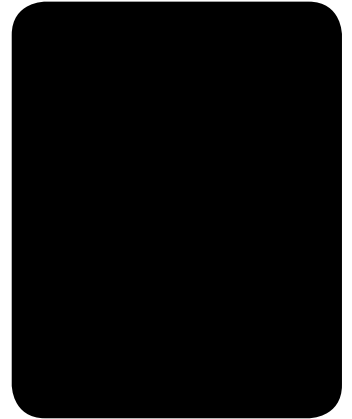


Stainless Steel Alloy Electrodes



PREMIUM BARE WIRE, COVERED & TUBULAR ELECTRODES

Your single stop for electrodes

Arcos is the company with the reputation and experience you can rely on for a comprehensive line of superior quality bare, covered and tubular electrodes for stainless steel alloys. Our wide selection of stainless steel alloy products delivers the superb slag release, wetting action and weld profile characteristics you require with a smooth, stable arc.

You can be assured that our electrodes will meet your demanding applications because Arcos has earned these prestigious certifications among others:

- ASME Nuclear Certificate # QSC448
- ISO 9001: Certified
- Mil-I 45208A Inspection
- Navy QPL
- American Bureau of Shipping (ABS)

Arcos will also provide you with a dedicated team of technical and customer service specialists to offer extensive testing and applications support.

Discover for yourself why, when it comes to the best in stainless steel alloy electrodes, Arcos has you covered. Call today at **800-233-8460** or visit our website at **www.arcos.us**.

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Technology

The world of stainless steel welding typically requires some combination of product performance, deposit composition and deposit cosmetics. The specific application will determine the most critical characteristic resulting in the selection of the specific grade. As an example, austenitic stainless steel is chosen for its corrosion resistance and mechanical properties. More specifically, there are grades of austenitic stainless steel which are resistant to various degrees of corrosive media while other grades offer improved corrosion resistance at elevated temperatures.

The ferritic stainless steel grades are used for applications requiring resistance to corrosion and moderate heat, while the martensitic grades provide harder deposits for wear resistance. The wide selection of Arcos grades allows manufacturers to select the proper product to match their base material and application.

Martensitic stainless steel products are offered in both covered and bare electrodes for the power generation industry, where these products are typically utilized on 410 alloys such as turbine blades and forgings.

in the past. Prior to the 1992 revision of AWS 5.4, there was no -17 classification.

On horizontal fillet welds, electrodes with a -17 covering tend to produce more of a spray arc and a finer rippled weld-bead surface than do those with the -16 coverings. The slower freezing slag of the -17 covering also permits improved handling characteristics when employing a drag technique. The bead shape on horizontal fillets is typically flatter to concave compared with -16 covered electrodes. When making fillet welds in the vertical position with upward progression, the slower freezing slag of the -17 covered electrodes requires a slight weave technique to produce the proper bead shape. For this reason, the minimum leg size fillet that can be properly made with a -17 covered electrode is larger than that for a -16 covered electrode. While these electrodes are designed for all position operation, electrode sizes 3/16" and larger are not recommended for vertical or overhead welding.

Arcos Stainless Steel Alloys Information

The same breadth of selection is available when considering mechanical properties. An example would be the austenitic grades ability to provide excellent CVN impact properties at subzero temperatures.

When welding these materials, the weld deposit must conform to the same properties and performance as the base material. The Arcos series of austenitic electrodes are manufactured to meet the exacting requirements of the AWS A5.4 and A5.9 documents. The 308 and 308L alloys are designed to weld the standard "18-8" grades such as 304 stainless steels. The 309 and 309L classes provide enhanced heat resistance with additional Cr and Ni alloying, and 316 and 316L classes are used for applications requiring higher corrosion resistance. Other grades can be designed to meet specific requirements by working through the Arcos sales and application groups.



Self peeling slag from a weld made with Arcos E309L.

Coverings Available

The type of covering applied to a core wire to make a shielded metal arc welding electrode typically determines the usability characteristics of the electrode.

-15 Coated Electrodes

These electrodes are usable with DCEP (electrode positive) only. While the use with alternating current is sometimes accomplished, they are not intended to qualify for use with this type of current. Electrode sizes 5/32" and smaller may be used in all positions of welding.

-16 Coated Electrodes

The covering for these electrodes generally contains readily ionizing elements, such as potassium, in order to stabilize the arc for welding with alternating current (AC), as well as DCEP (electrode positive). Electrode sizes 5/32" and smaller may be used in all positions of welding.

-17 Coated Electrodes

The covering of these electrodes is a modification of the -16 covering in that considerable silica replaces some of the titania of the -16 covering. Since both of the -16 and the -17 electrode coverings permit AC, as well as DCEP operation, both covering types were classified as -16

Cored Electrodes

Arcos cored electrodes come in a variety of types:

Gas shielded, flat and horizontal, flux cored electrodes (ExxxT0-1 and ExxxT0-4 types)

have a rutile based slag system that assures smooth arc transfer, minimal spatter and easy slag peeling. The slag system is fluid enough so that beads will be even and well washed with a finely rippled, shiny surface. Because of their fluidity these electrodes are not normally used for out-of-position welding (they can be used vertically at low current levels with a weaving technique). The major advantage of this type of electrode, as well as all cored electrodes, is a higher deposition rate compared to covered electrodes and solid wire. CO₂ or Ar/20-25% CO₂ shielding gas may be used. Penetration and bead wetting characteristics are better with CO₂, while the use of Ar/20-25% CO₂ results in less spatter and fume generation. Gas mixtures richer in

argon are not recommended. Mechanical properties are similar with either gas. Carbon levels are higher and ferrite numbers are slightly lower with CO₂ shielding gas.

Gas shielded, all position, flux cored electrodes (E_{xxxx}T1-1 and E_{xxxx}T1-4 types) also have a rutile based slag system, but they are designed to be fast freezing in order to support the molten weld puddle in out-of-position welding. Very high, out-of-position deposition rates can be achieved (in excess of 10 lbs/hr). CO₂ or Ar/20-25% CO₂ shielding gases are used. The flat and horizontal beads produced by the all position electrodes are perfectly acceptable but some people prefer the smoother, evenly rippled beads produced by the flat and horizontal electrodes.

Self-shielded, flux cored electrodes (E_{xxxx}T0-3 types) are designed to be used without a shielding gas. Because penetration and resultant dilution are low, they are

used mostly for surfacing applications in areas where remoteness or environmental conditions preclude the use of shielding gas. The performance characteristics are not as good as the gas shielded, flux cored electrodes. They are designed for flat or horizontal use only.

Gas shielded, metal cored electrodes (E_{Cxxx} types) operate much like solid GMAW electrodes. They do, however, offer several advantages over solid wire electrodes. Because the current is only carried by the sheath the arc tends to fan out, making it much less likely to burn through when welding thin material or over poor fit-ups. This same feature also improves bead wetting and allows higher travel speeds to be used. The metal cored types use argon with small additions of O₂ (up to 2%) or CO₂ (up to 3%) for shielding. They are used mostly in the flat and horizontal position. Out-of-position welding requires short-arc or pulse-arc procedures.

Quality

A quality product, such as a stainless steel electrode, begins with quality manufacturing. The Arcos stainless products are manufactured under a quality system certified to the strict standards of both the ASME Boiler and Pressure Vessel Code and to the requirements of ISO 9001:2000. In addition, Arcos' quality system has been approved by ABS and NAVSEA. Meeting all these requirements is no easy feat, but Arcos' systems and people are up to the task. The highest quality stainless steel electrodes can only be made using the highest quality raw materials. All of the components, such as rod, corewire, minerals, alloy powders and fluxing agents, are procured using rigorous purchasing standards. Upon arrival at Arcos, these materials are inspected and scrutinized to assure compliance with all technical requirements. The raw materials are then converted to electrodes using the most exacting manufacturing techniques and in-process checks. Nothing is left to chance; incoming dimensions, flux percentages, alloy mix consistency, finished diameter and other process keys are checked continually and held to very strict tolerances. Finally, the finished electrode is taken to the weld lab for final inspection, where the arc characteristics, bead cosmetics and slag removal are evaluated and must conform to the standards established during the development of the electrode. Prior to shipment, a chemical analysis of the weld deposit is performed for each lot of product to ensure compliance with AWS, ASME and internal standards.

It takes effort, discipline and adherence to procedures to manufacture high quality, stainless steel electrodes on a consistent basis. This is what Arcos does; every alloy, every day. This dedication to excellence is not a sometime thing, it is a constant determination to make the best product in the industry. The Arcos line of electrodes delivers; it delivers excellent feedability, superb welding characteristics, consistent deposit chemistry and the best overall performance in the marketplace.



Metallurgy

Stainless steel alloys can be divided into five groups; austenitic, ferritic, martensitic, duplex (ferritic-austenitic) and precipitation hardening.

Austenitic stainless steels are generously alloyed; they typically contain from 16-26% chromium and up to 35% nickel. Their crystal structure is face centered cubic (fcc) and they are not magnetic in the annealed condition. These materials work harden rapidly when cold worked and become ferromagnetic in the cold worked condition. Austenitic stainless steels produce good Charpy V-notch toughness values at subzero and cryogenic temperatures, but the values will decline for material in the cold worked condition and will vary by the amount of cold working. Corrosion resistance is dependent on many factors, including the in-service corrosive environment. However, the chromium and nickel contents largely dictate the alloy performance. Chromium in the range of 17-20% or higher increases the passivation properties of the material, which forms the protective film. Nickel stabilizes the austenite, but starts to decrease the resistance to stress corrosion cracking (SCC) up to the 8-10% range; beyond that the resistance to SCC starts to increase and peaks at about 30% nickel. Last, but not least, the elevated temperature properties of the austenitic grades are quite exemplary, as the higher chromium and nickel contents help improve creep resistance and prevent oxidation and scaling.

Ferritic stainless steels are basically chromium-bearing alloys and have a body centered cubic (bcc) crystal structure. These are ferromagnetic materials which exhibit good strength and ductility at room temperature, but have poor strength at elevated temperatures compared to the austenitic grades. Chromium content ranges from 10.5-30%. In the case of exhaust system, or muffler grades, additions of titanium or niobium may be employed to stabilize the microstructure during the heating and cooling process. The 400 series of ferritic alloys is used extensively in the fabrication of exhaust system components, as they are less expensive than the austenitic

grades, are quite formable and have good corrosion resistance.

Martensitic stainless steels are alloyed with chromium and carbon, and form a distorted body centered cubic (bcc) crystal structure when hardened. These materials are magnetic and resistant to only mildly corrosive environments. The chromium range of these alloys is normally 10.5-18% and the carbon may exceed 1.20%. The higher carbon contents are usually used for applications requiring high hardnesses, such as knife edges. Nickel may be added to impart extra corrosion resistance to the lower carbon grades, for applications such as blades and vanes in power generation equipment. The combination of nickel and molybdenum ensures the transformation to martensite and bolsters the pitting resistance along with corrosion resistance.

Duplex stainless steels contain a mixed microstructure of bcc ferrite and fcc austenite. These alloys normally contain an equal amount of each, although the exact amount of each phase is determined by composition and heat treatment. Chromium and nickel are the principal alloying agents, but elements such as nitrogen, molybdenum, copper and silicon may be added for composition control and corrosion resistance. Duplex stainless steels have higher tensile and yield strengths than the austenitic types, as well as improved resistance to stress corrosion cracking. The higher strength levels also provide greater resistance to distortion during welding. The toughness of these materials is between that of the austenitic and ferritic types.

Precipitation hardening stainless steels are principally alloyed with chromium and nickel and contain precipitation hardening elements such as copper, aluminum or titanium. In the annealed condition, these grades may be either austenitic or martensitic. The annealed, austenitic microstructures can be transformed to martensite by conditioning heat treatments, sometimes at subzero temperatures. In most cases, these alloys attain high strength by precipitation hardening of the martensitic phase.





Piping Systems



Petrochemical Plants



Furnace Equipment



Power Plants



Chemical Processing Plants

applications

All Position Flux Cored

Metal Cored

Arcos 16/8/2

CLASSIFICATIONS: ER16-8-2 per AWS A5.9, ASME SFA 5.9, UNS S16880

DESCRIPTION: Arcos 16/8/2 wire is primarily utilized for welding stainless steel Types 16-8-2, 316 and 347 for high pressure, high temperature piping systems.

APPLICATIONS: Arcos 16/8/2 is well suited for welding cat crackers and furnace parts as well as components in the petrochemical, chemical processing and power generation industries.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	90,000
Percent Elongation	37

TYPICAL CHEMICAL COMPOSITION:

C	.06
Mn	1.4
Si	.40
Ni	8.5
Cr	15.5
Mo	1.3

Arcos 16/8/2

CLASSIFICATIONS: E16-8-2 (-15/-16) per AWS A5.4, ASME SFA 5.4, UNS W36810

DESCRIPTION: Arcos 16/8/2 provides additional safety in welding highly restrained joints or crack sensitive alloys. This electrode features good hot ductility properties and offers relative freedom from weld and crater cracking.

APPLICATIONS: Arcos 16/8/2 is utilized for welding Types 16-8-2, 316 and 347 stainless steels in high temperature piping systems. This electrode product is well suited for welding cat crackers and furnace parts as well as petrochemical and power generation industry components.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	88,000
Percent Elongation	42

TYPICAL CHEMICAL COMPOSITION:

C	.05
Mn	1.2
Ni	8.5
Cr	15.5
Mo	1.2

Arcos covered electrodes do not contain bismuth.

Arcos 16-8-2-AP

CLASSIFICATION: None available (meets EC 16-8-2 chemistry requirements of AWS A5.22)

DESCRIPTION: A gas-shielded, flux cored, stainless steel electrode, Arcos 16-8-2-AP is composed of 15.5% chromium, 8.5% nickel and 1.5% molybdenum.

APPLICATIONS: This electrode may be used to weld 16-8-2, 316 and 347 grades of stainless steel in high temperature piping systems. Due to its good hot ductility properties, Arcos 16-8-2-AP is well suited for welding cat crackers, furnace parts and components utilized in the petrochemical, chemical processing and power generation industries.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/20-25% CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	86,000
Yield Strength (psi)	56,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.50
Si	.70
Ni	8.50
Cr	15.50
Mo	1.50

Ferrite Number (WRC, 1992) - 3

Arcos 16-8-2-C

CLASSIFICATIONS: EC16-8-2 per AWS A5.22 and A5.9:2006, ASME SFA 5.22, UNS S168800

DESCRIPTION: Arcos 16-8-2-C is a gas-shielded, metal cored, stainless steel electrode with a nominal composition of 15.5% chromium, 8.5% nickel and 1.5% molybdenum.

APPLICATIONS: Arcos 16-8-2-C may be used to weld 16-8-2, 316 and 347 grades of stainless steel in high temperature piping systems. This electrode offers good ductility properties and is well suited for welding cat crackers, furnace parts and components used in the petrochemical, chemical processing and power generation industries. It is also ideally suited for making small butt, lap and fillet welds on thin material at elevated speeds.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

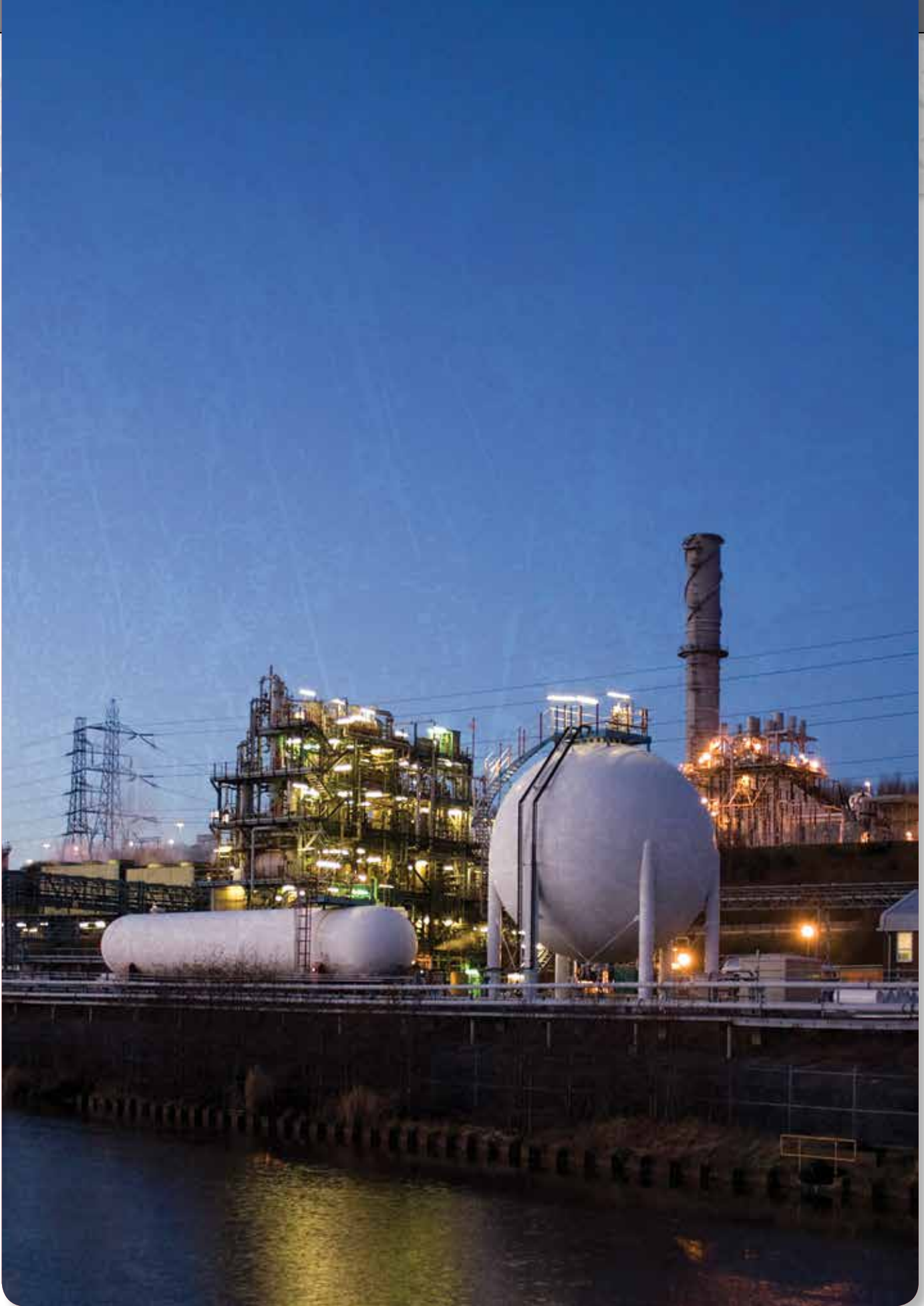
TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	88,600
Yield Strength (psi)	57,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.60
Si	.60
Ni	8.50
Cr	16.00
Mo	1.50

Ferrite Number (WRC, 1992) - 4





applications

All Position
Flux Cored

Self-Shielded
Flux Cored

Arcos 307

CLASSIFICATIONS: No AWS class. Conforms to European Standard EN12073, Class T 18 8 Mn M M.

DESCRIPTION: A moderate strength weld with good crack resistance between dissimilar steels.

APPLICATIONS: Arcos 307 is an ideal selection for welding automotive exhaust systems. This wire is also well suited to weld armor plate, austenitic manganese steel and dissimilar steels.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	95,000
Percent Elongation	36

TYPICAL CHEMICAL COMPOSITION:

C	.08
Mn	6.2
Si	.54
Ni	8.1
Cr	18.6
Mo	.18

Arcos 307-AP

CLASSIFICATIONS: E307T1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W30731

DESCRIPTION: Arcos 307-AP is a gas-shielded, flux cored, stainless steel electrode with nominal weld metal chemistry of 19% chromium, 10% nickel, 4% manganese, 1% molybdenum and a carbon content of 0.08%. This wire's relatively high manganese content helps reduce the chance of weld metal cracking in dissimilar metal welding.

APPLICATIONS: Arcos 307-AP is an excellent choice for joining difficult-to-weld steels, such as armor plate and hardenable steels, and for dissimilar metal joints, such as austenitic manganese steels to carbon steel forgings and castings.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/ balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	90,000	CO ₂ *
Yield Strength (psi)	59,000	
Percent Elongation	39	

*Strength levels may be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.07
Mn	4.20
Si	.70
Ni	10.0
Cr	19.40
Mo	1.10
N	.05

Ferrite Number (WRC, 1992) - 6

Arcos 307T0-3

CLASSIFICATIONS: E307T0-3 per AWS A5.22, ASME SFA 5.22, UNS W30733

DESCRIPTION: Arcos 307T0-3 is a self-shielded, flux cored, stainless steel electrode designed with a nominal weld metal composition of less than 20.5% chromium, 10% nickel, 4% manganese and 1% molybdenum. The relatively high manganese content helps reduce the chances of weld metal cracking in dissimilar metal welding.

APPLICATIONS: Primarily used to weld armor plate, Arcos 307T0-3 is also utilized to join carbon and low alloy steels to austenitic stainless steels and for the cladding of carbon steels.

DIAMETERS: .035", .045", 1/16", 3/32"

SHIELDING GAS: Self-shielded

WELDING POSITIONS: Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.10
Mn	4.20
Si	.70
Ni	9.80
Cr	20.70
Mo	1.10
N*	.10

Ferrite Number (WRC, 1992) - 4

* The nitrogen levels in self-shielded stainless steel deposits can vary widely depending on the welding parameters used. Since nitrogen has a strong effect on the ferrite level (increasing nitrogen lowers the ferrite number), careful control of parameters is necessary to maintain ferrite levels.



Metal Cored



Metal Cored

Arcos 307-C

CLASSIFICATIONS: EC307 per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS W30780

DESCRIPTION: Arcos 307-C is a composite, metal cored electrode for gas metal arc welding of stainless and certain types of other austenitic steels. The composite nature of this metal cored electrode provides higher deposition rates and faster travel speeds than those achieved by solid wires.

APPLICATIONS: Arcos 307-C is a superb choice for joining austenitic stainless to ferritic stainless or carbon steel, ferritic to ferritic stainless or other dissimilar metals. This electrode is widely utilized in welding automotive exhaust systems as well as armor plate, austenitic manganese steel, dissimilar steels and as a buttering layer prior to hardsurfacing.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	94,000
Yield Strength (psi)	68,000
Percent Elongation	40

TYPICAL CHEMICAL COMPOSITION:

C	.09
Mn	4.50
P	.010
S	.008
Si	.60
Ni	9.40
Cr	20.50
Mo	1.10
Cu	.24

Ferrite Number (WRC, 1992) - 12

Arcos 307EU-C

CLASSIFICATION: No AWS class. Conforms to European Standard EN12073, Class T 18 8 Mn M M.

DESCRIPTION: Designed to provide higher deposition rates and faster travel speeds than solid electrodes, the composite, metal cored Arcos 307EU-C is intended for the gas metal arc welding of stainless and certain types of other austenitic steels. This wire may also be used to weld armor steels and ferritic stainless steels in certain applications.

APPLICATIONS: Arcos 307EU-C is an excellent choice for welding automotive exhaust systems, especially when joining austenitic stainless to ferritic stainless or carbon steel, ferritic to ferritic stainless or other dissimilar metals within the exhaust system. European auto manufacturers often specify Type 307 to this specification.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	93,000
Yield Strength (psi)	65,400
Percent Elongation	40

TYPICAL CHEMICAL COMPOSITION:

C	.08
Mn	7.20
P	.010
S	.008
Si	.70
Ni	8.00
Cr	19.00
Mo	.20

Ferrite Number (WRC, 1992) - 5





applications

Flat & Horizontal
Flux Cored

All Position
Flux Cored

Arcos 308/308L

CLASSIFICATIONS:

ER 308/308L per AWS A5.9, ASME SFA 5.9, UNS S30880 and S30883

APPROVALS:

MIL-E-19933E, ABS

DESCRIPTION:

Arcos 308/308L is designed with lower carbon content to reduce the possibility of intergranular carbide precipitation. The wire's strength is less than that of niobium stabilized alloys or high carbon at elevated temperatures.

APPLICATIONS:

Arcos 308/308L is utilized to weld base metals of similar composition including AISI 301, 302, 304, 304L, 305, 308, 308L and 347. It is well suited for welding food, brewery and pharmaceutical equipment, in nuclear facilities and in general structural applications.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 82,000
Percent Elongation 40

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.7
Si	.40
Ni	10.0
Cr	20.0

Arcos 308/308L

CLASSIFICATIONS:

E308/ E308L (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W30810 and UNS W30813

APPROVALS:

MIL-E-22200/2, ABS

DESCRIPTION:

Arcos 308/308L is used for welding similar materials such as AISI grades 301, 302, 304 and 305. With a maximum .04% carbon content, this electrode reduces the possibility of intergranular carbide precipitation and increases the resistance to intergranular corrosion.

APPLICATIONS: This electrode's characteristics make Arcos 308/308L the smart choice for nuclear and general structural welding as well as for food, pharmaceutical and brewery equipment applications.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL

PROPERTIES:
Tensile Strength (psi) 85,000
Percent Elongation 42

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.0
Ni	10.0
Cr	20.0

Arcos covered electrodes do not contain bismuth.

Arcos/308L

CLASSIFICATIONS:

E308T0-1/4, E308LT0-1/4 per AWS A5.22, ASME SFA 5.22, UNS W30831 and W30835

DESCRIPTION:

This gas-shielded, flux cored, stainless steel electrode has a nominal weld metal composition of 20% chromium, 10% nickel and a maximum carbon content of 0.04%. Arcos 308L's low carbon minimizes carbide precipitation and makes it more resistant to intergranular corrosion.

APPLICATIONS: Arcos 308L is used in welded components in the chemical, paper, pharmaceutical and textile industries. It may be used to weld 301, 302, 304L, 308 and 308L stainless steel. Types 321 and 347 may also be welded as long as the service temperature does not exceed 500°F.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	82,300
Yield Strength (psi)	58,700
Percent Elongation	38

*Strength levels may be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.22
Si	.63
Ni	10.40
Cr	20.10
N	.05

Ferrite Number (WRC, 1992) - 9

Arcos 308L-AP

CLASSIFICATIONS:

E308T1-1/4, E308LT1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W30831 and W30835

DESCRIPTION:

Arcos 308L-AP is a gas-shielded, flux cored, stainless steel electrode with a nominal weld metal composition of 20% chromium, 10% nickel and a maximum carbon content of 0.04%. The low carbon in this alloy minimizes carbide precipitation and makes it more resistant to intergranular corrosion.

APPLICATIONS: Arcos 308L-AP finds wide application in the welding of components for the chemical, paper, textile and pharmaceutical industries. This wire may also be used to weld 301, 302, 304L, 308 and 308L stainless steel. Types 321 and 347 may also be welded as long as the service temperature does not exceed 500°F.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	83,000
Yield Strength (psi)	60,000
Percent Elongation	38

* Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.22
Si	.87
Ni	10.70
Cr	20.30
N	.05

Ferrite Number (WRC, 1992) - 9

Arcos all position electrodes do not contain bismuth.



Flat & Horizontal Flux Cored



All Position Flux Cored



Self-Shielded Flux Cored



Metal Cored

Arcos 308L CRYO

CLASSIFICATIONS: E308/E308L (-15/-16/-17) per AWS A5.22, ASME SFA 5.22, UNS W30831 and W30835

DESCRIPTION: Composed of 20% chromium, 10% nickel and a maximum carbon content of 0.04%, Arcos 308L CRYO is a gas-shielded, flux cored, stainless steel electrode designed for cryogenic applications where good weld metal toughness is required.

APPLICATIONS: Arcos 308L CRYO is utilized in the fabrication and repair of cryogenic components which require weld metal toughness at liquid nitrogen temperatures (-320°F).

DIAMETERS: .035", .045", 1/16"

SHIELDING GAS: 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	75% Ar/25% CO ₂
Tensile Strength (psi)	79,800
Yield Strength (psi)	51,100
Percent Elongation	49
CVN@ -320°F (ft•lbs f)	23
Lateral Expansion @ -320°F (mils)	21

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.50
Si	.70
Ni	10.50
Cr	18.70
N	.05

Ferrite Number (WRC, 1992) - 4

Arcos 308L-AP CRYO

CLASSIFICATIONS: E308LT1-4 per AWS A5.22, ASME SFA 5.22, UNS W30831 and W30835

DESCRIPTION: Arcos 308L-AP CRYO is a gas-shielded, flux cored, stainless steel electrode with a nominal weld metal composition of 18.5% chromium, 10% nickel and a maximum carbon content of 0.04%. It is designed for cryogenic applications where good weld metal toughness is required.

APPLICATIONS: Arcos 308L-AP CRYO is utilized in the fabrication and repair of cryogenic components that require weld metal toughness at liquid nitrogen temperatures (-320°F).

DIAMETERS: .035", .045", 1/16"

SHIELDING GAS: Ar/20-25% CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

	75% Ar/25% CO ₂
Tensile Strength (psi)	86,000
Yield Strength (psi)	59,000
Percent Elongation	50
CVN (ft•lb f) @ -320°F	28
Lateral Expansion @ -320°F (mils)	24

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.20
Si	.80
Ni	10.50
Cr	18.40
N	.05

Ferrite Number (WRC, 1992) - 3

Arcos all position electrodes do not contain bismuth.

Arcos 308LT0-3

CLASSIFICATIONS: E308T0-3 and E308LT0-3 per AWS A5.22, ASME SFA 5.22, UNS W30833 and W30837

DESCRIPTION: This self-shielded, flux cored, stainless steel electrode is designed with a nominal weld metal composition of 21% chromium and 10% nickel with a maximum carbon content of .03%. The low carbon in Arcos 308LT0-3 minimizes carbide precipitation and makes the weld metal more resistant to intergranular corrosion.

APPLICATIONS: Arcos 308LT0-3 is utilized for the cladding of carbon steels. This electrode may also be used to weld 301, 302, 304L, 308 and 308L stainless steel.

DIAMETERS: .035", .045", 1/16", 3/32"

SHIELDING GAS: Self-shielded

WELDING POSITIONS: Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.10
Si	.70
Ni	9.70
Cr	20.60
N*	.10

Ferrite Number (WRC, 1992) - 7

*The nitrogen levels in self-shielded stainless steel deposits can vary widely depending on the welding parameters used. Since nitrogen has a strong effect on the ferrite level (increasing nitrogen lowers the ferrite number) careful control of the parameters is necessary to maintain consistent ferrite levels.

Arcos 308L-C

CLASSIFICATIONS: EC308 and EC308L per AWS A5.22, ASME SFA 5.22, UNS S30880 and S30883

DESCRIPTION: A gas-shielded, metal cored, stainless steel electrode, Arcos 308L-C provides a nominal weld composition of 21% chromium, 10% nickel and a maximum carbon content of 0.03% to minimize carbide precipitation and resist intergranular corrosion.

APPLICATIONS: Arcos 308L-C is ideally suited for making small butt, lap and fillet welds on thin material at elevated travel speeds. It may be used to weld 301, 302, 304L, 308 and 308L grades of stainless as well as Types 321 and 347 (as long as the service temperature does not exceed 500°F). Typical applications are in-welded components for the chemical, paper, textile and pharmaceutical industries and food service equipment.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	82,600
Yield Strength (psi)	57,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.025
Mn	1.75
Si	.50
Ni	9.90
Cr	20.90
N	.05

Ferrite Number (WRC, 1992) - 7



applications

All Position
Flux Cored

Arcos 308H

CLASSIFICATIONS: ER308H per AWS A5.9, ASME SFA 5.9, UNS S30880

DESCRIPTION: Arcos 308H is a bare electrode with a restricted carbon content of .04% - .08%. This provides for higher tensile and creep strengths at elevated temperatures. This wire features a smooth arc transfer with very little spatter.

APPLICATIONS: Arcos 308H is designed for welding similar alloys in wrought or cast form and similar materials such as AISI grades 301, 302, 304 and 305. This electrode is particularly suited for welding food processing equipment and in petroleum and chemical processing plants.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL

PROPERTIES:

Tensile Strength (psi)	91,000
Percent Elongation	43

TYPICAL CHEMICAL COMPOSITION:

C	.05
Mn	1.8
Si	.40
Ni	9.5
Cr	19.9

Arcos 308H

CLASSIFICATIONS: E308/E308H (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W30810

DESCRIPTION: Arcos 308H is a covered electrode with a restricted carbon content of .04% - .08%. This provides for higher tensile and creep strengths at elevated temperatures. This wire features a smooth arc transfer with very little spatter and easy slag removal.

APPLICATIONS: Arcos 308H is designed for welding similar alloys in wrought or cast form and similar materials such as AISI grades 301, 302, 304 and 305. This electrode is particularly suited for welding food processing equipment and in petroleum and chemical processing plants.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL

PROPERTIES:

Tensile Strength (psi)	88,000
Percent Elongation	45

TYPICAL CHEMICAL

COMPOSITION:

C	.05
Mn	1.0
Ni	9.5
Cr	20.0

Arcos covered electrodes do not contain bismuth.

Arcos 308H-AP

CLASSIFICATIONS: E308T1-1/4, E308HT1-1/4 per AWS A5.22, ASME 5.22, UNS W30831

DESCRIPTION: Arcos 308H-AP is a gas-shielded, flux cored, all position, stainless steel electrode with a nominal weld metal composition of 20% chromium, 10% nickel and a carbon content of .04-.08%. The higher carbon in this alloy makes it well suited for higher temperature use.

APPLICATIONS: Arcos 308H-AP is utilized in the welding of components for the petrochemical industry. It may also be used to weld 304H and 347H.

DIAMETERS: .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfm

WELDING POSITIONS:

All positions

TYPICAL MECHANICAL

PROPERTIES:

Tensile Strength (psi)	87,000
Yield Strength (psi)	64,500
Percent Elongation	42

* Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL

COMPOSITION:

C	.06
Mn	1.22
Si	.67
Ni	10.40
Cr	20.30
N	.05

Ferrite Number (WRC, 1992) - 5

Arcos all position electrodes do not contain bismuth.









General Fabrication



Food Service



Paper Production



Pharmaceutical Industries

applications

Metal Cored

Arcos 308LSi

CLASSIFICATIONS: ER308LSi per AWS A5.9, ASME SFA 5.9, UNS S30888

DESCRIPTION: Arcos 308LSi features a higher silicon content which delivers smooth bead appearance and good wetting action. This wire offers good resistance to general corrosion and intergranular corrosion.

APPLICATIONS: Arcos 308LSi is designed for general purpose GMAW and GTAW welding. It is also suitable for joining 304 and 347 for service temperatures up to 660°F. 308LSi provides a smooth fillet profile for many applications, such as beverage tanks and food service applications.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL

PROPERTIES:	
Tensile Strength (psi)	82,000
Percent Elongation	40

TYPICAL CHEMICAL

COMPOSITION:	
C	.02
Mn	1.7
Si	.80
Ni	10.0
Cr	20.0

Arcos 308LSi-C

CLASSIFICATIONS: EC308LSi per AWS A5.22, ASME SFA 5.22, UNS S30888

DESCRIPTION: Arcos 308LSi-C features a weld metal composition of 21% chromium, 10% nickel, .8% silicon and a maximum carbon content of .03%. This metal cored electrode's higher silicon content level improves bead wetting and its low carbon content minimizes carbide precipitation, making it more resistant to intergranular corrosion.

APPLICATIONS: Arcos 308LSi-C is designed for making small butt, lap and fillet welds on thin material at elevated travel speeds. This wire is utilized to weld 301, 302, 304L, 308 and 308L grades of stainless. Standard applications for Arcos 308LSi-C include in-welded components for the chemical, paper, textile and pharmaceutical industries and food service equipment.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS:

Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

		98%Ar/2%O ₂
Tensile Strength (psi)	89,900	
Yield Strength (psi)	63,000	
Percent Elongation	42	

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.40
Si	.80
Ni	10.30
Cr	20.00
N	.05

Ferrite Number (WRC, 1992) - 14

applications



Flat & Horizontal Flux Cored

All Position Flux Cored

Arcos 309/309L

CLASSIFICATIONS: ER309/ER309L per AWS A5.9, ASME SFA 5.9, UNS S30980 and UNS S30983

APPROVALS: MIL-E-19933E (309 only), ABS

DESCRIPTION: Arcos 309/309L is generally used for welding similar alloys in wrought and cast form. This wire is also utilized to weld Type 304 and similar base metals, where severe corrosion conditions exist, as well as in dissimilar welds for joining 304 to carbon steel or the clad side of 304 clad steels.

APPLICATIONS: Arcos 309/309L joins Types 304, 347, 321 and 316 and duplex stainless steels to mild and low alloy steels. This electrode can also provide a buffer layer prior to surfacing for 308L for corrosion resistant overlays and is often used for dissimilar welds because of its tolerance for dilution.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	87,000
Percent Elongation	43

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.7
Si	.45
Ni	13.0
Cr	23.5

Arcos 309/309L

CLASSIFICATIONS: E309/E309L (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W30910 and W30913

APPROVALS: MIL-E-22200/2, ABS

DESCRIPTION: The Arcos 309/309L electrode is used for welding similar alloys in wrought or cast form, dissimilar metals (such as joining Type 304 to carbon steel) and the clad side of Type 304 clad steels.

APPLICATIONS: Arcos 309/309L is generally used to weld dissimilar joints, clad steels, hardenable steels and as a buffer layer prior to surfacing.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	88,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.8
Ni	13.0
Cr	23.5

Arcos covered electrodes do not contain bismuth.

Arcos 309/309L

CLASSIFICATIONS: E309T0-1/4, E309LT0-1/4 per AWS A5.22, ASME SFA 5.22, UNS W30931 and W30935

DESCRIPTION: Arcos 309L is a gas-shielded, flux cored, stainless steel electrode with a nominal weld metal composition of 24% chromium, 13% nickel and a maximum carbon content of 0.04%. Carbide precipitation is minimized and the weld metal more resistant to intergranular corrosion due to the wire's low carbon content.

APPLICATIONS: The welding of refinery and chemical processing equipment and furnace and auto exhaust parts is ideal for Arcos 309L. This electrode is used to weld Type 309 stainless steel, to join carbon and low alloy steels to austenitic stainless steels, to weld 304 clad sheets and for the first layer cladding of carbon steel.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfm

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	88,000
Yield Strength (psi)	69,200
Percent Elongation	32

*Strength levels may be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.00
Si	.67
Ni	13.20
Cr	24.60
N	.05

Ferrite Number (WRC, 1992) - 19

Arcos 309L-AP

CLASSIFICATIONS: E309T1-1/4, E309LT1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W30931 and W30935

DESCRIPTION: This all position electrode has a nominal weld metal composition of 24% chromium, 13% nickel and a maximum carbon content of 0.04%. Arcos 309L-AP minimizes carbide precipitation and makes the weld metal more resistant to intergranular corrosion because of its low carbon content.

APPLICATIONS: Arcos 309L-AP is utilized in welding refinery and chemical processing equipment as well as furnace and auto exhaust parts. It welds Type 309 stainless steel, joins carbon and low alloy steels and welds 304 clad sheets as well as the first layer cladding of carbon steel.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/ balance CO₂, 40-55 cfm

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	85,100
Yield Strength (psi)	66,900
Percent Elongation	38

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.95
Si	.80
Ni	12.50
Cr	24.20
N	.05

Ferrite Number (WRC, 1992) - 18

Arcos all position electrodes do not contain bismuth.



All Position Flux Cored



Self-Shielded Flux Cored



Self-Shielded Flux Cored



Metal Cored

Arcos 309LCb-AP

CLASSIFICATIONS:

E309LNbT1-1/4 per AWS A5.22, ASME 5.22, UNS W30932

DESCRIPTION: This all position, gas-shielded, flux cored electrode has a nominal weld metal composition of 23.5% chromium, 13% nickel, .8% niobium and a maximum carbon content of .04%. The niobium in Arcos 309LCb-AP forms a stable carbide and makes the weld metal more resistant to intergranular corrosion.

APPLICATIONS: Arcos 309LCb-AP is used to overlay carbon and low alloy steel. This electrode will produce a niobium stabilized first layer.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/ balance CO₂, 40-55 cfh

WELDING POSITIONS:

All positions

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	88,100
Yield Strength (psi)	59,900
Percent Elongation	34

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.10
Si	.80
Ni	12.30
Cr	23.60
N	.05
Nb	.80

Ferrite Number (WRC, 1992) - 15

Arcos all position electrodes do not contain bismuth.

Arcos 309T0-3

CLASSIFICATIONS: E309T0-3 per AWS A5.22, ASME SFA 5.22, UNS W30933

DESCRIPTION: This lower cost, self-shielded, flux cored, stainless steel wire has a nominal weld metal composition of 24% chromium and 13% nickel with a maximum carbon content of 0.10%.

APPLICATIONS: Arcos 309T0-3 is used for the cladding of carbon steels, for the welding of Type 309 stainless steel and for the joining of carbon and low alloy steels to austenitic stainless steels where lower carbon levels are not required.

DIAMETERS: .045", 1/16", 3/32"

SHIELDING GAS: Self-shielded

WELDING POSITIONS:

Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.04
Mn	1.30
Si	.70
Ni	12.50
Cr	24.00
N*	.10

Ferrite Number (WRC, 1992) - 10

*The nitrogen levels in self-shielded stainless steel deposits can vary widely depending on the welding parameters used. Since nitrogen has a strong effect on the ferrite level (increasing nitrogen lowers the ferrite number), careful control of parameters is necessary to maintain consistent ferrite levels.

Arcos 309LT0-3

CLASSIFICATIONS: E309T0-3 and E309LT0-3 per AWS A5.22, ASME SFA 5.22, UNS W30933 and W30937

DESCRIPTION: This self-shielded, flux cored, stainless steel electrode has a nominal weld metal composition of 24% chromium and 13% nickel with a maximum carbon content of 0.03%. The low carbon minimizes carbide precipitation and makes the weld metal more resistant to intergranular corrosion.

APPLICATIONS: Arcos 309LT0-3 is utilized for the cladding of carbon steels. It may also be used to weld Type 309 stainless steel and to join carbon and low alloy steels to austenitic stainless steels.

DIAMETERS: .035", .045", 1/16", 3/32"

SHIELDING GAS: Self-shielded

WELDING POSITIONS:

Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.10
Si	.70
Ni	12.70
Cr	24.50
N*	.10

Ferrite Number (WRC, 1992) - 13

*The nitrogen levels in self-shielded stainless steel deposits can vary widely depending on the welding parameters used. Since nitrogen has a strong effect on the ferrite level (increasing nitrogen lowers the ferrite number), careful control of parameters is necessary to maintain consistent ferrite levels.

Arcos 309L-C

CLASSIFICATIONS: EC309/ EC309L per AWS A5.22 and AWS A5.9: 2006, ASME SFA 5.22, UNS S30980 and S30983

DESCRIPTION: Arcos 309L-C's low carbon content minimizes carbide precipitation and makes the weld metal more resistant to intergranular corrosion. This gas-shielded, metal cored, stainless steel electrode is composed of 24% chromium, 13% nickel and no more than 0.03% carbon.

APPLICATIONS: Arcos 309L-C is used to weld Type 309 stainless steel, to join carbon and low alloy steels, to weld 304 and for the first layer cladding of carbon steel. This wire is designed for welding refinery and chemical processing equipment and furnace and auto exhaust parts.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS:

Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	84,000
Yield Strength (psi)	64,200
Percent Elongation	35

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.50
Si	.50
Ni	12.30
Cr	23.80
N	.05

Ferrite Number (WRC, 1992) - 17



Chemical
Processing
Plants



General
Fabrication



Food
Service

applications

All Position
Flux Cored

Arcos 309H

CLASSIFICATIONS: E309/
E309H (-15/-16/-17) per
AWS A5.4, ASME SFA 5.4,
UNS W30910

DESCRIPTION: Arcos 309H is
designed for welding similar
alloys in wrought or cast form,
dissimilar metals such as joining
Type 304 to carbon steel, and the
clad side of Type 304 clad steels.

APPLICATIONS: This electrode
is well suited for joining 304 type
stainless steels where severe
corrosion conditions exist. Arcos
309H is ideal for welding food
machinery and is generally used
to weld dissimilar joints and
hardenable steels.

DIAMETERS: 3/32", 1/8",
5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	92,000
Percent Elongation	36

TYPICAL CHEMICAL COMPOSITION:

C	.06
Mn	1.8
Ni	13.6
Cr	23.1

Arcos covered electrodes do not
contain bismuth.

Arcos 309H-AP

CLASSIFICATIONS:
E309T1-1/4 and E309HT1-1/4
per AWS A5.22, ASME SFA 5.22,
UNS W30931

DESCRIPTION: Arcos
309H-AP is a gas-shielded, flux
cored, stainless steel electrode
with a nominal weld metal
composition of 24% chromium
and 13% nickel with a carbon
content of .04-.08%. The higher
carbon in this all position alloy
wire makes it suitable for higher
temperature use.

APPLICATIONS: Arcos
309H-AP is utilized to weld type
309 stainless steel where higher
temperature strength is required.
This electrode may also be used
to join carbon and low alloy
steels to austenitic stainless
steels. Arcos 309H-AP is well
suited for refinery and chemical
processing equipment welding.

DIAMETERS: .035", .045",
1/16"

SHIELDING GASES: 100%
CO₂, 75-80% Ar/ balance CO₂,
40-55 cfh

WELDING POSITIONS:
All positions

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	89,100
Yield Strength (psi)	69,800
Percent Elongation	35

*Strength levels will be slightly higher with
Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.07
Mn	1.20
Si	.80
Ni	12.60
Cr	23.80
N	.05

Ferrite Number (WRC, 1992) - 9

Arcos all position electrodes do not
contain bismuth.









Food Service



Structural Welding



Chemical Processing Plants



Paper Production

applications

All Position
Flux Cored

Arcos 309LMo

CLASSIFICATIONS: E309LMo (-15/-16) per AWS A5.4, ASME SFA 5.4, UNS W30923

DESCRIPTION: Arcos 309LMo is designed for welding stainless steels to other types of steel, for dissimilar welds between stainless steels and mild or low alloys, and for depositing buffer layers when welding acid-resisting clad steels.

APPLICATIONS: Arcos 309LMo joins stainless Types 304L, 316L and 410 to mild or low alloy steels such as brackets and stiffeners. This electrode also welds hardenable steels and provides a buffer layer prior to hardsurfacing.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL

PROPERTIES:	
Tensile Strength (psi)	98,000
Percent Elongation	37

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.1
Ni	13.8
Cr	23.5
Mo	2.6

Arcos covered electrodes do not contain bismuth.

Arcos 309LMo-AP

CLASSIFICATIONS: E309LMoT1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W30938

DESCRIPTION: This gas-shielded, flux cored, all position, stainless steel electrode is nominally composed of 23% chromium, 13% nickel, 2.5% molybdenum and a maximum carbon content of .04%. The molybdenum provides increased resistance to pitting corrosion. The low carbon minimizes carbide precipitation and makes the weld metal more resistant to intergranular corrosion.

APPLICATIONS: Arcos 309LMo-AP is designed for welding in the pulp and paper industry, chemical processing equipment and food and beverage equipment. It is used to join carbon and low alloy steels to molybdenum-containing austenitic stainless steels, for root passes in cladding applications and to join difficult-to-weld or dissimilar steels.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL

PROPERTIES:		CO ₂ *
Tensile Strength (psi)	95,100	
Yield Strength (psi)	72,000	
Percent Elongation	34	

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.95
Si	.70
Ni	13.00
Cr	22.50
Mo	2.40
N	.05

Ferrite Number (WRC, 1992) - 18

Arcos all position electrodes do not contain bismuth.



applications

Metal Cored

Arcos 309LSi

CLASSIFICATIONS: ER309LSi per AWS A5.9, ASME SFA 5.9, UNS S30988

DESCRIPTION: Arcos 309LSi features a higher silicon content which delivers smooth bead appearance and good wetting action. This wire offers good resistance to general corrosion and intergranular corrosion.

APPLICATIONS: Arcos 309LSi is designed for general purpose GMAW and GTAW welding. It is also suitable for surfacing lower alloyed steels and for joining clad steels and dissimilar joints. 309LSi provides a smooth fillet profile for many applications, such as beverage tanks and food service applications.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	85,000
Percent Elongation	39

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.7
Si	.80
Ni	12.9
Cr	23.8

Arcos 309LSi-C

CLASSIFICATIONS: EC309LSi per AWS A5.22 and A5.9: 2006, ASME SFA 5.22 and SFA 5.9, UNS S30988

DESCRIPTION: This metal cored, stainless steel electrode is composed of 24% chromium, 13% nickel and 0.8% silicon with a maximum carbon content of .03%. The higher silicon level improves bead wetting while the lower carbon content minimizes carbide precipitation and makes the weld metal more resistant to intergranular corrosion.

APPLICATIONS: Arcos 309LSi-C is utilized in the welding of refinery and chemical processing equipment as well as furnace and auto exhaust parts. This electrode welds Type 309 stainless steel and may be used to join carbon and low alloy steels to austenitic stainless steels.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfm

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	87,000
Yield Strength (psi)	66,200
Percent Elongation	39

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.40
Si	.80
Ni	12.80
Cr	23.90
N	.05

Ferrite Number (WRC, 1992) - 15





Petrochemical
Plants



Furnace
Equipment



Power
Plants

applications

Arcos 309Nb

CLASSIFICATION: E309Nb (-15/16) per AWS A5.4, ASME SFA 5.4, UNS W30917

DESCRIPTION: This covered electrode mirrors Arcos 309 with the exception of the addition of niobium and a reduction in carbon. Arcos 309Nb provides resistance to carbide precipitation and, therefore, increases intergranular corrosion resistance. It also delivers higher strength in elevated temperatures.

APPLICATIONS: Arcos 309Nb is designed for welding Type 347 clad steels or for the overlay of carbon steel.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	92,000
Percent Elongation	36

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.50
S	.001
Si	.52
P	.02
Cr	22.90
Ni	13.20
Mo	.13
Nb-Ta	.76
Ti	.02
Co	.04
Cu	.08
Fe	Balance
V	.07
Others	<.50

Arcos covered electrodes do not contain bismuth.





applications

Arcos 310

CLASSIFICATIONS: ER310 per AWS A5.9, ASME SFA 5.9, UNS S31080

APPROVAL: MIL-E-19933E

DESCRIPTION: Arcos 310 is designed to deliver high temperature oxidation resistance up to 2100 °F. This wire welds 25Cr-20Ni, Type 310 wrought and cast stainless steels with up to 2% carbon.

APPLICATIONS: The high scaling temperature and excellent oxidation resistance of Arcos 310 make it ideal for welding in chemical processing and nuclear plants as well as for furnace and heat treatment equipment.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
 GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	89,000
Percent Elongation	41

TYPICAL CHEMICAL COMPOSITION:

C	.11
Mn	1.8
Si	.40
Ni	21.0
Cr	26.0

Arcos 310

CLASSIFICATIONS: E310 (-15/-16) per AWS A5.4, ASME SFA 5.4, UNS W31010

APPROVAL: MIL-E-22200/2

DESCRIPTION: The Arcos 310 electrode is used to weld stainless steel of similar composition in cast and wrought form. It may also be used for surfacing low alloy steels where 310 deposit is required.

APPLICATIONS: Its exceptional resistance to oxidation and high temperature toughness make Arcos 310 electrode well suited for welding in chemical processing plants and nuclear facilities.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	82,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.12
Mn	2.0
Ni	21.0
Cr	26.0

Arcos covered electrodes do not contain bismuth.



Food Service



General Fabrication



Petrochemical Plants



Furnace Equipment



Chemical Processing Plants

applications

Metal Cored

Arcos 310H

CLASSIFICATIONS: E310H (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W31015

DESCRIPTION: Arcos 310H electrode composition is the same as deposited by E310 electrodes, except that carbon ranges from .35% - .45%. This product provides high strength at temperatures over 1700 °F

APPLICATIONS: Arcos 310H is primarily used for welding high alloy heat and corrosion resistant castings of the same general composition as Type HK. These include such applications as chemical and petrochemical plants and steel, cement and ceramic industries.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	105,000
Percent Elongation	20

TYPICAL CHEMICAL COMPOSITION:

C	.42
Mn	1.4
Ni	21.0
Cr	26.0

Arcos covered electrodes do not contain bismuth.

Arcos 310G-C

CLASSIFICATION: No AWS class

DESCRIPTION: Arcos 310G-C has a modified 310 chemistry with a nominal composition of 26% chromium, 20% nickel and 5% manganese. The addition of manganese in this gas-shielded, metal cored, stainless steel electrode reduces the tendency for hot cracking of this highly austenitic alloy.

APPLICATIONS: Arcos 310G-C is used to weld 310 stainless steel, as well as 410 and 430 stainless steels when preheating or postweld heat treatments are not possible. This electrode is utilized when elevated temperatures are involved such as with equipment for heat treating, chemical and food processing.

DIAMETERS: .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	87,000
Yield Strength (psi)	64,200
Percent Elongation	33

TYPICAL CHEMICAL COMPOSITION:

C	.08
Mn	5.50
Si	.50
Ni	19.90
Cr	25.80
N	.05







applications

Flat & Horizontal Flux Cored

All Position Flux Cored

Arcos 312

CLASSIFICATIONS: ER312 per AWS A5.9, ASME SFA 5.9, UNS S31380

APPROVAL: MIL-E-19933E

DESCRIPTION: This alloy is valuable for welding dissimilar joints, especially if one of the base metals is a stainless high in nickel content. The deposit is two-phase, high in ferrite. Even with considerable dilution with austenite forming elements, such as nickel, the microstructure is two-phase and thus highly resistant to weld metal cracks and fissures.

APPLICATIONS: Arcos 312 is intended for welding stainless steels to mild steels and for welding high strength steels that are difficult to weld with ferritic electrodes. This wire also joins stainless steels where high strength or wear resistance is essential. Service temperatures should be below 800°F to prevent formation of secondary brittle phases.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	106,000
Percent Elongation	25

TYPICAL CHEMICAL COMPOSITION:

C	.11
Mn	1.8
Si	.40
Ni	8.8
Cr	30.0

Arcos 312

CLASSIFICATIONS: E312 (-15/-16) per AWS A5.4, ASME SFA 5.4, UNS W31310

APPROVAL: MIL-E-22200/2

DESCRIPTION: This alloy is valuable for welding dissimilar joints, especially if one of the base metals is a stainless high in nickel content. The deposit is two-phase, high in ferrite. Even with considerable dilution with austenite forming elements, such as nickel, the microstructure is two-phase and thus highly resistant to weld metal cracks and fissures.

APPLICATIONS: Arcos 312 is utilized for welding stainless steels to mild steels and for welding high strength steels that are difficult to weld with ferritic electrodes. This wire provides high oxidation resistance at elevated temperatures. Arcos 312 is work-hardenable and hot-cracking resistant.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	115,000
Percent Elongation	22

TYPICAL CHEMICAL COMPOSITION:

C	.12
Mn	1.7
Ni	9.5
Cr	29.0

Arcos covered electrodes do not contain bismuth.

Arcos 312

CLASSIFICATIONS: E312T0-1/4 per AWS A5.22, ASME SFA 5.22, UNS W31331

DESCRIPTION: A gas-shielded, flux cored, stainless steel electrode, Arcos 312 has a nominal weld metal composition of 30% chromium, 9% nickel and 0.1% carbon. This wire produces a two-phase weld metal with substantial ferrite in an austenitic matrix. The high level of ferrite makes the weld metal very resistant to cracking, even when highly diluted.

APPLICATIONS: Arcos 312 is designed for the welding of dissimilar metals such as the joining of carbon steels to stainless steels high in nickel.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	117,000
Yield Strength (psi)	89,300
Percent Elongation	24

*Strength levels may be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.09
Mn	1.00
Si	.70
Ni	9.00
Cr	29.40
N	.05

Ferrite Number (WRC, 1992) - 65

Arcos 312-AP

CLASSIFICATIONS: E312T1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W31331

DESCRIPTION: Arcos 312-AP is a flux cored, stainless steel electrode designed with a weld metal composition of 30% chromium, 9% nickel and 0.1% carbon. This wire produces a two-phase weld metal with substantial ferrite in an austenitic matrix.

APPLICATIONS: Arcos 312-AP is used for the welding of dissimilar metals, such as the joining of carbon steels to stainless steels high in nickel.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/ balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	114,000
Yield Strength (psi)	90,000
Percent Elongation	25

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.10
Mn	.80
Si	.70
Ni	8.70
Cr	29.50
N	.05

Ferrite Number (WRC, 1992) - 60

Arcos all position electrodes do not contain bismuth.



Metal Cored

Arcos 312-C

CLASSIFICATIONS: EC312 per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S31380

DESCRIPTION: With a nominal weld composition of 30% chromium, 9% nickel and 0.1% carbon, Arcos 312-C produces a two-phase weld metal with substantial ferrite in an austenitic matrix. The high level of ferrite in this gas-shielded, metal cored, stainless steel electrode makes the weld metal very resistant to cracking, even when highly diluted.

APPLICATIONS: Arcos 312-C is well suited for making small butt, lap and fillet welds on thin material at elevated speeds. This wire is used for the welding of dissimilar metals such as the joining of carbon steels to stainless steels high in nickel.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	114,000
Yield Strength (psi)	87,200
Percent Elongation	24

TYPICAL CHEMICAL COMPOSITION:

C	.10
Mn	1.50
Si	.50
Ni	9.30
Cr	29.80
N	.05

Ferrite Number (WRC, 1992) - 65





Chemical Processing Plants



Piping Systems



Oil and Gas Facilities



Food Service



Marine Environments



Paper Production



Pharmaceutical Industries

applications

Flat & Horizontal Flux Cored

All Position Flux Cored

Arcos 316/316L

CLASSIFICATIONS:

ER316/316L per AWS A5.9, ASME SFA 5.9, UNS S31680 and S31683

APPROVALS: MIL-E-19933E, ABS

DESCRIPTION: Arcos 316/316L is designed for welding low carbon, molybdenum bearing, austenitic alloys. This wire's lower carbon level increases the resistance to intergranular corrosion.

APPLICATIONS: Arcos 316/316L serves as a general purpose electrode for GMAW, GTAW and SAW welding. It offers improved corrosion and pitting resistance in marine and industrial environments.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	88,000
Percent Elongation	35

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.4
Si	.45
Ni	12.8
Cr	18.5
Mo	2.6

Arcos 316/316L

CLASSIFICATIONS:

E316/316L (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W31610 and W31613

APPROVALS: MIL-E-22200/2, ABS

DESCRIPTION: Used to weld Type 316L and low carbon, molybdenum-bearing, austenitic alloys, Arcos 316/316L reduces intergranular carbide precipitation and increases the resistance to intergranular corrosion.

APPLICATIONS: Arcos 316/316L is well suited for pipe welding, especially in marine and industrial environments.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	87,000
Percent Elongation	37

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.80
Ni	12.0
Cr	19.0
Mo	2.7

Arcos covered electrodes do not contain bismuth.

Arcos 316/316L

CLASSIFICATIONS: E316T0-1/4, E316LT0-1/4 per AWS A5.22, ASME SFA 5.22, UNS W31631 and W31635

DESCRIPTION: This gas-shielded, flux cored, stainless steel electrode is composed of 19% chromium, 12.5% nickel, 2.5% molybdenum and no more than 0.04% carbon. The molybdenum in Arcos 316L improves resistance to pitting and provides increased creep resistance. Its low carbon content minimizes carbide precipitation and resists intergranular corrosion.

APPLICATIONS: Arcos 316L finds wide usage in the pulp and paper industry, chemical and textile processing equipment, furnace parts and parts exposed to marine environments. It is used to weld Type 316 stainless and other similar alloys, such as ASTM A743 and A744, and Types CF-8M and CF-3M.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	82,000
Yield Strength (psi)	64,000
Percent Elongation	39

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.02
Si	.66
Ni	12.90
Cr	19.20
Mo	2.50
N	.05

Ferrite Number (WRC, 1992) - 6

Arcos 316L-AP

CLASSIFICATIONS: E316T1-1/4, E316LT1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W31631 and W31635

DESCRIPTION: Arcos 316L-AP is an all position electrode composed of 19% chromium, 12.5% nickel, 2.5% molybdenum and a maximum of 0.04% carbon. The molybdenum improves pitting resistance and provides increased creep resistance. The low carbon minimizes carbide precipitation which helps resist intergranular corrosion.

APPLICATIONS: Arcos 316L-AP is utilized to weld Type 316 stainless and other similar alloys, such as ASTM A743 and A744, as well as Types CF-8M and CF-3M. It has broad applications in pulp and paper, textile and chemical processing equipment, furnace parts and parts exposed to marine environments.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	81,000
Yield Strength (psi)	63,000
Percent Elongation	39

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.35
Si	.80
Ni	12.30
Cr	18.90
Mo	2.50
N	.05

Ferrite Number (WRC, 1992) - 5

Arcos all position electrodes do not contain bismuth.



Flat & Horizontal Flux Cored



All Position Flux Cored



Self-Shielded Flux Cored



Metal Cored

Arcos 316L CRYO

CLASSIFICATIONS:

E316LT0-4 per AWS A5.22, ASME SFA 5.22, UNS W31635

DESCRIPTION: Arcos 316L CRYO is a gas-shielded, flux cored, stainless steel electrode with a nominal weld metal composition of 19% chromium, 12.5% nickel, 2.5% molybdenum and a maximum carbon content of 0.04%. This wire is designed for cryogenic applications where good weld metal toughness is needed.

APPLICATIONS: Arcos 316L CRYO is used in the fabrication and repair of cryogenic components in applications which require weld metal toughness at liquid nitrogen temperatures (-320°F).

DIAMETERS: .035", .045", 1/16"

SHIELDING GAS: 75-80% Ar/ balance CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	75% Ar/25% CO ₂
Tensile Strength (psi)	82,000
Yield Strength (psi)	56,000
Percent Elongation	46
CVN@ -320°F (ft•lbs f)	21
Lateral Expansion @ -320°F (mils)	17

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.20
Si	.70
Ni	12.00
Cr	17.90
Mo	2.40
N	.05

Ferrite Number (WRC, 1992) - 4

Arcos 316L-AP CRYO

CLASSIFICATIONS: E316LT1-4 per AWS A5.22, ASME SFA 5.22, UNS W31635

DESCRIPTION: A gas-shielded, flux cored, stainless steel electrode, Arcos 316L-AP CRYO has a nominal weld metal composition of 17.5% chromium, 13% nickel, 2.5% molybdenum and a maximum carbon content of 0.04%. This all position wire is designed for cryogenic applications where good weld metal toughness is needed.

APPLICATIONS: Arcos 316L-AP CRYO is utilized in the fabrication and repair of cryogenic components which require weld metal toughness at liquid nitrogen temperatures (-320°F).

DIAMETERS: .035", .045", 1/16"

SHIELDING GAS: Argon/20-25% CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

	75% Ar/25% CO ₂
Tensile Strength (psi)	80,000
Yield Strength (psi)	57,000
Percent Elongation	45
CVN (ft•lb f) @ -320°F	27
Lateral Expansion @ -320°F (mils)	24
Hardness (HV10)	190

TYPICAL DEPOSIT COMPOSITION:

C	.03
Mn	1.00
Si	.60
Ni	12.90
Cr	17.50
Mo	2.50
N	.05

Ferrite Number (WRC, 1992) - 1

Arcos all position electrodes do not contain bismuth.

Arcos 316LT0-3

CLASSIFICATIONS:

E316LT0-3 and E316T0-3 per AWS A5.22, ASME SFA 5.22, UNS W31633 and W31637

DESCRIPTION: Arcos 316LT0-3 is a self-shielded, flux cored, stainless steel wire designed with a nominal weld metal composition of 19% chromium, 12.5% nickel, 2.5% molybdenum and a maximum carbon content of 0.03%. The presence of molybdenum improves resistance to pitting and provides increased creep resistance. In addition, the low carbon content minimizes carbide precipitation and makes it more resistant to intergranular corrosion.

APPLICATIONS: Arcos 316LT0-3 is used to weld Type 316 stainless steel as well as for the cladding of carbon steels.

DIAMETERS: .035", .045", 1/16", 3/32"

SHIELDING GAS: Self-shielded

WELDING POSITIONS: Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.10
Si	.70
Ni	12.30
Cr	19.20
Mo	2.50
N*	.10

Ferrite Number (WRC, 1992) - 4

*The nitrogen levels in self-shielded stainless steel deposits can vary widely depending on the welding parameters used. Since nitrogen has a strong effect on the ferrite level (increasing nitrogen lowers the ferrite number), careful control of parameters is necessary to maintain consistent ferrite levels.

Arcos 316L-C

CLASSIFICATIONS:

EC316/ EC316L per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S31680 and S31683

DESCRIPTION: This gas-shielded, metal cored, stainless steel electrode has a nominal weld metal composition of 19% chromium, 12.5% nickel, 2.5% molybdenum and a maximum of 0.03% carbon. Arcos 316L-C provides increased creep resistance and improves resistance to pitting, carbide precipitation and intergranular corrosion.

APPLICATIONS: Ideally suited for making small butt, lap and fillet welds on thin material at elevated travel speeds, Arcos 316L-C is used to weld Type 316 stainless steel and other similar alloys such as ASTM A743 and A744 and Types CF-8M and CF-3M. Arcos 316L-C is utilized in the pulp and paper industry, chemical and textile processing equipment, furnace parts and in parts exposed to marine environments.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 98% Ar/2% CO₂, 98% Ar/2% O₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

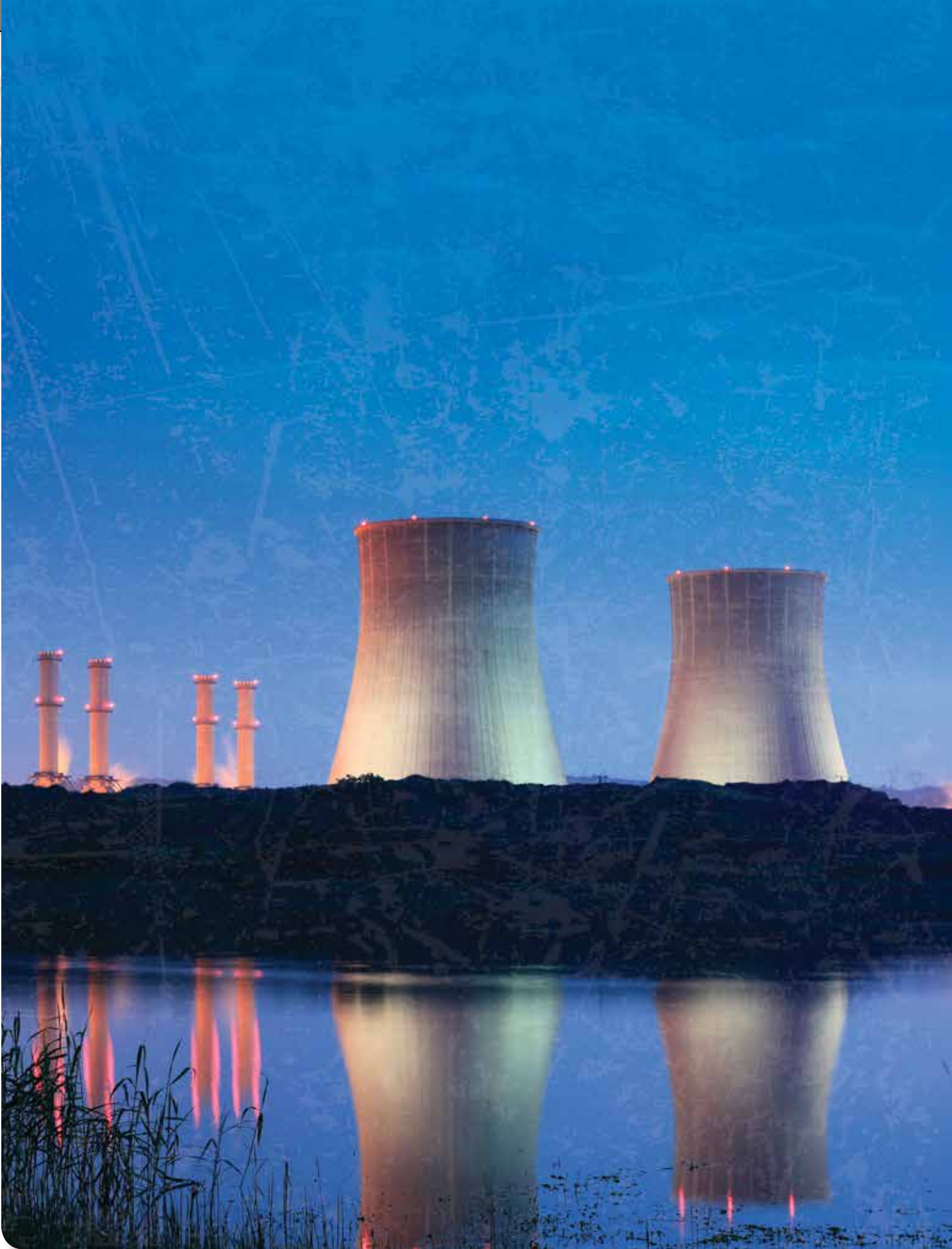
TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	82,900
Yield Strength (psi)	63,100
Percent Elongation	37

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.20
Si	.50
Ni	12.30
Cr	18.40
Mo	2.30
N	.05

Ferrite Number (WRC, 1992) - 6





Furnace Equipment



Paper Production



Petrochemical Plants



Power Plants



Gas Turbine Parts



Nuclear Power Plants



Marine Environments

applications

Flat & Horizontal Flux Cored

Arcos 316H

CLASSIFICATIONS: E316/E316H (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W31610

DESCRIPTION: Arcos 316H is often utilized for welding Type 316 and similar chemical composition alloys in wrought or cast form. This electrode's higher carbon content assures higher tensile and creep strengths at elevated temperatures. The presence of molybdenum provides creep resistance at higher temperature levels.

APPLICATIONS: Arcos 316H is well suited for nuclear plants, power facilities and the petrochemical industry. It welds furnace parts, turbine components and superheater headers.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL

PROPERTIES:

Tensile Strength (psi)	83,000
Percent Elongation	35

TYPICAL CHEMICAL

COMPOSITION:

C	.05
Mn	1.2
Ni	12.0
Cr	18.0
Mo	2.2

Arcos covered electrodes do not contain bismuth.

Arcos 316H-AP

CLASSIFICATIONS: E316T1-1/4, E316HT1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W31631

DESCRIPTION: This flux cored, stainless steel electrode has a nominal weld metal composition of 19% chromium, 12% nickel, 2.5% molybdenum and a carbon content of .04-.08%. The higher carbon content improves the elevated temperature strength. The presence of molybdenum augments resistance to pitting while providing increased creep resistance.

APPLICATIONS: Arcos 316H-AP finds application in the pulp and paper industry, chemical and textile processing equipment, furnace parts and in parts exposed to marine environments. It is used to weld Type 316H stainless steel.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/ balance CO₂, 40-55 cfh

WELDING POSITIONS:

All positions

TYPICAL MECHANICAL

PROPERTIES:

Tensile Strength (psi)	84,000
Yield Strength (psi)	66,000
Percent Elongation	36

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL

COMPOSITION:

C	.06
Mn	1.35
Si	.80
Ni	11.80
Cr	18.90
Mo	2.50
N	.05

Ferrite Number (WRC, 1992) - 4

Arcos all position electrodes do not contain bismuth.



Furnace
Equipment



Marine
Environments



Piping
Systems



Chemical
Processing
Plants

applications

Metal Cored

Arcos 316LSi

CLASSIFICATIONS: ER316LSi per AWS A5.9, ASME SFA 5.9, UNS S31688

DESCRIPTION: Arcos 316LSi is a higher silicon wire which provides a smooth bead appearance and improved wetting action.

APPLICATIONS: A general purpose electrode for GMAW and GTAW welding, Arcos 316LSi joins Types 304L, 316 and 316L as well as Types 318 and 347 for temperatures up to 750° F

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 83,000
Percent Elongation 42

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.4
Si	.85
Ni	12.8
Cr	18.5
Mo	2.6

Arcos 316LSi-C

CLASSIFICATIONS: EC316LSi per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S31688

DESCRIPTION: Arcos 316LSi-C is a gas-shielded, metal cored, stainless steel electrode with a nominal weld composition of 19% chromium, 12.5% nickel, 2.5% molybdenum, 0.8% silicon and a maximum carbon content of 0.03%. The presence of molybdenum improves resistance to pitting and provides increased creep resistance. The low carbon content minimizes carbide precipitation and makes it more resistant to intergranular corrosion. In addition, the augmented silicon content improves bead wetting and produces a cosmetically appealing weld.

APPLICATIONS: This wire is ideally suited for making small butt, lap and fillet welds on thin material at elevated travel speeds. It is utilized to weld Type 316 stainless and other similar alloys, such as ASTM A743, and A744, Types CF-8M and CF-3M. Arcos 316LSi-C is widely used in the pulp and paper industry, chemical and textile processing equipment, furnace parts and in parts exposed to marine environments.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/ 1-2% O₂, Ar/ 1-2% CO₂, 40-55 cfh

WELDING POSITIONS:

Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

98%Ar/2%O₂
Tensile Strength (psi) 84,000
Yield Strength (psi) 64,200
Percent Elongation 36

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.20
Si	.80
Ni	12.40
Cr	18.60
Mo	2.40
N	.05

Ferrite Number (WRC, 1992) - 6

Product headers in red indicate a bare wire electrode • Product headers in black indicate a covered electrode • Product headers in blue indicate a tubular electrode





applications



Paper Production



Food Service



Pharmaceutical Industries



Chemical Processing Plants



Marine Environments



Furnace Equipment



Flat & Horizontal Flux Cored

All Position Flux Cored

Arcos 317/317L

CLASSIFICATIONS: ER317/ER317L per AWS A5.9, ASME SFA 5.9, UNS S31780 and S31783

DESCRIPTION: Arcos 317/317L was developed for welding in severely corrosive environments where crevice and pitting corrosion are of concern. The wire's low carbon content reduces the possibility of intergranular carbide precipitation and increases the resistance to intergranular corrosion.

APPLICATIONS: Arcos 317/317L is ideally suited for welding in paper industries, food processing facilities, chemical processing plants and in marine environments.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	91,000
Percent Elongation	35

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.5
Si	.40
Ni	14.0
Cr	19.0
Mo	3.5

Arcos 317/317L

CLASSIFICATIONS: E317/E317L (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W31710 and UNS W31713

DESCRIPTION: Arcos 317/317L is used for welding alloys of similar composition, especially in severely corrosive environments. This electrode increases the resistance to intergranular corrosion without the use of niobium or titanium stabilizers.

APPLICATIONS: Arcos 317/317L is specially designed for welding in corrosive environments such as food processing plants, paper industries, chemical processing facilities and marine applications.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	90,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.2
Ni	13.0
Cr	19.0
Mo	3.8

Arcos covered electrodes do not contain bismuth.

Arcos 317/317L

CLASSIFICATIONS: E317LT0-1/4 per AWS A5.22, ASME SFA 5.22, UNS W31735

DESCRIPTION: This gas-shielded, flux cored, stainless steel electrode offers a nominal weld metal composition of 19.5% chromium, 13% nickel, 3.5% molybdenum and a maximum carbon content of 0.04%. The higher level of molybdenum in Arcos 317L improves resistance to pitting and provides increased creep resistance. Its low carbon content minimizes carbide precipitation and makes it more resistant to intergranular corrosion.

APPLICATIONS: Arcos 317L delivers improved pitting resistance compared to 316L and is an excellent choice for applications involving solutions of sulfuric acid and sulfur bearing gases. Utilized to weld Types 316 and 317 stainless, Arcos 317L finds wide application in the pulp and paper industry as well as in food and pharmaceutical processing equipment.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	89,000
Yield Strength (psi)	68,000
Percent Elongation	33

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.02
Si	.62
Ni	12.70
Cr	19.50
Mo	3.30
N	.05

Ferrite Number (WRC, 1992) - 9

Arcos 317L-AP

CLASSIFICATIONS: E317LT1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W31735

DESCRIPTION: This all position, stainless steel electrode has a nominal weld metal composition of 19.5% chromium, 13% nickel, 3.5% molybdenum and a maximum carbon content of .04%. Arcos 317L-AP's higher level of molybdenum improves resistance to pitting and provides increased creep resistance.

APPLICATIONS: Containing a higher molybdenum content than 316L-AP gives Arcos 317L-AP better resistance to pitting corrosion. This electrode offers excellent resistance to solutions of sulfuric acid and sulfur bearing gases. It is used to weld types 316 and 317 stainless. Arcos 317L-AP is ideal for applications in the pulp and paper industry and for welding food and pharmaceutical equipment.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/ balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

	CO ₂ *
Tensile Strength (psi)	90,000
Yield Strength (psi)	69,000
Percent Elongation	34

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.85
Si	.75
Ni	12.50
Cr	18.90
N	.05
Mo	3.30

Ferrite Number (WRC, 1992) - 8
Arcos all position electrodes do not contain bismuth.



Metal Cored

Arcos 317L-C

CLASSIFICATIONS: EC317/EC317L per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S31780 and S31783

DESCRIPTION: Arcos 317L-C is designed with a nominal weld composition of 19.5% chromium, 14% nickel, 3.5% molybdenum and a maximum carbon content of .03%. This metal cored, stainless steel electrode delivers a higher level of molybdenum to improve resistance to pitting and provides increased creep resistance. The low carbon content of Arcos 317L-C minimizes carbide precipitation and makes it more resistant to intergranular corrosion.

APPLICATIONS: Due to its exceptional resistance to pitting corrosion, Arcos 317L-C is an excellent choice for applications involving solutions of sulfuric acid and sulfur bearing gases. Used to weld Types 316 and 317 stainless steel, Arcos 317L-C is utilized in the pulp and paper industry as well as in food and pharmaceutical processing equipment.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	88,900
Yield Strength (psi)	69,100
Percent Elongation	34

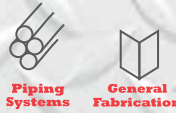
TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.40
Si	.50
Ni	13.30
Cr	19.60
Mo	3.30
N	.05

Ferrite Number (WRC, 1992) - 8







applications

Arcos 320LR

CLASSIFICATIONS: ER320/ER320LR per AWS A5.9, ASME SFA 5.9, UNS N08021 and N08022

DESCRIPTION: Arcos 320/320LR produces a high purity weld deposit which reduces weld metal fissuring (while maintaining the corrosion resistance) frequently encountered in fully austenitic stainless steel weld metals.

APPLICATIONS: Arcos 320/320LR is primarily used to weld Carpenter 20Cb-3* and is especially suited to pipe welding.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
 GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	81,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.8
Ni	33.7
Cr	20.2
Mo	2.2
Nb+Ta	.34
Cu	3.4

*Carpenter 20Cb-3 is a registered trademark of Carpenter Technology Corporation.

Arcos 320LR

CLASSIFICATIONS: E320/E320LR(-15/-16) per AWS A5.4, ASME SFA 5.4, UNS W88021 and UNS W88022

DESCRIPTION: Arcos 320/320LR produces a high purity weld deposit which reduces weld metal fissuring (while maintaining the corrosion resistance) frequently encountered in fully austenitic stainless steel weld metals.

APPLICATIONS: Arcos 320/320LR is primarily used to weld Carpenter 20Cb-3* and is especially suited to pipe welding.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	81,000
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.9
Ni	33.1
Cr	19.5
Mo	2.2
Nb+Ta	.30
Cu	3.5

Arcos covered electrodes do not contain bismuth.

*Carpenter 20Cb-3 is a registered trademark of Carpenter Technology Corporation.



Automotive Exhaust Systems



Piping Systems



Shipbuilding



Pressure Vessels



Nuclear Power Plants



Furnace Equipment



Chemical Processing Plants

applications

Flat & Horizontal Flux Cored

All Position Flux Cored

Arcos 347

CLASSIFICATIONS: ER347 per AWS A5.9, ASME SFA 5.9, UNS S34780

APPROVAL: MIL-E-19933E

DESCRIPTION: Arcos 347 is designed to weld chromium-nickel base metals of similar composition stabilized with niobium or titanium. The added niobium in this wire greatly reduces the possibility of intergranular chromium carbide precipitation.

APPLICATIONS: Arcos 347 is used for welding base metals 302, 320 and 347. It is ideal for welding in conditions which require maximum resistance to corrosion or when the metal is subjected to high temperatures.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂, 90% He/7-8% Ar/2-3% CO₂ for short circuit transfer only

GTAW - 100%Ar or Ar/25-75%He

Consult Arcos for applicability of Tri-gas or Specialty gas blends.

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 96,000
Percent Elongation 42

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.5
Si	.40
Ni	9.7
Cr	19.5
Nb+Ta	.6

Arcos 347

CLASSIFICATIONS: E347 (-15/-16/-17) per AWS A5.4, ASME SFA 5.4, UNS W34710

APPROVAL: MIL-E-22200/2D

DESCRIPTION: Arcos 347 is utilized where conditions require maximum resistance to corrosion and is recommended where weld metal is subject to temperatures above 700°F

APPLICATIONS: This electrode was specially developed for welding grades of similar chemical composition such as 302, 304, 321 and 347. Arcos 347 is well suited for nuclear power plants.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 94,000
Percent Elongation 42

TYPICAL CHEMICAL COMPOSITION:

C	.04
Mn	.7
Ni	9.5
Cr	19.0
Nb+Ta	.4

Arcos covered electrodes do not contain bismuth.

Arcos 347

CLASSIFICATIONS: E347T0-1/4 per AWS A5.22, ASME SFA 5.22, UNS W34731

DESCRIPTION: Arcos 347 has a nominal weld metal composition of 19.50% chromium, 10% nickel and 0.6% niobium. This gas-shielded, flux cored, stainless steel electrode's niobium content forms a stable carbide, which reduces chromium carbide precipitation and makes the weld metal more resistant to intergranular corrosion.

APPLICATIONS: Used to weld Types 321, 347 and 348 stainless steel, Arcos 347 welds furnace parts, pressure vessels, chemical tanks and automotive parts.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS:

Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 89,000
Yield Strength (psi) 61,000
Percent Elongation 36

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.05
Mn	1.00
Si	.70
Ni	10.20
Cr	19.90
Nb	.70
N	.05

Ferrite Number (WRC, 1992) - 8

Arcos 347-AP

CLASSIFICATIONS: E347T1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W34731

DESCRIPTION: Arcos 347-AP is a gas-shielded, flux cored, all position stainless steel electrode with a nominal weld metal composition of 19.5% chromium, 10% nickel and 0.5% niobium (columbium). The niobium forms a stable carbide which reduces chromium carbide precipitation and makes weld metal more resistant to intergranular corrosion.

APPLICATIONS: Arcos 347-AP is utilized in the welding of furnace parts, pressure vessels, chemical tanks and automotive parts. It is also used to weld Types 321, 347 and 348 stainless steels.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar / balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 94,000
Yield Strength (psi) 63,000
Percent Elongation 35

*Strength levels will be slightly higher with Ar/20-25% CO₂

TYPICAL CHEMICAL COMPOSITION:

C	.05
Mn	1.05
Si	.70
Ni	10.10
Cr	19.60
Nb	.55
N	.05

Ferrite Number (WRC, 1992) - 8

Arcos all position electrodes do not contain bismuth.



**Self Shielded
Flux Cored**



Metal Cored

Arcos 347T0-3

CLASSIFICATIONS: E347T0-3 per AWS A5.22, ASME SFA 5.22, UNS W34733

DESCRIPTION: A self-shielded, flux cored, stainless steel electrode, Arcos 347T0-3 has a nominal weld metal composition of 20% chromium, 10% nickel and 0.7% niobium. The niobium forms a stable carbide which reduces chromium carbide precipitation and makes the weld metal more resistant to intergranular corrosion.

APPLICATIONS: Arcos 347T0-3 is designed to weld Types 321, 347 and 348 stainless steel. It may also be used for the cladding of carbon steels.

DIAMETERS: .035", .045", 1/16", 3/32"

SHIELDING GAS: Self-shielded

WELDING POSITIONS:

Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.05
Mn	1.10
Si	.70
Ni	10.00
Cr	20.00
Nb	.70
N*	.10

Ferrite Number (WRC, 1992) - 5

*The nitrogen levels in self-shielded stainless steel deposits can vary widely depending on the welding parameters used. Since nitrogen has a strong effect on the ferrite level (increasing nitrogen lowers the ferrite number), careful control of parameters is necessary to maintain consistent ferrite levels.

Arcos 347-C

CLASSIFICATIONS: EC347 per AWS A5.22 and A5.9:2006, ASME SAF 5.22 and SFA 5.59, UNS S34780

DESCRIPTION: This gas-shielded, metal cored, stainless steel electrode has a nominal weld metal composition of 20% chromium, 10% nickel and 0.7% niobium. The niobium in Arcos 347-C forms a stable carbide, which reduces chromium carbide precipitation and increases resistance to intergranular corrosion.

APPLICATIONS: Utilized to weld Types 321, 347 and 348 stainless steel, Arcos 347-C finds wide application in the welding of furnace parts, pressure vessels, chemical tanks and automotive parts.

DIAMETERS: .035", .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	98%Ar/2%O ₂
Tensile Strength (psi)	92,900
Yield Strength (psi)	63,100
Percent Elongation	38

TYPICAL CHEMICAL COMPOSITION:

C	.05
Mn	1.20
Si	.47
Ni	10.00
Cr	20.10
Nb	.70
N	.05

Ferrite Number (WRC, 1992) - 9





Automotive Exhaust Systems



General Fabrication

applications

Metal Cored

Metal Cored

Arcos 409Cb/409Nb

CLASSIFICATIONS: ER409Nb per AWS A5.9, ASME SFA 5.9, UNS S40940

DESCRIPTION: With a niobium stabilized, chromium enriched, ferritic microstructure, Arcos 409Cb/409Nb is used on heat and corrosion resistant steels of similar composition.

APPLICATIONS: Arcos 409Cb/409Nb is designed for welding automotive exhaust system components such as manifolds, mufflers, catalytic converters and tubing.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂

GTAW - 100%Ar

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	67,000
Percent Elongation	26

TYPICAL CHEMICAL COMPOSITION:

C	.04
Mn	.5
Si	.6
Ni	.2
Cr	11.5
Nb+Ta	.55

Arcos 409Cb

CLASSIFICATIONS: EC409Nb per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S40940

DESCRIPTION: Arcos 409Cb is a composite metal cored, stainless steel electrode for gas-shielded arc welding. This product is intended for welding ferritic stainless steel sheet and thin gauge material where niobium stabilization is preferred over titanium. Arc transfer is a smooth spray with minimal spatter; bead appearance is smooth and clean.

APPLICATIONS: Arcos 409Cb produces a ferritic stainless steel deposit which is ideal for welding thin gauge ferritic stainless in the fabrication of automotive exhaust systems. Typically, these components are manifolds, mufflers, catalytic converters and tubing. The tubular wire characteristics provide better performance on gaps and poor fit up than solid wires.

DIAMETERS: .045", .052", 1/16"

SHIELDING GAS: 98% Ar/2% O₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	.60
P	.010
S	.010
Si	.58
Cr	11.60
Nb	.66

Arcos 409Ti

CLASSIFICATIONS: EC409 per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S40900

DESCRIPTION: Arcos 409Ti is a composite metal cored electrode for gas-shielded arc welding of ferritic stainless steels. This wire is formulated to produce improved bead wetting, faster travel speeds and a superb ability to bridge gaps and joints with poor fit up.

APPLICATIONS: Arcos 409Ti is expressly designed for welding automotive exhaust systems, especially manifolds, mufflers, converters and other components. It excels in the welding of tubing to these other components, particularly where there are gaps or generally poor fit up.

DIAMETERS: .045", .052", 1/16"

SHIELDING GAS: 98% Ar/2% O₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	.60
P	.010
S	.010
Si	.69
Cr	11.90
Ti	.70





Arcos 410

CLASSIFICATIONS: ER410 per AWS A5.9, ASME SFA 5.9, UNS S41080

APPROVAL: MIL-E-19933E

DESCRIPTION: Arcos 410, a 12% chromium alloy, is an air-hardened steel. This wire requires preheat and postheat treatments to achieve welds of adequate ductility for many engineering purposes.

APPLICATIONS: Generally used for welding alloys of similar composition, Arcos 410 is also utilized for deposition of overlays on carbon steel to resist corrosion, erosion and abrasion.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂

GTAW - 100%Ar

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	120,000
Percent Elongation	22

TYPICAL CHEMICAL COMPOSITION:

C	.11
Mn	.4
Si	.35
Ni	.3
Cr	13.0



Structural Welding



Gas Turbine Parts



Valve Overlays



Power Plants

Flat & Horizontal Flux Cored

All Position Flux Cored

Metal Cored

Arcos 410

CLASSIFICATIONS: E410 (-15/-16) per AWS A 5.4, ASME SFA 5.4, UNS W41010

APPROVAL: MIL-E-22200/8

DESCRIPTION: A 12% chromium electrode, Arcos 410 is an air-hardened steel which requires preheat and postheat treatments to achieve welds of adequate ductility.

APPLICATIONS: Arcos 410 welds alloys of similar compositions and is also used for the surfacing of carbon steels to resist abrasion, erosion and corrosion.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	118,000
Percent Elongation	22

TYPICAL CHEMICAL COMPOSITION:

C	.08
Mn	.8
Si	.32
Ni	.4
Cr	12.7

Arcos covered electrodes do not contain bismuth.

Arcos 410

CLASSIFICATIONS: E410T0-4 per AWS A5.22, ASME SFA 5.22, UNS W41031

DESCRIPTION: Arcos 410, which contains 12% chromium, is a flux cored electrode designed for single or multiple pass welding in the flat or horizontal positions. The weld deposit is air hardening and is normally heat-treated after welding.

APPLICATIONS: Arcos 410 is utilized to weld 410 stainless steel. It provides good corrosion and oxidation resistance up to 1200°F.

DIAMETERS: .045", 1/16", 3/32"

SHIELDING GAS: 75-80% Ar/20-25% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

<u>75%Ar/25%CO₂</u>	
SR 1 Hr. @ 1375°F	
Tensile Strength (psi)	78,000
Yield Strength (psi)	45,000
Percent Elongation	24

TYPICAL CHEMICAL COMPOSITION:

C	.07
Mn	.70
Si	.50
Cr	12.80

Arcos 410-AP

CLASSIFICATIONS: E410T1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W41031

DESCRIPTION: This flux cored, gas-shielded, stainless steel electrode contains 12% chromium. The weld deposit is air hardening and is normally heat-treated after welding.

APPLICATIONS: Arcos 410-AP is commonly used to weld 410 stainless steel together. This electrode provides good corrosion and oxidation resistance up to 1200°F.

DIAMETERS: .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/balance CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

<u>SR 1 Hr. @ 1375°F</u>	
<u>CO₂</u>	
Tensile Strength (psi)	96,700
Yield Strength (psi)	79,000
Percent Elongation	20
<u>75%Ar/25%CO₂</u>	
Tensile Strength (psi)	91,900
Yield Strength (psi)	73,400
Percent Elongation	20

TYPICAL CHEMICAL COMPOSITION:

<u>CO₂</u>	
<u>75Ar/25CO₂</u>	
C	.08
Mn	.70
Si	.50
Cr	12.30
	11.50

Arcos 410-C

CLASSIFICATION: EC410 per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S41080

DESCRIPTION: Arcos 410-C is a composite metal cored, martensitic stainless steel electrode designed to weld 410 stainless steel.

APPLICATIONS: Arcos 410-C is used to weld straight 410 stainless steel. Heat-treatment after welding is normally required.

DIAMETERS: .045", 1/16", 3/32"

SHIELDING GAS: Ar/1-2% O₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

<u>98%Ar/2%O₂</u>	
<u>SR 1 Hr. @ 1375°F</u>	
Tensile Strength (psi)	77,000
Yield Strength (psi)	46,000
Percent Elongation	23

TYPICAL CHEMICAL COMPOSITION:

C	.07
Mn	.50
Si	.40
Cr	12.90



Structural
Welding



Gas Turbine
Parts



Valve
Overlays



Power
Plants

applications

Flat & Horizontal
Flux Cored

All Position
Flux Cored

Arcos ER410NiMo

CLASSIFICATIONS:

ER410NiMo per AWS A5.9, ASME SFA 5.9, UNS S41086

DESCRIPTION: Nominal composition for this wire is 12% Cr, 4.5% Ni and 0.55 Mo.

APPLICATIONS: Arcos ER410NiMo is primarily designed for welding ASTM CA6NM castings of similar material, as well as light gauge 410, 410S and 405 base metals.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂

GTAW - 100%Ar

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	110,000
Percent Elongation	15

TYPICAL CHEMICAL COMPOSITION:

C	.06
Mn	.60
P	.03
S	.03
Si	.50
Ni	4.00-5.00
Cr	11.00-12.50
Cu	.75
Mo	.40-.70

Arcos 410NiMo

CLASSIFICATIONS:

E410NiMo per AWS A5.4, ASME SFA 5.4, UNS W41016

DESCRIPTION: This electrode is composed of 12% Cr, 4.5% Ni and 0.5% Mo. Arcos 410NiMo is an air-hardened martensitic stainless steel wire that requires preheat and post-weld heat treatment to achieve welds of adequate ductility.

APPLICATIONS: Arcos 410NiMo is utilized for welding ASTM CA6NM castings as well as 410, 410S and 405 stainless steels.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	142,000
Percent Elongation	18

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.50
Si	.32
Cr	12.10
Ni	4.70
Mo	.50

Arcos covered electrodes do not contain bismuth.

Arcos 410NiMo

CLASSIFICATION:

E410NiMoT0-1 per AWS A5.22, ASME SFA 5.22, UNS W41036

DESCRIPTION: This is a flux cored, gas-shielded electrode for welding martensitic stainless steel in the flat and horizontal positions. Arcos 410NiMo is nominally composed of 12% chromium, 4.5% nickel, 0.65% molybdenum and a maximum carbon content of .06%.

APPLICATIONS: This wire is primarily designed to weld ASTM CA6NM castings and certain 410 alloys, usually for blades and vanes in power generation equipment.

DIAMETERS: .045", 1/16", 3/32"

SHIELDING GAS: 100% CO₂, 40-55 cfh

WELDING POSITIONS:

Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

	CO ₂
	SR 1 Hr. @ 1125°F
Tensile Strength (psi)	128,000
Yield Strength (psi)	107,000
Percent Elongation	17

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.70
Si	.50
Ni	4.70
Cr	12.20
Mo	.60

Arcos 410NiMo-AP

CLASSIFICATIONS:

E410NiMoT1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W41036

DESCRIPTION: Arcos 410NiMo-AP is a gas-shielded, flux cored, stainless steel electrode designed to weld martensitic stainless steels in all positions. It has a nominal weld metal composition of 12% chromium, 4.5% nickel, 0.6% molybdenum and a maximum carbon content of 0.06%.

APPLICATIONS: This electrode finds wide application in the power generation industry, especially with turbine blades and vanes. Arcos 410NiMo-AP is widely used for welding ASTM CA6NM castings as well as 410, 410S and 405 stainless steels.

DIAMETERS: .045", 1/16"

SHIELDING GASES: 100% CO₂, 75-80% Ar/20-25% CO₂, 40-55 cfh

WELDING POSITIONS:

All positions

TYPICAL MECHANICAL PROPERTIES:

	CO ₂	
	SR 1 Hr. @ 1125°F	
Tensile Strength (psi)	126,000	
Yield Strength (psi)	109,000	
Percent Elongation	18	

	75%Ar/25%CO ₂	
Tensile Strength (psi)	132,100	
Yield Strength (psi)	119,500	
Percent Elongation	16	

TYPICAL CHEMICAL COMPOSITION:

	CO ₂	75Ar/25CO ₂
C	.04	.03
Mn	.71	.72
Si	.53	.55
Ni	4.60	4.52
Cr	11.90	12.00
Mo	.54	.69

Metal Cored

Arcos 410NiMo-C

CLASSIFICATION:

EC410NiMo per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S41086

DESCRIPTION: This composite metal cored electrode is utilized to weld ASTM CA6NM castings and certain 410 alloys.

APPLICATIONS: Arcos 410NiMo-C welds ASTM CA6NM castings as well as specific 410 alloys.

DIAMETERS: .045", 1/16"

SHIELDING GAS: 98% Ar/2% O₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

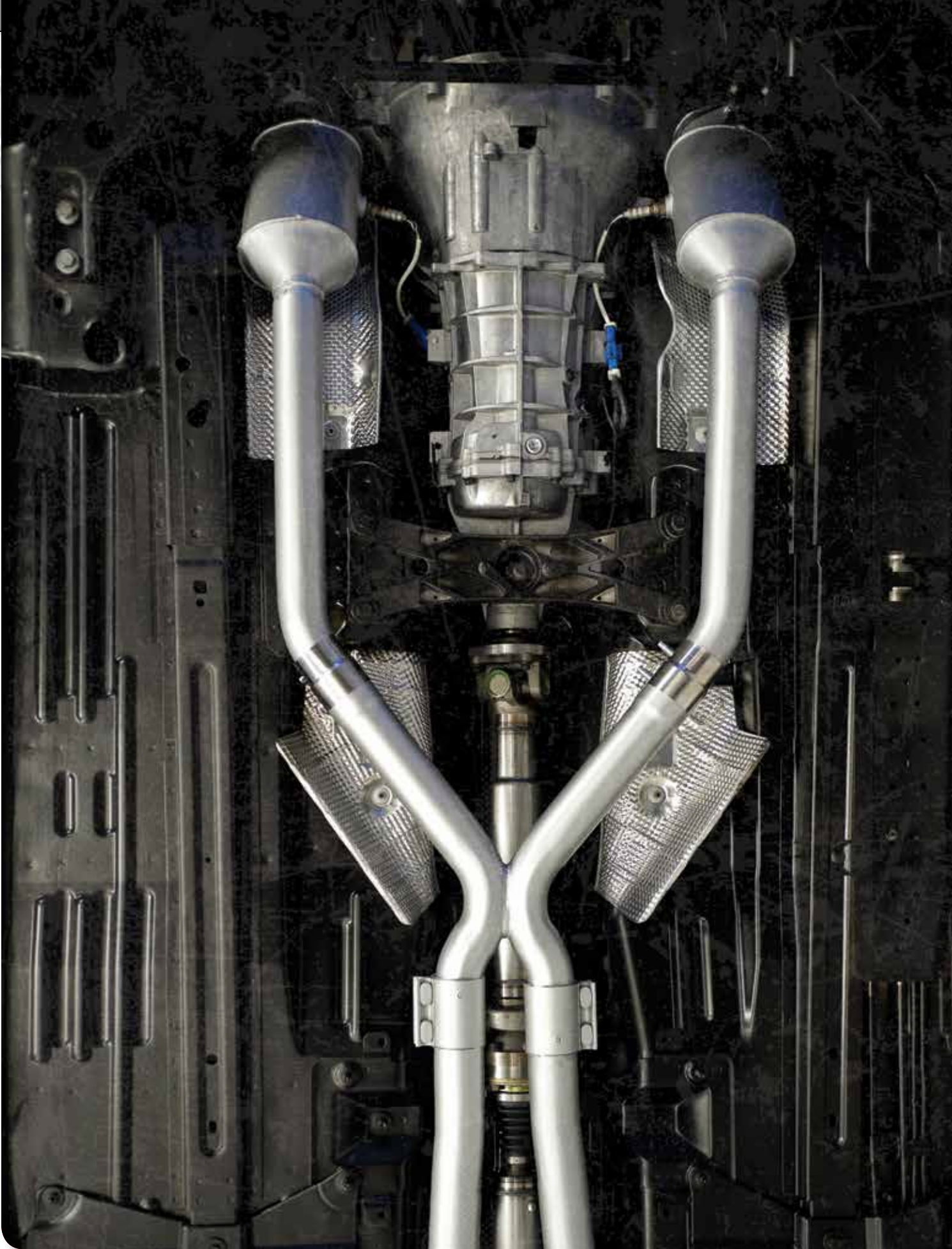
98%Ar/2%O₂
SR 1 Hr. @ 1125°F

Tensile Strength (psi)	126,500
Yield Strength (psi)	113,400
Percent Elongation	18

TYPICAL CHEMICAL COMPOSITION:

C	.01
Mn	.50
P	.010
S	.010
Si	.40
Ni	4.30
Cr	12.00
Mo	.50







applications

Metal Cored

Metal Cored

Arcos 430LCb

CLASSIFICATION:

No AWS Class

DESCRIPTION: Arcos 430LCb is designed to provide superior corrosion characteristics and resistance to cracking. This wire features welds that are free of the martensitic normally associated with conventional ferrite stainless steel welds.

APPLICATIONS: Arcos 430LCb is ideally suited for welding automotive stainless steel exhaust system components including manifolds, converters, mufflers and tubing.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂
GTAW - 100%Ar

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 74,000
Percent Elongation 25

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	.4
Si	.4
Ni	.3
Cr	17.5
Nb+Ta	.38

Arcos 430LCb

CLASSIFICATION:

No AWS Class

DESCRIPTION: Normally used for single pass applications on thin sheet metal materials, Arcos 430LCb is a metal cored electrode designed for the welding of ferritic stainless materials. Arcos 430LCb's higher chromium content combined with the niobium stabilization provides similar heat and corrosion resistance to the base metals which are welded.

APPLICATIONS: Arcos 430LCb is designed to weld heat resistant, corrosion resistant, ferritic stainless steels used in exhaust system components. Typical applications include manifolds, converters, mufflers and tubular components of automotive exhaust systems made of 430 grade materials.

DIAMETERS: .045", .052", 1/16"

SHIELDING GAS: 95-98%Ar/ balance O₂, 40-55 cfh

WELDING POSITIONS:
Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	.68
P	.007
S	.010
Si	.58
Ni	.02
Cr	17.50
Nb	.36
Cu	.06

Arcos 430NbL

CLASSIFICATION:

No AWS Class

DESCRIPTION: Arcos 430NbL is a metal cored electrode designed for the welding of ferritic stainless steel materials used in automotive exhaust systems.

APPLICATIONS: Arcos 430NbL is utilized to weld heat and corrosion resistant, ferritic stainless steels used in exhaust system components including manifolds, converters, mufflers and tubular parts of automotive systems made of 430 grade materials.

DIAMETERS: .045", 1/16"

SHIELDING GAS: 80-95% Ar/ balance CO₂, 40-55 cfh

WELDING POSITIONS:
Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.30
P	.007
S	.010
Si	.60
Cr	17.80
Nb	.60
Ti	.10



Oil and Gas
Facilities



Power
Plants



Automotive
Exhaust
Systems



Chemical
Processing
Plants

applications

Metal Cored

Arcos 439Ti

CLASSIFICATIONS: ER439 per AWS A5.9, ASME SFA 5.9, UNS S43035

DESCRIPTION: Arcos 439Ti was developed to provide outstanding high temperature strength, good thermal fatigue, superior corrosion characteristics and resistance to cracking. It produces a martensitic-free weld normally associated with conventional ferrite stainless steels.

APPLICATIONS: Arcos 439Ti is used for welding automotive stainless steel exhausts and a variety of applications in the power generation, petroleum refining and chemical processing industries.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 95-98% Ar/2-5% O₂
GTAW - 100%Ar

TYPICAL CHEMICAL PROPERTIES:

Tensile Strength (psi) 73,000
Percent Elongation 38

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	.7
Si	.7
Ni	.1
Cr	17.8
Ti	.78

Arcos 439Ti

CLASSIFICATIONS: EC439 per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS S43035

DESCRIPTION: Arcos 439Ti is a composite metal cored, stainless steel electrode for gas-shielded arc welding. This product is designed for welding ferritic stainless thin stock or sheet steel in the fabrication of automotive exhaust system components. The 439 alloys are higher in chromium than the 409 series in order to provide better heat and corrosion resistance. This particular grade is titanium stabilized.

APPLICATIONS: Arcos 439Ti is a titanium stabilized, 18% chromium stainless steel electrode intended to weld sheet metal and thin stock of similar composition. This material is primarily used in the fabrication of automotive exhaust systems subjected to higher temperatures and corrosion than the 409 series. Typical components to be welded are manifolds, mufflers, catalytic converters and exhaust tubing.

DIAMETERS: .045", .052", 1/16"

SHIELDING GAS: 98% Ar/2% O₂, 40-55 cfh

WELDING POSITIONS:
Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	.62
P	.010
S	.010
Si	.56
Cr	17.90
Ti	.70









Automotive
Exhaust
Systems

applications

Metal Cored

Arcos 18CrCb

CLASSIFICATION:

No AWS Class

DESCRIPTION: Arcos 18CrCb provides superior corrosion characteristics and resistance to cracking. This premium wire offers high temperature strength and good thermal fatigue.

APPLICATIONS: Arcos 18CrCb is primarily utilized for the welding of automotive stainless steel exhaust systems.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂

GTAW - 100%Ar

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	65,000
Percent Elongation	20

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	.50
S	.01
Si	.40
P	.02
Cr	18.00
Cb	.50
Mo	.10
Cu	.10
Fe	Balance
Ni	.20

Arcos 18CrCb-C

CLASSIFICATIONS: EC439Nb per AWS 5.22, ASME SFA 5.22, UNS S43035

DESCRIPTION: A composite metal cored, stainless steel electrode, Arcos 18CrCb-C is intended for welding thin stock and sheet steel of similar ferritic stainless composition. Stabilization of the weld deposit is with niobium and titanium.

APPLICATIONS: Arcos 18CrCb-C is an excellent choice to weld stainless steels of similar composition (18% Cr, 0.6% Cb) in the fabrication of automotive exhaust systems. Unlike solid wires, Arcos 18CrCb-C handles gaps and poor fit up quite effectively when welding components such as manifolds, mufflers, catalytic converters and tubing.

DIAMETERS: .045", .052", 1/16"

SHIELDING GAS: 98% Ar/2% O₂, 40-55 cfh

WELDING POSITIONS:

Flat and Horizontal

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	.66
Si	.58
Cr	17.70
Nb	.56
Ti	.44



Chemical Processing Plants



Piping Systems



Offshore Structures



General Fabrication



Pipelines



Structural Welding



Oil and Gas Facilities

applications

All Position Flux Cored

Metal Cored

Arcos 2209

CLASSIFICATIONS: ER2209 per AWS A5.9, ASME SFA 5.9, UNS S39209

DESCRIPTION: This wire is designed for joining 22% Cr duplex stainless steels, including 2205, for applications with service temperatures up to 480°F (250°C) and down to -58°F (-50°C). Arcos 2209 provides high resistance to general corrosion, pitting and stress corrosion.

APPLICATIONS: Very good resistance to intergranular corrosion and pitting. Good resistance to stress corrosion cracking, especially in environments containing hydrogen sulfide and chlorides.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂

GTAW - 100%Ar

Consult Arcos for applicability of Tri-gas or Specialty gas blends

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 109,000
Percent Elongation 25

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.7
Si	.40
Ni	8.6
Cr	22.6
Mo	3.2
N	.16

Arcos 2209

CLASSIFICATIONS: E2209 (-15/-16) per AWS A5.4, ASME SFA 5.4, UNS W39209

DESCRIPTION: Designed for joining 22% Cr duplex stainless steels, including 2205, for applications with service temperatures up to 480°F (250°C) and down to -58°F (-50°C). Arcos 2209 provides high resistance to general corrosion, pitting and stress corrosion.

APPLICATIONS: Very good resistance to intergranular corrosion and pitting. Good resistance to stress corrosion cracking, especially in environments containing hydrogen sulfide and chlorides.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi) 109,000
Percent Elongation 25

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.2
Ni	9.6
Cr	23.0
Mo	3.2
N	.17

Arcos covered electrodes do not contain bismuth.

Arcos 2209-AP

CLASSIFICATIONS: E2209T1-1/4 per AWS A5.22, ASME SFA 5.22, UNS W39239

DESCRIPTION: Arcos 2209-AP is a flux cored electrode designed to weld duplex stainless steels of the 22Cr-9Ni-2Mo-N type. The weld deposit has a "duplex" microstructure of austenite and ferrite and normally gives ferrite in the range of 25-40 FN. Argon with 20-25% CO₂ is the recommended shielding gas.

APPLICATIONS: The all position Arcos 2209-AP is designed to weld similar materials in the chemical and fertilizer industry, off-shore pipelines, sour gas lines, etc. It is used to weld 2205, 2304 and other similar types of duplex stainless steel.

DIAMETERS: .045", 1/16"

SHIELDING GAS: 75-80% Ar/20-25% CO₂, 40-55 cfh

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	110,400
Yield Strength (psi)	79,000
Percent Elongation	32
CVN ft•lb f) @-60°F	47

<i>75%Ar/25%CO₂</i>	
Tensile Strength (psi)	113,000
Yield Strength (psi)	85,000
Percent Elongation	31
CVN ft•lb f) @-60°F	44

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.70
Si	.80
Ni	9.10
Cr	22.10
Mo	2.70
N	.12

Ferrite Number (WRC, 1992) - 35

Arcos 2209-C

CLASSIFICATIONS: EC2209 per AWS A5.22 and A5.9:2006, ASME SFA 5.22 and SFA 5.9, UNS 39209

DESCRIPTION: Arcos 2209-C is a metal cored electrode designed to weld duplex stainless steels of 22Cr-9Ni-2Mo-N type. The weld deposit has a "duplex" microstructure of austenite and ferrite and normally gives ferrite in the range of 25-40 FN. This electrode delivers very good resistance to intergranular corrosion, pitting and to stress corrosion cracking in environments containing H₂S and chlorides.

APPLICATIONS: Arcos 2209-C is utilized for welding in the chemical and fertilizer industries, on offshore pipelines and on sour gas lines. This electrode welds 2205, 2304 and other similar types of duplex stainless steel.

DIAMETERS: .045", 1/16"

SHIELDING GASES: Ar/1-2% O₂, Ar/1-2% CO₂, 40-55 cfh

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

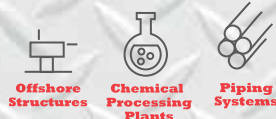
<i>98%Ar/2%O₂</i>	
Tensile Strength (psi)	117,000
Yield Strength (psi)	93,200
Percent Elongation	25

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.30
Si	.70
Ni	8.40
Cr	22.50
Mo	3.10
N	.15

Ferrite Number (WRC, 1992) - 40





applications

All Position
Flux Cored

Arcos 2553-AP

CLASSIFICATION: E2553T1-4
per AWS A5.22, ASME SFA 5.22,
UNS W39533

DESCRIPTION: A flux cored, all position electrode with a nominal composition of 25% chromium, 9.5% nickel, 3.5% molybdenum, 2% copper and 0.2% nitrogen, Arcos 2553-AP is used to weld duplex stainless steels which contain approximately 25% chromium. It offers greater resistance to intergranular corrosion, pitting and stress corrosion cracking than 2209.

APPLICATIONS: The weld metal exhibits high strength with excellent corrosion resistance, especially to pitting attack from chlorides in sea water. Arcos 2553-AP is well suited for welding similar materials in the chemical and fertilizer industries, offshore pipelines, sour gas lines and many more.

DIAMETERS: .045", 1/16"

SHIELDING GAS: 75-80%
Ar/20-25% CO₂ 40-55 cfh

WELDING POSITIONS:
All positions

TYPICAL MECHANICAL PROPERTIES:

	75%Ar/25%CO ₂
Tensile Strength (psi)	124,000
Yield Strength (psi)	97,000
Percent Elongation	24

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.10
Si	.70
Ni	9.50
Cr	25.40
Mo	3.80
Cu	2.20
N	.20

Ferrite Number (WRC, 1992) - 42





applications

Arcos 90S/B9

CLASSIFICATIONS: ER90S-B9 per AWS A5.28, ASME SFA 5.28, UNS S50482

DESCRIPTION: This filler metal is intended for welding components designed to operate at elevated temperatures. The chemistry is modified to improve long term creep properties.

APPLICATIONS: Arcos 90S/B9 is utilized for welding a wide variety of components in power generation plants. This wire is also used in coal plants and oil refineries.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:
GMAW - 70-75% Ar/20-25% CO₂

GTAW - 100%Ar

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	116,000
Percent Elongation	22

TYPICAL CHEMICAL COMPOSITION:

C	.10
Mn	.50
Si	.25
Ni	.60
Cr	8.7
Mo	1.0
Nb+Ta	.05
V	.20
N	.05

Arcos E9015/B91-H4

CLASSIFICATIONS: E9015/B91-H4 per AWS A5.5, ASME SFA 5.5, UNS W50425

DESCRIPTION: Arcos E9015/B91-H4 was developed for welding higher chromium alloyed 9CrMoNbV steel. The wire is Bruscato X-Factor less 15 with a diffusible hydrogen of 4 ml/100g maximum.

APPLICATIONS: Arcos E9015/B91-H4 is well suited for welding heavy wall components such as headers and main stream piping. This electrode is also for welding turbine rotors in fossil fueled power generating facilities.

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL PROPERTIES:

Tensile Strength (psi)	103,000
Percent Elongation	23

TYPICAL CHEMICAL COMPOSITION:

C	.10
Mn	.50
Si	.25
Ni	.3
Cr	9.0
Mo	1.0
Nb+Ta	.04
V	.20
N	.05

Arcos covered electrodes do not contain bismuth.



Chemical Processing Plants



Piping Systems



Offshore Structures



General Fabrication



Pipelines



Structural Welding



Oil and Gas Facilities

applications

All Position Flux Cored

Metal Cored

Arcos 2594

CLASSIFICATIONS: ER2594 per AWS A5.9, ASME SFA A5.9, UNS S32750

DESCRIPTION: Arcos 2495 is designed for welding duplex (2500 family) and super duplex (wrought UNS S32750 and S32760 and cast UNS J93380 and J93404) materials. This all position bare wire provides resistance to pitting in aqueous environments containing chlorides.

APPLICATIONS: Arcos 2594 is utilized for welding in the chemical and fertilizer industries, energy generation, flue gas desulfurization and for many offshore applications including piping systems, pumps, valves and heat exchangers.

DIAMETERS: .035", .045", 1/16", 3/32", 1/8", 5/32", 3/16"

SHIELDING GASES:

GMAW - 95-98% Ar/2-5% O₂, 97-98% Ar/2-3% CO₂

GTAW - 100%Ar

Consult Arcos for applicability of Tri-gas or Specialty gas blend.

TYPICAL MECHANICAL

PROPERTIES:

Tensile Strength (psi) 120,000
Yield Strength (psi) 85,000
Percent Elongation 38

TYPICAL CHEMICAL

COMPOSITION:

C	.01
Mn	.60
Si	.44
Ni	9.10
Cr	24.90
Mo	3.90
N	.27

Ferrite Number (WRC, 1992) - 50
PREN - 42

Arcos 2594

CLASSIFICATIONS: E2594 per AWS A5.4, ASME SFA A5.4, UNS W39594

DESCRIPTION: An all position covered electrode, Arcos 2594 is designed for welding duplex (2500 family) and super duplex (wrought UNS S32750 and S32760 and cast UNS J93380 and J93404) materials. This wire provides resistance to pitting in aqueous environments containing chlorides.

APPLICATIONS: Arcos 2594 is used in energy generation plants, flue gas desulfurization facilities, in chemical and fertilizer industries and for many offshore applications including pumps, valves, heat exchangers and piping systems

DIAMETERS: 3/32", 1/8", 5/32", 3/16"

TYPICAL MECHANICAL

PROPERTIES:

Tensile Strength (psi) 127,000
Yield Strength (psi) 98,000
Percent Elongation 29

TYPICAL CHEMICAL

COMPOSITION:

C	.03
Mn	1.00
Si	.62
Ni	9.50
Cr	25.00
Mo	3.80
N	.25

Ferrite Number (WRC, 1992) - 42
PREN - 42

Arcos covered electrodes do not contain bismuth.

Arcos 2594-AP

CLASSIFICATION: E2594T1-4 per AWS A5.22. ASME SFA 5.22

DESCRIPTION: Arcos 2594-AP is a flux cored, all position electrode has a nominal composition of 25.5% chromium, 9.3% nickel, 3.5% molybdenum and 0.25% nitrogen. The Pitting Resistance Equivalent Number, given as Cr + 3.3*(Mo+0.5W) + 16*N, is equal or greater than 40. This semi-quantitative Number provides a measure of the resistance to pitting in aqueous environments containing chlorides.

APPLICATIONS: Arcos 2594-AP electrodes are designed for welding duplex (2500 family) and super-duplex (wrought UNS S32750 and S32760 and cast UNS J93380 and J93404) materials in the chemical and fertilizer industries, energy generation, flue gas desulfurization, and for many offshore applications including piping systems, pumps, valves and heat exchangers

DIAMETERS: .045", 1/16"

SHIELDING GASES: 75% Ar/25% CO₂

WELDING POSITIONS: All positions

TYPICAL MECHANICAL PROPERTIES:

75%Ar/25%CO₂
Tensile Strength (psi) 124,000
Yield Strength (psi) 97,000
Percent Elongation 20

TYPICAL CHEMICAL COMPOSITION:

C	.03
Mn	1.50
Si	.70
Ni	9.60
Cr	25.40
Mo	3.80
N	.24
W	.55

Ferrite Number (WRC, 1992) - 48
PREN - 43.5

Arcos 2594-C

CLASSIFICATIONS: EC2594 per AWS A5.22. ASME SFA 5.22

DESCRIPTION: Arcos 2594-C is a metal cored electrode having a nominal composition of 26% chromium, 9% nickel, 3% molybdenum, 0.6% tungsten and 0.25% nitrogen. The Pitting Resistance Equivalent Number is equal or greater than 40, making it an excellent choice for use in aqueous environments containing chlorides.

APPLICATIONS: Arcos 2594-C is designed for welding duplex (2500 family) and super-duplex (wrought UNS S32750 and S32760 and cast UNS J93380 and J93404) materials in the chemical and fertilizer industries, energy generation, flue gas desulfurization and for many offshore applications including piping systems, pumps, valves and heat exchangers.

DIAMETERS: .045", 1/16"

SHIELDING GASES: 98% Ar/2% O₂

WELDING POSITIONS: Flat and Horizontal

TYPICAL MECHANICAL PROPERTIES:

98%Ar/2%O₂
Tensile Strength (psi) 123,000
Yield Strength (psi) 90,000
Percent Elongation 29

TYPICAL CHEMICAL COMPOSITION:

C	.02
Mn	1.90
Si	.60
Ni	8.90
Cr	25.80
Mo	3.10
N	.25
W	.60

Ferrite Number (WRC, 1992) - 49
PREN - 42





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Arcos also offers a brochure detailing our complete line of premium bare and covered High Nickel Alloy electrode products.

