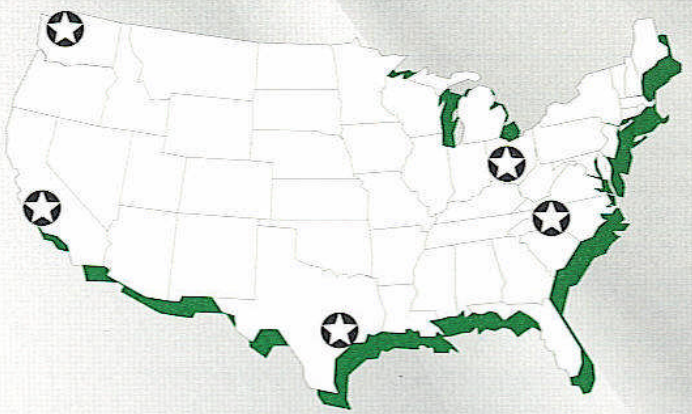
WASHINGTON ALLOY CO.

Quality Products and Services
From the Quality Supplier

FLUX-CORED STAINLESS STEEL WELDING WIRES



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STAINLESS STEEL FLUX-CORED

FEATURES

- Increased efficiency through greater deposition rates
- All-Position welding using standard MIG welding machines
- Smoother and more beautiful bead appearance
- Better arc stability yields minimal spatter
- Thin slag is virtually self-peeling revealing a beautiful and bright stainless steel color weld deposit
- X-ray quality weld deposits. No pinholes or cracks

DESCRIPTION

Washington Alloy Stainless Steel Flux-Cored wires were developed for use with 100% CO_2 or 80% Ar/20% CO_2 shielding gas. The ability of operating over a wide range of current settings permits deposition rates that are nearly 4 times greater than covered electrodes and up to 50% greater than solid MIG wire. Although the cost per pound of Stainless Steel Flux-Cored wires may be more than that of coated electrodes or solid MIG wire, your cost per pound of deposited weld metal is greatly reduced because of the higher deposition efficiency and lower operational costs. The true stainless steel sheath used in manufacturing Washington Alloy Flux-Cored Stainless is your guarantee of smooth performance, x-ray quality welds and a beautiful stainless steel bead appearance. Spatter is extremely low and slag is self-peeling.

"T1-1/T0-1" VS "T1-4/T0-4"?

Stainless Steel Flux-Cored wires that end with a "-1", such as E308LT1-1 are for use with 100% CO2 shielding gas. When using 100% CO_2, there will be a savings since CO_2 is a much cheaper gas, however the weld deposits will lose some of their oxidizable characteristics and will even pick up more carbon from the CO_2 gas. The upside is that you will get greater penetration using CO_2 shielding gas.

SPECIFICATION AWS/SFA 5.22 ALLOY	TYPICAL MECHANICAL PROPERTIES - AS WELDED		*UNDILUTED WELD METAL CHEMICAL ANALYSIS RANGES					
	Tensile Strength minimum	Elongation minimum	C	Cr	Ni	Mo	Mn	Si
308HT0-1/-4 UNS W30831	80,000 psi	35%	0.04 -0.08	18.0 -21.0	9.0 -11.0	0.5	0.5 -2.5	1.0
308LT1-1/-4 UNS W30835	75,000 psi (avg 90,200 psi)	35% (avg 39.4%)	0.4	18.0 -21.0	9.0 -11.0	0.5	0.5 -2.5	1.0
309T0-1/-4 UNS W30931	80,000 psi	30%	0.10	22.0 -25.0	12.0 -14.0	0.5	0.5 -2.5	1.0
309LT1-1/-4 UNS W30935	75,000 psi (avg 83,500 psi)	30% (avg 35%)	0.04	22.0 -25.0	12.0 -14.0	0.5	0.5 -2.5	1.0
309LMoT0-1/-4 UNS W30938	75,000 psi (avg 95,200 psi)	25% (avg 32%)	0.04	21.0 -25.0	12.0 -16.0	2.0 -3.0	0.5 -2.5	1.0
316T0-1/-4 UNS W31631	75,000 psi	30%	0.08	17.0 -20.0	11.0 -14.0	2.0 -3.0	0.5 -2.5	1.0
316LT1-1/-4 UNS W31635	70,000 psi (avg 93,500 psi)	30% (avg 38%)	0.04	17.0 -20.0	11.0 -14.0	2.0 -3.0	0.5 -2.5	1.0
317LT0-1/-4 UNS W31735	75,000 psi (avg 87,000 psi)	20% (avg 28.2%)	0.04	18.0 -21.0	12.0 -14.0	3.0 -4.0	0.5 -2.5	1.0
347T0-1/-4[b] UNS W34731	75,000 psi (avg 96,800 psi)	30% (avg 32%)	0.08	18.0 -21.0	9.0 -11.0	0.5	0.5 -2.5	1.0
410T0-1/-4 UNS W41031	75,000 psi (1562°F x 2 hrs + *F.C. to 1094°F + **A.C.)	27%	0.12	11.0 -13.5	0.60	0.5	1.20	1.0
410NiMoT0-1/-4 UNS W41036	146,000 psi 127,000 psi (1112°F x 1 hr + **A.C.)	8% 22%	0.06	11.0 -12.5	4.0 -5.0	0.40 -0.70	1.0	1.0
409T1-1/-4[a] UNS W40931	82,000 psi	29%	0.10	10.5 -13.5	0.60	0.5	0.80	1.0

*F.C.: Furnace Cooling
**A.C.: Air Cooling

* Single values shown are maximums
*All of the above contain P: 0.04 max, S: 0.03 max and Cu: 0.5 max
a. Contains Titanium (Ti) in the amount of 10 x C min, 1.5 max.
b. Contains: Cb+Ta(Nb): 8 x C min., 1.0 max

Stainless Steel Flux-Cored wires that end with a "-4", such as E308LT1-4 are designed for use with a 20-25% CO_2/Balance Argon mixtures. Washington Alloy recommends 80% Ar/20% CO_2 (although you can use 75% Ar/25% CO_2) for this specification. An 80/20 mixture will give a much softer arc, resulting in virtually no spatter. The softer arc also enhances vertical welding. Weld deposits of "-4" Stainless Steel Flux-Cored wires exhibit less carbon pick up and less chromium loss, which pushes up the ferrite level of the weld deposit. Keep this fact in mind when examining the desired ferrite level or considering which gas to use. Greater weld deposit toughness can be achieved by choosing an 80/20 mixture over 100% CO_2.

WELDING RECOMMENDATIONS FOR OPTIMUM RESULTS

- Be sure that the wire feed drive rolls are not too tight, so as to not "crush" the flux-cored wire.
- Make sure the conduit and liner are as short as possible and that they are the correct I.D.
- Welding should be done from left to right. This will reduce spatter even further.
- The torch angle should be 10-20° from vertical to the base metal.
- Preheating is generally not needed for 300 series (austenitic) Stainless Steel, however, 400 series does require preheating.
- Changing the length of the wire stick-out does have a profound effect. The wire stick-out length influences arc stability, penetration, bead appearance and deposition rates. Basically you can increase the deposition rate by welding with a longer wire stick-out.

SPECIFICATIONS

AWS: A5.22
ASME: SFA 5.22
ABS American Bureau of Shipping

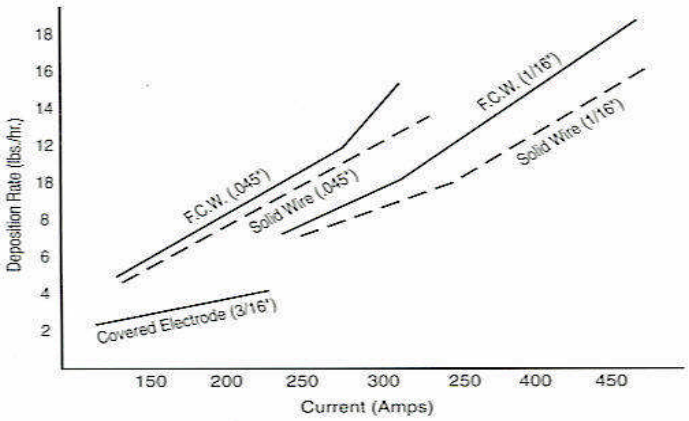
PACKAGE OPTIONS

10 lb. (4.54 kg) spool - 8" flange.035 (0.9 mm), .045 (1.2 mm), 1/16 (1.6 mm)
25 lb. (11.34 kg) spool - 12" flange.035 (0.9 mm), .045 (1.2 mm), 1/16 (1.6 mm)
All 1 spool per carton
Standard Pallets are 2100 lbs. (84 spools x 25 lbs./spool)

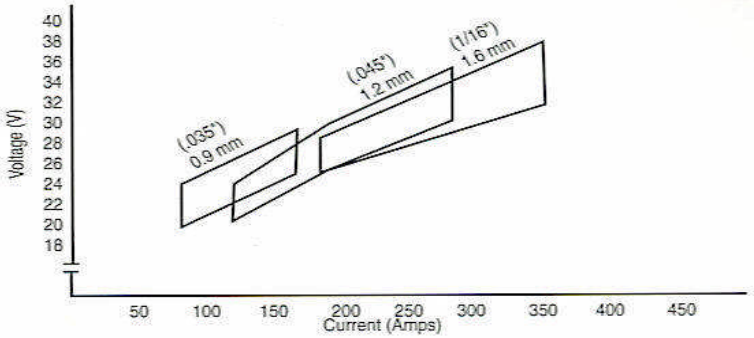
APPLICATIONS

All-position welding of AISI 301, 302, 304, and 308. Produces an austenitic (non-magnetic) 19% Chromium - 9% Nickel weld deposit with a controlled ferrite.
Similar to 308HT0-1/-4 but the lower carbon content in the weld deposit greatly reduces the possibility of intergranular corrosion caused by carbide precipitation. Commonly used on AISI 301, 302, 304, 304L and 308L.
All-position welding of 25% Chromium - 12% Nickel Stainless Steel. Commonly used on dissimilar metals such as joining stainless steel to carbon or low alloy steel and for welding the clad side of 18-8 stainless clad steels.
Better corrosion resistance than 309T0-1/-4, due to the lower carbon content of the weld deposit. Excellent crack resistance and oxidation resistance at extreme temperatures. Typical applications include furnaces, kiln linings, 309 wrought or cast parts.
For joining dissimilar metals of stainless steel to carbon and low alloy steels. Most commonly used as a buffer layer when cladding mild steel with 316 austenitic stainless.
For welding 18% Chromium - 12% Nickel - 2.5% Molybdenum Stainless Steel. The addition of Molybdenum gives added creep resistance at elevated temperatures and corrosion resistance against "pitting" that may be caused by sulfuric and sulfurous acids, phosphoric acids and acetic acids.
An all-position wire similar to 316T0-1/-4 however the lower carbon content of the weld metal provides protection against intergranular corrosion due to carbide precipitation. Commonly used in industries that manufacture rayon, dyes, paper, ink, rubber, bleaches, photographic chemicals.
All-position welding of austenitic 18% Chromium - 12% Nickel - 3.5% Molybdenum Stainless Steel which is subjected to severely corrosive acids such as sulfuric or sulfurous acids and their salts. Excellent resistance to corrosion and pitting.
For Columbium stabilized grades of AISI 347 and 321 or 18/8 grades of austenitic stainless subjected to temperatures above 750°F but less than 1550°F. Also available in a low carbon grade (E347LT0-1/-4) with a carbon level average of .03.
For welding AISI 403, 405, and 410 Chromium steel. Primarily used as an overlay on carbon steel to give added resistance against corrosion, erosion or abrasion on valve seats and parts. Preheat and Postheat treatment is required for most applications.
All-position welding of 409, 410, 410S and 405 stainless steel. Less crack sensitive than 410T0-1/-4. Primarily used for repairing and welding CA6NM castings such as found in fluid handling equipment, valves and pump parts. Postweld heat treatment required.
For welding base metals of similar analysis. 11% Chromium with 0.70% titanium as a stabilizer.

DEPOSITION RATE



RECOMMENDED CURRENT RANGES (Flat/Horizontal) FCW

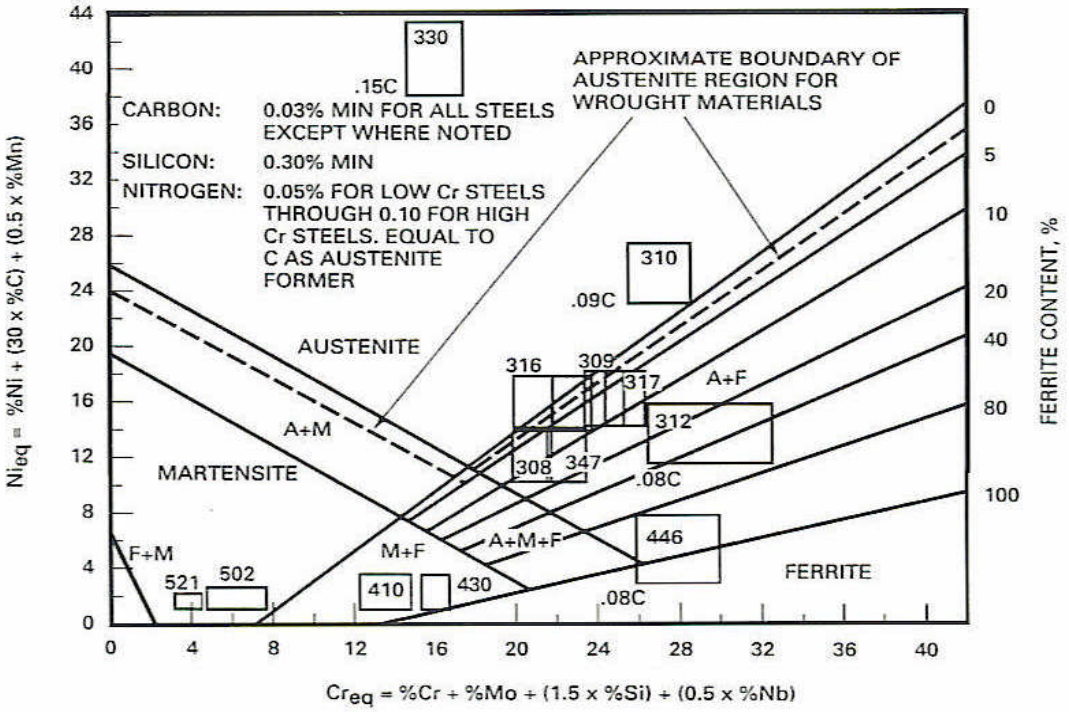


AVAILABLE SIZES AND WELDING PARAMETERS (DC REVERSE POLARITY)[1]

Diameter (mm)		.035" (0.9 mm)		.045" (1.2 mm)		1/16" (1.6 mm)	
Shielding Gas		CO_2	80%Ar+20%CO_2	CO_2	80%Ar+20%CO_2	CO_2	80%Ar+20%CO_2
F	Amp.	120~130	120~130	180~200	180~200	220~240	220~240
	Volt	29~31	27~29	30~32	28~30	30~32	28~30
V-Up	Amp.	60~80	60~80	110~140	110~140	—	—
	Volt	26~28	25~27	22~24	21~23	—	—
Gas Flow Rate		(20L/min)	42 ft³/hr				
Electrode Stickout		(10-20 mm)	1/2 - 3/4"				

[1] Ideal procedure is to set the wire feed speed and find the voltage setting that will yield the smoothest performance.

SCHAEFFLER DIAGRAM FOR ESTIMATING THE MICROSTRUCTURE OF STAINLESS STEEL WELD METAL



Courtesy of American Welding Society Welding Handbook 8th Ed. Vol. 4 Part 2