevated temperature as the columbium-stabilized alloys or high carbon content **AFM E309-16** deposits.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04	Si	0.90
Cr	22.0-25.0	P	0.04
Ni	12.0-14.0	S	0.03
Mo	0.75	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E309Cb-16

AWS/SFA A5.4

AFM E309Cb-16 has the same composition of weld metal deposited by **AFM E309-16**, except for the addition of columbium (niobium) and a reduction in the carbon limit. The columbium (niobium) provides resistance to carbide precipitation and thus increases intergranular corrosion resistance and also provides higher strength in elevated temperature service. **AFM E309Cb-16** electrodes are used also for welding Type 347 clad steels or for the overlay of carbon steel.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.12	Mn	0.5-2.5
Cr	22.0-25.0	Si	0.90
Ni	12.0-14.0	P	0.04
Mo	0.75	S	0.03
Cb+Ta	0.70-1.00	Cu	0.75

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	80,000
MPa	550
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E309Mo-16

AWS/SFA A5.4

AFM E309Mo-16 has the same composition of weld metal deposited by AFM E309-16, except for the addition of molybdenum and a small reduction in the carbon limit. It is used for welding Type 316 clad steels or for the overlay of carbon steels.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.12	Si	0.90
Cr	22.0-25.0	P	0.04
Ni	12.0-14.0	S	0.03
Mo	2.0-3.0	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	80,000
MPa	550
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E309MoL-16

AWS/SFA A5.4

AFM E309MoL-16 has the same composition of weld metal deposited by AFM E309Mo-16, except for the restricted carbon content. The lower carbon content of the weld metal reduces the possibility of intergranular corrosion.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04	Si	0.90
Cr	22.0-25.0	P	0.04
Ni	12.0-14.0	S	0.03
Mo	2.0-3.0	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E310-16

AWS/SFA A5.4

AFM E310-16 is used for welding type 310 stainless steel. The weld deposit exhibits the same chemical analysis and oxidation resistance as the base plate metal.

Chemical Composition Requirements for Undiluted Weld Metal:

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

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	80,000
MPa	550
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E312-16

AWS/SFA A5.4

AFM E312-16 was originally designed to weld cast alloys of similar composition. They have been found to be valuable in welding dissimilar metals, high in nickel. **AFM E312-16** gives a two-phase weld deposit with substantial amounts of ferrite in an austenitic matrix. Even with considerable dilution by austenite-forming elements, such as nickel, the microstructure remains two-phase and thus highly resistant to weld metal cracks and fissures. Applications should be limited to service temperature below 800°F (420°C) to avoid formation of secondary brittle phases.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.15	Si	0.90
Cr	28.0-32.0	P	0.04
Ni	8.0-10.5	S	0.03
Mo	0.75	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	95,000
MPa	660
Elongation, (%)	22

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E316-16

AWS/SFA A5.4

AFM E316-16 is used for welding Type 316 and similar alloys. They have been used successfully in certain applications involving special base metals for high-temperature service. The presence of molybdenum provides creep resistance at elevated temperatures.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.08	Si	0.90
Cr	17.0-20.0	P	0.04
Ni	11.0-14.0	S	0.03
Mo	2.0-3.0	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E316H-16

AWS/SFA A5.4

AFM E316H-16 is used for welding 316H base metal. It is the same as AFM E316-16 except that the allowable carbon content has been restricted to the higher portion of the E316 range. Carbon content in the range of 0.04 to 0.08 provides higher tensile and creep strengths at elevated temperatures.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04-0.08	Si	0.90
Cr	17.0-20.0	P	0.04
Ni	11.0-14.0	S	0.03
Mo	2.0-3.0	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E316L-16

AWS/SFA A5.4

AFM E316L-16 has the same composition as **AFM E316-16**, except for the restricted carbon content. The 0.04 percent maximum carbon content of weld metal deposited by these electrodes reduces the possibility of intergranular carbide precipitation and thereby increases the resistance to intergranular corrosion without the use of stabilizers such as columbium (niobium) or titanium. **AFM E316L-16** is used principally for welding low carbon, molybdenum-bearing austenitic alloys. Tests have shown that 0.04 percent carbon limit in the weld metal gives adequate protection against intergranular corrosion in most cases. **AFM E316L-16**, however, is not as strong at elevated temperatures as Type 316H.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04	Si	0.90
Cr	17.0-20.0	P	0.04
Ni	11.0-14.0	S	0.03
Mo	2.0-3.0	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	70,000
MPa	490
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E317L-16

AWS/SFA A5.4

AFM E317L-16 is usually used for welding alloys of similar composition and are utilized in severely corrosive environments (such as those containing halogens) where crevice and pitting corrosion are of concern. The 0.04 percent maximum carbon content of weld metal deposited by these electrodes reduces the possibility of intergranular carbide precipitation and thereby increases the resistance to intergranular corrosion without the use of stabilizers such as columbium (niobium) or titanium. **AFM E317L-16**, however, is not as strong at elevated temperatures as the columbium (niobium)-stabilized alloys or the standard Type 317 weld metal with a higher carbon content.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04	Si	0.90
Cr	18.0-21.0	P	0.04
Ni	12.0-14.0	S	0.03
Mo	3.0-4.0	Cu	0.75
Mn	0.5-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E320-16

AWS/SFA A5.4

AFM E320-16 is primarily used to weld base metals of similar composition, such as alloy 20, for applications where resistance to severe corrosion is required for a wide range of chemicals including sulfuric and sulfurous acids and their salts. They can be used to weld both castings and wrought alloys of similar composition without postweld heat treatment.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.07	Mn	0.5-2.5
Cr	19.0-21.0	Si	0.60
Ni	32.0-36.0	P	0.04
Mo	2.0-3.0	S	0.03
Cb (Nb) plus Ta	8 X C, min to 1.00 max	Cu	3.0-4.0

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Requirements (min.):	Mechanical	Property
Tensile Strength, psi		80,000
	MPa	550
Elongation, (%)		30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E320LR-16

(Low Residuals)

AWS/SFA A5.4

AFM E320LR-16 weld metal deposits have the same basic composition as that deposited by **AFM E320-16**; however, the elements of C, Si, P, and S are specified at lower maximum levels, and Cb (Nb) and Mn are controlled within narrower ranges. These changes reduce the weld metal fissuring (while maintaining the corrosion resistance) frequently encountered in fully austenitic stainless steel weld metals. Consequently, welding practices typically used to deposit ferrite-containing austenitic stainless steel weld metals can be used. **AFM E320LR-16** has a lower minimum tensile strength than **AFM E320-16**.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.03	Mn	1.50-2.50
Cr	19.0-21.0	Si	0.30
Ni	32.0-36.0	P	0.020
Mo	2.0-3.0	S	0.015
Cb (Nb) plus Ta	8 X C, min to 0.40 max	Cu	3.0-4.0

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Requirements (min.):	Mechanical	Property
Tensile Strength, psi		75,000
	MPa	520
Elongation, (%)		30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E330-16

AWS/SFA A5.4

The nominal composition of the weld metal is 35 Ni, 15.5 Cr. **AFM E330-16** is commonly used where heat-and scale-resisting properties above 1800°F (980°C) are required. However, high-sulfur environments may adversely effect performance at elevated temperature. Repairs of defects in alloy castings and the welding of castings and wrought alloys of alloy 330 are the most common applications.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.18-0.25	Si	0.90
Cr	14.0-17.0	P	0.04
Ni	33.0-37.0	S	0.03
Mo	0.75	Cu	0.75
Mn	1.0-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	25

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E330H-16

AWS/SFA A5.4

The composition of this weld metal is the same as that deposited by **AFM E330-16**, except that carbon ranges from 0.35 to 0.45 percent. **AFM E330H-16** is primarily for the welding and repairing of high alloy heat and corrosion resistant castings of the same general composition which are designated HT by the Alloy Castings Institute. This composition can be used to 2100°F (1150°C) in oxidizing atmospheres and at 2000°F (1090°C) in reducing atmospheres. However, high-sulfur environments may adversely affect performance at elevated temperature.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.35-0.45	Si	0.90
Cr	14.0-17.0	P	0.04
Ni	33.0-37.0	S	0.03
Mo	0.75	Cu	0.75
Mn	1.0-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	90,000
MPa	620
Elongation, (%)	10

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E347-16

AWS/SFA A5.4

The nominal composition of this weld metal is 19.5 Cr, 10 Ni with Cb (Nb) or Cb (Nb) plus Ta added as a stabilizer. Either of these additions reduces the possibility of intergranular chromium carbide precipitation and thus increases resistance to intergranular corrosion. **AFM E347-16** is usually used for welding alloys 347 and 321. It is commonly used where maximum resistance to corrosion is required.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.08	Mn	0.5-2.5
Cr	18.0-21.0	Si	0.90
Ni	9.0-11.0	P	0.04
Mo	0.75	S	0.03
Cb (Nb)	8 X C, min	Cu	0.75
plus Ta	to 1.00 max		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E385-16

AWS/SFA A5.4

AFM E385-16 is used primarily for welding Type 904L materials for the handling of sulphuric acid and many chloride-containing media. **AFM E385-16** also may be used to join Type 317L material where improved corrosion resistance in specific media is needed. It can also be used for joining Type 904L base metal to other grades of stainless. The elements C, Si, P and S are specified at lower maximum levels to minimize weld metal hot cracking and fissuring (while maintaining corrosion resistance) frequently encountered in fully austenitic weld metals.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.03	Si	0.75
Cr	19.5-21.5	P	0.03
Ni	24.0-26.0	S	0.02
Mo	4.2-5.2	Cu	1.2-2.0
Mn	1.0-2.5		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	520
Elongation, (%)	30

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	70-110	100-140	130-180

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E410-16

AWS/SFA A5.4

This 12 Cr alloy is an air-hardening steel. Preheat and postheat treatments are required to achieve welds adequate ductility for many engineering purposes. **AFM E410-16** is most commonly used to weld alloy 410, but also 403, 405, 414, 416 and 420 alloys. It is also used for surfacing of carbon steels to resist corrosion, erosion, or abrasion.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.12	Si	0.90
Cr	11.0-13.5	P	0.04
Ni	0.70	S	0.03
Mo	0.75	Cu	0.75
Mn	1.00		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	75,000
MPa	450
Elongation, (%)	20

Heat Treatment:

Heat to 1350 to 1400°F(730 to 760°C), hold for one hour, furnace cool at a rate of 100°F(60°C) per hour to 600°F(315°C) and air cool to ambient.

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-75	80-115	115-160	150-210

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E410NiMo-16

AWS/SFA A5.4

AFM E410NiMo-16 is used for welding ASTM CA6NM castings or similar materials, as well as light gage Type 410, 410S, and 405 base metals. Weld metal deposited by **AFM E410NiMo-16** is modified to contain less chromium and more nickel than weld metal deposits by **AFM E410-16**. The objective is to eliminate ferrite in the microstructure, as ferrite has a deleterious effect on mechanical properties of this alloy. Final postweld heat treatment should not exceed 1150°F (620°C). Higher temperatures may result in rehardening due to untempered martensite in the microstructure after cooling to room temperature.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.06	Si	0.90
Cr	11.0-12.5	P	0.04
Ni	4.0-5.0	S	0.03
Mo	0.40-0.70	Cu	0.75
Mn	1.00		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	110,000
MPa	760
Elongation, (%)	15

Heat Treatment:

Heat to 1100 to 1150°F (595 to 620°C), hold for one hour, and air cool to ambient.

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-75	80-115	115-160	150-210

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E2209-16

AWS/SFA A5.4

AFM E2209-16 is used primarily to weld duplex stainless steels which contain approximately 22 percent of chromium (grade 2205). Weld metal deposited by **AFM E2209-16** has “duplex” microstructure consisting of an austenite-ferrite matrix. It combines increased tensile strength with improved resistance to pitting corrosive attack and to stress corrosion cracking.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.04	Si	0.90
Cr	21.5-23.5	P	0.04
Ni	8.5-10.5	S	0.03
Mo	2.5-3.5	N	0.08-0.20
Mn	0.5-2.0	Cu	0.75

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	100,000
MPa	690
Elongation, (%)	20

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12”	14”	14”	14”
Amps	50-80	80-120	100-160	150-210

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E2553-16

AWS/SFA A5.4

AFM E2553-16 is primarily used to weld duplex stainless steels which contain approximately 25 percent of chromium. Weld metal deposited by **AFM E2553-16** has “duplex” microstructure consisting of an austenite-ferrite matrix. It combines increased tensile strength with improved resistance to pitting corrosive attack and to stress corrosion cracking.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.06	Si	1.00
Cr	24.0-27.0	P	0.04
Ni	6.5-8.5	S	0.03
Mo	2.9-3.9	N	0.10-0.25
Mn	0.5-1.5	Cu	1.5-2.5

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	110,000
MPa	760
Elongation, (%)	15

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12”	14”	14”	14”
Amps	50-75	80-115	115-160	150-210

Packaging:

All sizes are packaged in 10 lb. containers-4 containers per 40 lb. master carton.

AFM E502-15, 16

AWS/SFA A5.4*

AFM E502-15, 16 electrodes are used for welding base metal of similar composition (alloy 501 & 502), usually in the form of pipe or tubing. The alloy is an air-hardening material; therefore, when welding with AFM E502-15, 16, preheat and postweld heat treatment are required.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.10	Si	0.90
Cr	4.0-6.0	P	0.04
Ni	0.40	S	0.03
Mo	0.45-0.65	Cu	0.75
Mn	1.00		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	60,000
MPa	420
Elongation, (%)	20

Heat Treatment:

Heat to 1550 to 1600°F (840 to 870°C), hold for two hours, furnace cool at a rate not exceeding 100°F (55°C) and air cool to ambient.

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	80-120	100-160	150-210

Packaging:

All sizes are packaged in 10 lb. containers-6 containers per 60 lb. master carton.

*New AWS specification is E8015-B6 & E8016-B6 under AWS A5.5.

AFM E505-15, 16

AWS/SFA A5.4*

AFM E505-15, 16 electrodes are used for welding base metals having 6-8% or 8-10% chrome moly content, usually in the form of pipe or tubing. The alloy is an air-hardening material; therefore, when welding with AFM E505-15, 16, preheat and postweld heat treatment are required.

Chemical Composition Requirements for Undiluted Weld Metal:

C	0.10	Si	0.90
Cr	8.0-10.5	P	0.04
Ni	0.40	S	0.03
Mo	0.85-1.20	Cu	0.75
Mn	1.00		

All values are considered maximum, unless otherwise noted.

All-Weld-Metal Mechanical Property Requirements (min.):

Tensile Strength, psi	60,000
MPa	420
Elongation, (%)	20

Heat Treatment:

Heat to 1550 to 1600°F (840 to 870°C), hold for two hours, furnace cool at a rate not exceeding 100°F (55°C) and air cool to ambient.

Recommended Amperages:

Dia.	3/32	1/8	5/32	3/16
MM	2.4	3.2	4.0	4.8
Length	12"	14"	14"	14"
Amps	50-80	80-120	100-160	150-210

Packaging:

All sizes are packaged in 10 lb. containers-6 containers per 60 lb. master carton.

*New AWS specification is E8015-B8 & E8016-B8 under AWS A5.5.