NICKEL ALLOY (190, "A", FC-276) ELECTRODES FOR ARC WELDING

ALLOY 190
AW/SFA5.11-90 Class ENiCu-7
†MIL-E-22200/3 Type MIL-9N10
UNS # W84190

	1 LB CONTAINER		10 LB CONTAINER	
SIZE	PART No.	PRICE	PART No.	PRICE
3/32	190-332-1	$29.90	190-332-10	$252.00
1/8	190-18-1	$29.90	190-18-10	$249.00
5/32	190-532-1	$29.90	190-532-10	$249.00
3/16	190-316-1	$29.90	190-316-10	$249.00

DESCRIPTION
Alloy 190 flux-coated electrodes are designed for shielded metal arc welding of nickel-copper Monel® 400 and 404 to themselves and to steel. This electrode is perfect for joining many nickel-copper alloys to copper, copper-nickel, carbon steel and low alloy steel. Alloy 190 is also used for overlaying on steel and for welding the clad side of joints in steel clad with a nickel-copper alloy.

APPLICATIONS
Alloy 190 is a very popular electrode. Most common uses include electroplating and chemical pickling equipment, polyvinyl chloride production plants, sea water desalination plants and in waste water treatment plants.

TYPICAL WELD METAL CHEMISTRY (%)

*Ni	62.0-69.0
C	0.15 max.
Mn	4.0 max.
Fe	2.5 max.
S	0.015 max.
Si	1.5 max.
Cu	Balance
Ti	1.0 max.
Al	0.75 max.
P	0.02 max.

*Includes Cobalt (Co)

TYPICAL MECHANICAL PROPERTIES OF WELD DEPOSIT (as welded)
Tensile strength (psi) ..... 70,000 min.
Yield strength (psi) ..... 30,000 min.
Elongation in 2" (%) ..... 30 min. Avg.
Charpy V-notch impact
impact value..... 89 ft.-lbs. @ 68°F

AVAILABLE SIZES AND OPERATING RANGES (DCEP) (DC+)
3/32 (2.4mm)..... 70-90 amps
1/8 (3.2mm)..... 90-125 amps
5/32 (4.0mm)..... 110-160 amps
3/16 (4.8mm)..... 155-185 amps

WELDING PROCEDURES
Flat, horizontal, vertical, overhead.

ALLOY "A"
AWS/SFA5.11-90 Class ENiCrFe-2
†MIL-E-22200/3 Type MIL 4N1A
UNS # W86133

	1 LB CONTAINER (Not Available)		10 LB CONTAINER	
SIZE	PART No.	PRICE	PART No.	PRICE
3/32	-	-	A-332-10	$307.00
1/8	-	-	A-18-10	$305.00
5/32	-	-	A-532-10	$305.00
3/16	-	-	A-316-10	$305.00

DESCRIPTION
Alloy "A" is a nickel-chromium-iron fluxcoated electrode designed primarily for shielded metal arc welding of Incoloy® 800 to itself or to 9% nickel steels. This electrode is used for welding a variety of dissimilar wrought or cast forms of carbon steel, austenitic and ferritic stainless steel, and nickel-chromium Inconel® 600 to themselves or to each other. Alloy "A" is frequently used for joining Incoloy® 800 to high nickel alloys 200 and 201 or to nickel copper Monel® 400 and K-500.

APPLICATIONS
Alloy "A" is excellent for overlaying nickel-chromium alloy on steel. More common applications include the welding of 5% and 9% nickel steel transport or storage tanks used for cryogenic products. The chemical or petrochemical industries use Alloy "A" for many applications such as valve seats and gates, coal gasification and wet process desulphurization equipment.

TYPICAL WELD METAL CHEMISTRY (%)

Ni	62.0 min.
C	0.10 max.
Mn	1.0-3.5
Fe	12.0 max.
S	0.02 max.
Si	0.75 max.
Cr	13.0-17.0
Mo	0.5-2.50
*Cb	0.5-3.0
Co	0.1 2 max.
*Includes Tantalum (Ta)	0.30 max.

TYPICAL MECHANICAL PROPERTIES OF WELD DEPOSIT (as welded)
Tensile strength (psi) 80,000 min.
Yield strength (psi) 40,000 min.
Elongation in 2" (%) 30 min. Avg.
Charpy V-notch impact
value 60 ft.-lbs. @ -320°F

AVAILABLE SIZES AND OPERATING RANGES (DCEP) (DC+)
3/32 (2.4mm) ..... 70-90 amps
1/8 (3.2mm) ..... 100-135 amps
5/32 (4.0mm) ..... 130-180 amps
3/16 (4.8mm) ..... 190-220 amps

WELDING PROCEDURES
Flat, horizontal, vertical, overhead.

NICKEL ALLOY ELECTRODES
WELDING Ni & HIGH Ni ALLOYS INFO.

MSDS THIS PAGE AVAILABLE

ALLOY FC-276
AWS/SFA5.11-90 Class ENiCrMo-4
UNS # W80276

	1 LB CONTAINER (Not Available)		10 LB CONTAINER	
SIZE	PART No.	PRICE	PART No.	PRICE
3/32	-	-	276-332-10	$395.00
1/8	-	-	276-18-10	$375.00
5/32	-	-	276-532-10	$375.00
3/16	-	-	276-316-10	$375.00

DESCRIPTION
Alloy FC-276 is a flux-coated electrode designed for welding low carbon nickel chromium-molybdenum Hastelloy® C and Hastelloy® C-276 to themselves or to stainless steel or nickel base alloys. This electrode offers excellent resistance to pitting, stress-corrosion cracking and oxidizing up to 1900°F. Alloy FC-276 is used for welding the clad side of joints in steel clad with low carbon nickel-chromium molybdenum alloys.

APPLICATIONS
This highly versatile corrosion-resistant electrode is most commonly used in chemical process applications such as ferric and cupric chlorides, solvents, chlorine, sea water and brine solutions, acetic acids, mineral acids and wet chlorine gas.

TYPICAL WELD METAL CHEMISTRY (%)

Ni	Balance
C	0.02 max.
Mn	1.0 max.
Fe	4.0-7.0
S	0.03 max.
Cu	0.50 max.
P	0.04 max.
Cr	14.5-16.5
Mo	15.0-17.0
W	3.0-4.5
V	0.35 max.
Co	2.5 max.
Si	0.20 max.

TYPICAL MECHANICAL PROPERTIES OF WELD DEPOSIT (as welded)
Tensile strength (psi) 100,000
Elongation in 2" (%) 25

AVAILABLE SIZES AND OPERATING RANGES (DCEP) (DC+)
3/32 (2.4mm) ..... 60-80 amps
1/8 (3.2mm) ..... 80-110 amps
5/32 (4.0mm) ..... 105-135 amps
3/16 (4.8mm) ..... 125-165 amps

WELDING PROCEDURES
Flat, horizontal, vertical, overhead.

t Nickel Based and Cobalt-Based Alloys can be certified to most commercial and aircraft specifications, however material supplied to both ASME and MIL specifications are considered nonstandard and must be tested to the applicable specification. Such testing will necessitate additional charges to the buyer. It is the responsibility of the buyer to state these ASME or MIL specification requirements at the time of inquiry.