



**!!!! WARNING !!!!**



**WELDING FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH.**

**BEFORE USING THIS PRODUCT THE WELDER (END-USER) MUST READ AND UNDERSTAND THE COMPLETE PRODUCT WARNING LABEL AND MATERIAL SAFETY DATA SHEET (MSDS).**

**THE MATERIAL SAFETY DATA SHEET (MSDS) WHICH OUTLINES THE POTENTIAL HEALTH HAZARDS AND SAFETY INFORMATION RELATED TO THIS PRODUCT CAN BE DOWNLOADED FROM THE MSDS PORTION OF THIS WEBSITE. IT IS ALSO AVAILABLE FROM YOUR EMPLOYER AND WELDING SUPPLY DISTRIBUTOR.**

**DO NOT PROCEED WITH USE OF THIS PRODUCT UNTIL YOU READ AND UNDERSTAND THE MATERIAL SAFETY DATA SHEET (MSDS) AND PRODUCT WARNING STATEMENT.**

**BE SURE TO CONSULT THE LATEST VERSION OF THE MSDS.**

**SEE THE PRODUCT WARNING LABEL AND MSDS FOR COMPLETE WARNING INFORMATION.**



# **CROWN ALLOYS**

## **COMPANY**

30105 STEPHENSON HWY.  
MADISON HEIGHTS, MI. 48071  
(248) 588-3790 • (800) 521-7878

### **STAINLESS STEEL COVERED ELECTRODES**

#### **Welding Parameters for 300 & 400 series Stainless Steel Covered Electrodes**

##### **Specifications:**

- **SMAW (Shielded Metal Arc Welding) - Crown Alloys stainless steel covered stick electrodes** are exactly manufactured to conform to the requirements of American Welding Society (AWS) Filler Metal Specification **A5.4/A5.4M:2006**.

Most of the **Crown Alloys stainless electrodes** have a titania coating (-16 suffix). Titania-covered electrodes are very popular because they are designed to work with AC or DC machines *and* they operate in all positions. The **Crown stainless covered electrodes** exhibit smooth arc action, low amount of fine spatter and easy slag removal.

##### **Precautions:**

- **Crown Alloys stainless steel coated electrodes** should be treated and stored as low hydrogen electrodes. They should not be exposed to damp air, and once a sealed bag is opened, the electrodes should be used entirely or stored in a warm, dry and sealed container.

##### **Procedure:**

- For high quality welds, joints must be clean and dry. Welding current can be either DC reverse polarity (DC+) or AC. However, DC+ always ensures the best weldability and penetration. Use a short arc, but keep the coating (flux) from touching the puddle. Try to run these **stainless steel electrodes** as cool as possible. Start welding at the low end of the amp range and increase amps until a smooth and stable arc is established. Fill each crater before breaking the arc to avoid crater cracks. On deep groove butt joints, the root pass should penetrate only enough to fuse to both plates and seal the opening. More penetration may cause cracks.

#### **Recommended Welding Parameters for Stainless Steel Stick Electrodes (Direct Current Reverse Polarity)\***

Wire Diameter (inches)	Welding Current (amperage)						Arc Voltage (volts)
	300 Series			400 Series			
	Flat	Vertical	Overhead	Flat	Vertical	Overhead	
1/16	20 – 45	15 – 35	20 - 40	N/A	N/A	N/A	21 - 26
5/64	30 – 50	25 – 40	30 – 45	N/A	N/A	N/A	22 – 26
3/32	45 – 80	35 – 60	40 – 65	50 - 75	40 – 55	45 – 65	22 - 26
1/8	70 – 110	60 - 75	65 – 90	80 – 115	65 – 80	75 – 100	22 - 26
5/32	100 – 145	85 – 100	95 – 120	115 – 160	95 – 110	105 – 130	23 – 26
3/16	130 – 190	100 – 115	125 – 150	150 – 210	115 – 130	145 – 170	22 - 25
1/4	175 – 270	Not Recommended	Not Recommended	235 – 310	Not Recommended	Not Recommended	22 - 25

\*When the welder is in the AC position, use an amp range that is 10% to 20% greater than that of the DCRP position.

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### **STAINLESS STEEL ALLOYS (continued)**

<b>Coated Electrodes (SMAW)</b>	<b>Cut length (TIG) or (GTAW) &amp; Spooled Wire (MIG) or (GMAW)</b>	<b>TYPICAL APPLICATIONS</b>
<b>ANSI/AWS SFA A5.4</b>	<b>ANSI/AWS SFA 5.9</b>	
E 316-15 E 316-16	ER 316	Used for welding 316 wrought alloys and CF-8M cast alloys. Also used on type 304 and 308 alloys when better corrosion resistance than type 308 is needed. Tensile strength 85,000PSI
E 316L-15 E 316L-16 E 316L-17	ER 316L	Similar usage as E316/ER316 but lower carbon content increases resistance to intergranular corrosion and helps to inhibit weld cracking. Tensile strength 82,000 PSI
	ER 316LSi	Similar usage as above but higher silicon content increases wetability. Tensile strength 82,000 PSI
	ER 317L	Used to weld alloys of similar composition. It is utilized in severely corrosive environments where crevice and pitting corrosion are of concern. Tensile strength 75,000 PSI
	ER 320	Resists severe corrosion involving a wide range of chemicals, including sulfuric and sulfurous acids and their salts. Tensile strength 80,000 PSI
	ER 320LR	Similar usage as above but the low residuals "LR" reduce the weld metal hot cracking and fissuring. Tensile strength 75,000 PSI
E 330-16	ER 330	Used to weld 330 wrought alloys and HT cast alloys. Good high temperature characteristics make it first choice for work on heat treat and other type furnaces. Tensile strength 86,000 PSI
E 347-16	ER 347	Used to weld type 347/321 wrought alloy and CF-8C cast alloys. Also used to weld 304-308 type alloys when intergranular corrosion is a problem. Tensile strength 96,000 PSI
	ER 409	Used primarily for welding catalytic converters and exhaust system components.
	ER 409Cb	Columbium (Cb) is added to reduce oxidation losses.
E 410-16	ER 410	Used to weld type 403, 410, 414 and 420 martensitic stainless steels. Tensile strength 89,000 PSI
	ER 420	This classification is similar to ER 410, except for slightly higher chromium and carbon contents which increases wear resistance.
	ER 630 (17-4 PH)	Designed to weld Type 630 and some other precipitation-hardening stainless steels.

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## Filler Metal Selector Guide for Stainless Steels (page 1)

Stainless Steel or Steel Base Alloy	442	430F	430	501	416	403	321	317	316L	316	314	310	309	304L	303	201	MILD STEEL				
	446	430FSE	431	502	416SE	405	348					310S	309S		303SE	202		301	302	302B	304
201-202	310	310	310	310	309	309	347	308	308	308	308,	308	308	308	308	308	312				
301-302	312	312	312	312	310	310	308	316	316	316	309					310					
302B-304	309	309	309	309	312	312		317			310					309					
305-308																308					
303	310	310	310	310	309	309	347	308	308	308	308,	308	308	308	308-15	308	312				
303SE	309	309	309	309	310	310	308	316	316	316	309					310					
	312	312	312	312	312	312	317	317			310					309					
304L	310	310	310	310	309	309	347	308	308L	308	308,	308	309	308L	308	308	312				
	309	309	309	309	310	310	308L	316		316	309		308			310					
	312	312	312	312	312	312	317	317		310	310		308			309					
309	310	310	310	310	309	309	347	317	316	316	309	309	309	309	308	308	309				
309S	309	309	309	309	310	310	308	316	309	309	310	310	310	308		310					
	312	312	312	312	312	312	309	309		310						312					
310	310	310	310	310	310	310	347	317	310	316	310	310	309	308	308	308	310				
310S	309	309	309	309	309	309	308	316	316	310			310			309					
	312	312	312	312	312	312	309	309	309	309						312					
314	310	310	310	310	310	310	309	309	309	309	310-15	310	309	308,	308,	308,	310				
	312	312	312	312	312	309	310	310	310	310			310	309	309	309	309				
	309	309	309	309	309	312	347	317	316	316				310	310	310	312				
316	310	310	310	310	309	309	347	316	316	316	309	316	316	308	308	308	309				
	309	309	309	309	310	310	308	308			310	310	309	316	316	316	310				
	312	312	312	312	312	312					316	309	310	316	316	316	312				
316L	310	310	310	310	309	309	347	316	316L	316	309	310	316	308L	308	308	309				
	309	309	309	309	310	310	308	317			310	316	309	316	316	316	310				
	312	312	312	312	312	312	308	308			316	309				316	312				

Bold numbers indicate first choice, light numbers indicate second and third choice. This choice can vary with specific applications and individual job requirements.

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	446	430FSE	431	502	416SE	405	348									317		316L	316	314	310
317	310	310	310	310	309	309	308	317	316	316	309	317	317	308	308	308	309				
	309	309	309	309	310	310	347		317	308	310	316	316	316	316	316	310				
	312	312	312	312	312	312			308	308	317	309	309	317	317	317	312				
321	310	310	310	310	309	309	347	308	347	347	309	347	347	347	347	347	309				
348	309	309	309	309	310	310		347	308	308	310	308	308	308L	308	308	310				
347	312	312	312	312	312	312					347					312					
403-405	310	310	310	310	410-15*	410*	309	309	309	309	310	310	309	309	309	309	309				
410-420	309	309	309	309	309**	309**	310	310	310	310	309	309	310	310	310	310	310				
414	312	312	312	312	310**	310**	312	312	312	312	312	312	312	312	312	312	312				
416	310	310	310	310	410-15*	410-15*	309	309	309	309	310	310	309	309	309	309	309				
416SE	309	309	309			309**	310	310	310	310	312	309	310	310	310	310	310				
						310**	312	312	312	312	309	312	312	312	312	312	312				
501	310	310	310	502*	310	310	310	310	310	310	310	310	310	310	310	310	310				
502				310**		309	309	309	309	309	312	309	309	309	309	312	312				
						312	312	312	312	312	309	312	312	312	312	309	309				
430	310	310	430-15*	310	310	310	310	310	310	310	310	310	310	310	310	310	310				
431	309	309	310**		309	309	309	309	309	309	312	309	309	309	309	312	309				
			309**		312	312	312	312	312	312	309	312	312	312	312	309	312				
430F	310	410-15*	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310				
430FSE	309		309		309	309	309	309	309	309	312	309	309	309	309	312	309				
					312	312	312	312	312	312	309	312	312	312	312	309	312				
442	309	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310	310				
446	310	309	309		309	309	309	309	309	309	312	309	309	309	309	312	309				
					312	312	312	312	312	312	309	312	312	312	312	309	312				

\*Preheat    \*\*No Preheat Necessary    Bold numbers indicate first choice, light numbers indicate second and third choice. This choice can vary with specific applications and individual job requirements.