

REVOLLOY®

Welding Products



Revolloy has been supplying a wide range of welding consumables since 2008. We have developed the knowledge, inventory to meet the demanding needs of our customers in Asia Pacific Region.

We provide the high-end innovative welding products for the Oil and Gas Industry, with the relevant Shipping Approval Certification from American Bureau of Shipping (ABS) & Det Norske Veritas (DNV)

Revolloy operates under a strict quality system to ensure our products quality throughout the purchasing, processing, warehousing, and shipping. Our ability to offer exceptional value to our customers is what distinguishes us in the welding industry. Not only do we offer high quality products at competitive prices, we also provide the necessary technical support to all our customers.

We are aware that most of our customers face an ever increasing competitive pressures in a constantly changing business environment. Since product cost and on-time delivery are vital to success, many customers have learned that partnering with **Revolloy** gives them the competitive advantage they need to reduce cost and improves on their bottom line.

Important Notice:

Revolloy sells all its products subject to the "Term and Conditions of Sale". There are no warranties whatsoever, whether written, oral, implied, express or statutory, other than those specified in the Terms and Conditions of Sales. There is no warranty of merchantability or fitness for a particular purpose. The data contained in this catalogue is intended for general information only, and not for specification purposes. Applications suggested for these alloys are made to permit you to make your own evaluation and decision, and not to be construed as either express or implied warranties of fitness for these or other application. All analysis should be considered as typical or average values, and are minimum or maximum only when indicated. They are not for specification purposes.



Product Information

Page

Stainless Steel Coated Electrodes	2
Stainless Steel Flux Cored Wire	3
Stainless Steel Solid Wire - GTAW, GMAW, SAW	3
Stainless Steel Welding Flux for SAW	6
Nickel Alloy – GTAW, GMAW, SAW Wire	8
Carbon & Low Alloy Steel – GTAW, GMAW, SAW	10
Low Temperature Wire – GTAW, GMAW, SAW	11
Heat Resistance Wire – GTAW, GMAW, SAW	12
Carbon & Low Alloy Steel – Flux Cored Wire	13
Carbon & Low Alloy Steel Wire – SAW	13
Carbon & Low Alloy Steel Welding Flux for SAW	14
Titanium Wire – GTAW, GMAW Wire	16
Aluminium Wire – GTAW, GMAW	17
Copper & Copper Alloy Wire – GTAW, GMAW	18
Copper Brazing Wire – GTAW, GMAW	19
Tungsten Carbide Brazing Consumable	19
Silver Brazing Consumable – Cadmium Free Coated Rods	20
Hardfacing Consumable – Coated Electrode	21
Hardfacing / Wear Resistant Welding Flux for SAW	22
<u>Notes:</u>	
Typical Welding Parameters Recommendations	23
Schaeffler Diagrams & WRC Diagram	25
Hardness Conversion Chart	26



Stainless Steel Consumables for SMAW Welding

Product Name	ASME/AWS	Applications and Characteristics	Typical Chemical Analysis %		Typical Mechanical Properties	
					Tensile Strength MPa	EL %
RevoWel 307L-16	A5.4 E307L-16	REVOWEL 307L-16 is a lime titanium oxide type stainless steel covered electrode with 5% Mn designed for welding hardenable steel, austenitic high Mn-steel including dissimilar welding on C-Mn. The deposited weld metal has excellent crack resistance	C Mn Si Cr Ni Mo	0.08 4.25 0.40 19.6 9.80 0.70	630	42
RevoWel 308L-16	A5.4 E308L-16	REVOWEL 308L-16 is a lime titanium oxide type stainless steel covered electrode designed for welding type 304, 304L base material with low carbon content, depositing weld metal containing approximately 19%Cr-9%Ni.	C Mn Si Cr Ni	0.03 0.66 0.80 19.3 9.80	556	47
RevoWel 308H-16	A5.4 E308H-16	REVOWEL 308H-16 is a lime titanium oxide type stainless steel covered electrode designed for welding type 308H base material with low carbon content, depositing weld metal containing approximately 19%Cr-9%Ni.	C Mn Si Cr Ni	0.06 0.76 0.72 19.3 9.85	630	43
RevoWel 309L-16	A5.4 E309L-16	REVOWEL 309L-16 is a lime titanium oxide type covered electrode for low carbon content stainless steel, depositing weld metal containing approximately 23%Cr-13%Ni. This electrode is used primarily for welding type 316L and 316 clad steels, or dissimilar welding between carbon steel & stainless steel.	C Mn Si Cr Ni	0.03 1.20 0.72 23.7 13.40	570	39
RevoWel 309LMo-16	A5.4 E309LMo-16	REVOWEL 309LMo-16 is a lime titanium oxide type covered electrode for low carbon content stainless steel, depositing weld metal containing approximately 2.5%Mo. This electrode is used primarily for welding type 316L and 316 clad steels, or dissimilar welding between carbon steel & stainless steel.	C Mn Si Cr Ni Mo	0.03 1.25 0.63 22.89 12.94 2.5	650	40
RevoWel 310-16	A5.4 E310-16	REVOWEL 310-16 is a lime titanium oxide type covered electrode for heat resistant austenitic Type 310 stainless steel depositing weld metal containing approximately 25%Cr 20%Ni.	C Mn Si Cr Ni Mo	0.10 1.63 0.33 27.28 21.73 0.07	569	38
RevoWel 316L-16	A5.4 E316L-16	REVOWEL 316L-16 is a lime titanium oxide type covered electrode for Type 316 low carbon content stainless steel, depositing weld metal containing approximately 18%Cr 12%Ni 2.0%Mo.	C Mn Si Cr Ni Mo	0.02 1.63 0.71 17/91 12.38 2.5	560	41
RevoWel 347-16	A5.4 E347-16	REVOWEL 347-16 is a niobium bearing rutile type covered electrode for Ta + Nb stabilized 18%Cr-8%Ni steel, especially for high temperature services. This electrode is used primarily for welding type 347 and 321 steel, the depositing weld metal containing Niobium which promotes good inter-granular corrosion resistance.	C Mn Si Cr Ni Mo	0.04 0.79 0.89 19.28 9.5 2.49	643	38

Stainless Steel Consumables for FCAW Welding

Product Name	ASME/AWS	Applications and Characteristics	Typical Chemical Analysis %		Typical Mechanical Properties	
					Tensile Strength MPa	EL %
RevoCor 308LT1	A5.22 E308LT1-1/4	REVOCOR 308LT-1 is a rutile flux cored tubular wire for all-positional welding capable of depositing a nominal 18%Cr-8%Ni low carbon weld metal for the welding of stainless steels of similar composition. The weld metal provides a good resistance to inter-granular corrosion and is suitable for applications operating at temperatures up to 300°C.	C Mn Si Cr Ni	0.02 1.31 0.72 20.5 10.5	550 33J @ -196C	45
RevoCor 308HT1	A5.22 E308HT1-1/4	RevoCor 308HT-1 is a rutile flux cored tubular wire for all-positional welding of types 304H and 347H stainless when high temperature service is required.	C Mn Si Cr Ni	0.06 1.42 0.72 19.9 9.4	565 34J @ -196C	34
RevoCor 309LT1	A5.22 E309LT1-1/4	REVOCOR 309LT1-1 is a gas shielded rutile flux cored wire for all-positional welding capable of depositing a low C -23%Cr -12%Ni weld metal for welding joints between stainless steel to mild and medium tensile steels.	C Mn Si Cr Ni	0.03 1.20 0.5 22.2 12.8	586	38
RevoCor 309LMo	A5.22 E309LMoT1-1/4	REVOCOR 309LMo is a gas shielded rutile flux cored wire for all-positional welding capable of depositing a low C-23%Cr -12%Ni - 2.5%Mo weld metal for welding joints between stainless steel to mild and medium tensile steels.	C Mn Si Cr Ni Mo	0.02 0.90 0.74 23.4 13.2 2.6	660	31
RevoCor 316LT1	A5.22 E316LT1-1/4	REVOCOR 316LT-1 is a gas shielded rutile flux cored wire for all-positional welding capable of depositing a nominal low C-19%Cr-12%Ni-2.6%Mo weld metal for the welding of 316L grade stainless steels. Being a molybdenum bearing stainless steel provides good resistance to pitting corrosion and crevice corrosion in non-oxidising acids.	C Mn Si Cr Ni Mo	0.02 1.70 0.70 19.00 12.00 2.80	587 65J @ -100C	30
RevoCor 316LT-PA	A5.22 E316LT0-1/4	REVOCOR 316LT-PA is a gas shielded rutile flux cored wire for flat & horizontal welding capable of depositing a nominal low C-19%Cr-12%Ni-2.6%Mo weld metal for the welding of 316L grade stainless steels. Being a molybdenum bearing stainless steel provides good resistance to pitting corrosion and crevice corrosion in non-oxidising acids.	C Mn Si Cr Ni Mo	0.037 1.13 0.67 18.16 12.17 2.5	520	38

Stainless Steel Consumables for GTAW, GMAW and SAW Welding

Revofil 307Si	A5.9 (ER307Si) EN 18 8 Mn	For welding on work-hardenable steels, armour plates, austenitic Mn steels and free-machining steels, e.g. 303. Also for stainless Cr steels with max. 18% Cr, e.g. in the automotive industry. Overlay welding of carbon and low-alloyed steels The corrosion resistance is similar to that of stainless the respective parent metal.	C Mn Si Cr Ni Mo	0.070 6.76 0.7 18.8 8.94 0.12	600	41
Revofil 308L	A5.9 ER308L EN 19 9 L	The weld metal is 18Cr-8Ni stainless steel. It is suitable for the welding of AISI 304, 304L, 301, 302 and 321.	C Mn Si Cr Ni	0.024 1.65 0.42 20.1 10.3	580	42
Revofil 308H	A5.9 ER308H EN 19 9 H	The weld metal is 18Cr-8Ni stainless steel. It is suitable for the welding of AISI 304, 304L, 301, 302, 308, 308H and 321.	C Mn Si Cr Ni	0.05 1.65 0.46 20.4 9.85	610	40



Stainless Steel Consumables for GTAW, GMAW and SAW Welding

Product Name	AWS A5.9 / EN 12072	Applications and Characteristics	Typical Chemical Analysis %		Typical Mechanical Properties	
					Tensile Strength MPa	EL %
Revofil 308LSi	A5.9 ER308LSi EN 19 9 L Si	The weld metal with low carbon and higher silicon content improves the fluidity of the filler metal during welding.	C Mn Si Cr Ni	0.025 2.25 0.78 19.80 10.50	590	41
Revofil 309L	A5.9 ER309L EN 23 12 L	The weld metal contains high Ni and Cr. Suitable for the welding of dissimilar metals such as mild steel to stainless steel.	C Mn Si Cr Ni	0.023 1.98 0.39 23.9 12.90	590	40
Revofil 309LSi	A5.9 ER309LSi EN 23 12 L Si	The weld metal with low carbon and higher silicon content improves the fluidity of the filler metal during welding.	C Mn Si Cr Ni	0.024 2.35 0.74 23.9 13.80	600	38
Revofil 309LMo	A5.9 (ER309LMo) EN 23 12 2 L	The weld metal is low carbon 25Cr-12Ni-2.5Mo stainless steel. Excellent oxidization resistance at high temp. can be attained. Suitable for welding of dissimilar metals.	C Mn Si Cr Ni Mo	0.01 1.82 0.46 21.35 14.80 2.54	620	42
Revofil 310	A5.9 ER310 EN 25 20	Excellent corrosion resistance, heat resistance, and toughness. Suitable for the welding of steel with high hardenability, and 13Cr steel.	C Mn Si Cr Ni	0.09 2.01 0.40 27.40 21.80	610	41
Revofil 312	A5.9 ER312 EN 29 9	For welding of 29%Cr-9%Ni stainless cast steel. And dissimilar metal such as carbon steel or low alloy steel to stainless steel.	C Mn Si Cr Ni	0.13 1.62 0.49 29.6 8.70	710	26
Revofil 316L	A5.9 ER316L EN 19 12 3 L	For welding of 18%Cr-12%Ni-2%Mo stainless steel. Excellent creep strength and resistance to sulfuric acid due to the Mo content.	C Mn Si Cr Ni Mo	0.02 1.91 0.42 19.10 12.60 2.6	560	40
Revofil 316LSi	A5.9 ER316LSi EN 19 12 3 L Si	For welding of 18%Cr-12%Ni-2%Mo stainless steel. Excellent creep strength and resistance to sulfuric acid due to the Mo content.	C Mn Si Cr Ni Mo	0.02 1.91 0.80 19.10 12.60 2.6	560	40
Revofil 317L	A5.9 ER317L EN 19 13 4 L	For welding of low carbon 19%Cr-13%Ni-3%Mo stainless steel. Excellent inter-granular corrosion resistance.	C Mn Si Cr Ni Mo	0.02 1.76 0.40 19.60 13.70 3.60	570	42



Stainless Steel Consumables for GTAW, GMAW and SAW Welding

Product Name	AWS A5.9 / EN 12072	Applications and Characteristics	Typical Chemical Analysis %		Typical Mechanical Properties	
					Tensile Strength MPa	EL %
Revolfil 318	A5.9 ER318 EN 19 12 3 Nb	For welding stabilised austenitic stainless steel such as AISI318.	C Mn Si Cr Ni Nb Mo	0.04 1.85 0.40 18.9 13.0 0.80 2.53	640	37
Revolfil 347	A5.9 ER347 EN 19 9 Nb	For welding of heat resistance steel. Excellent intergranular corrosion resistance due to Nb content, suitable for welding of AISI 347, 321, 304L.	C Mn Si Cr Ni Nb	0.04 1.61 0.41 20.40 9.9 0.80	630	41
Revolfil 347Si	A5.9 ER347Si EN 19 9 Nb Si	The weld metal is ultra low carbon and higher silicon content that improves the fluidity of the filler metal during welding.	C Mn Si Cr Ni Nb	0.02 1.9 0.8 19.2 9.9 0.52	665	37
Revolfil 410NiMo	A5.9 (ER 410NiMo) EN 13 4	For welding of soft Martensitic like DIN X5 Cr Ni 13 4 or similar in hydropower equipment. Surfacing the continuous casting rolls of the steel mills.	C Mn Si Cr Ni Mo	0.02 0.73 4.1 12.2 4.5 0.55	990	15
Revolfil 410	A5.9 ER410 EN 13L	For welding of 13%Cr stainless steel such as AISI 410 and AISI 420.	C Mn Si Cr Ni	0.14 0.20 0.13 12.16 0.30	530	25
Revolfil 904L	A5.9 ER385 EN 20 25 5 Cu L	For welding of stainless high-alloyed Ni-Cr-Mo-Cu grade 904L or other similar materials. Excellent resistance to stress corrosion cracking and intergranular corrosion as well as in non-oxidising acids, e.g. sulphuric, phosphoric. Also used for welding of clad steels or overlay on carbon steel.	C Mn Si Cr Ni Mo Cu	0.020 1.8 0.4 20 25 4.5 1.5	550	35
Revolfil 2209	A5.9 ER2209 EN 22 9 3NL	For welding of duplex stainless steels such as UNS31803, S31500, S31200, S32304. Excellent resistance to intergranular corrosion and pitting. Good resistance to stress corrosion cracking, especially in environments containing H2S and chlorides.	C Mn Si Cr Ni Mo N	0.012 1.23 0.48 23.28 8.57 3.2 0.14	750	25
Revolfil 2594	A5.9 ER2594 EN 25 9 4NL	For welding of Superduplex stainless steel such as UNS32750, S32760. It is also use to weld UNS31803 duplex where higher corrosion resistance is required.	C Mn Si Cr Ni Mo N	0.013 0.40 0.30 25.10 9.50 4.0 0.26	850	27



Stainless Steel Flux for SAW Welding

REVOFLUX 330

REVOFLUX 330 is an agglomerated flux for welding austenitic stainless steel. It contains a well balance alloying element to maintain the stability of the ferrite in weld metal. It gives a high resistance to crack, corrosion and mechanical properties. The flux in combination with wire gives a good weldability, excellent slag detachability, and good smooth weld bead appearance. It is use in combination with stainless steel wire grade 308L, 316L, and 309L in submerged arc welding.

Classification: EN760 SA FB 2 AC

Grain Size: 10-60 Mesh

Basicity Index: 2.7

SiO ₂ +TiO ₂	Al ₂ O ₃ +MnO	CaO+MgO	CaF ₂
15.0	20.0	0.40	25.0

The flux must be bake at 300 ~350C for 2 hours before use.

TYPICAL CHEMICAL ANALYSIS OF WELD-METAL (%)

	C	Mn	Si	Ni	Cr	Mo
Revofil 308L	0.03	1.58	0.65	9.20	19.20	-
Revofil 309L	0.03	1.48	0.62	13.32	23.25	-
Revofil 316L	0.03	1.70	0.40	11.20	19.00	2.5

TYPICAL WELD-METAL MECHANICAL PROPERTIES

	Tensile Strength (N/mm ²)	Elongation (%)	Charpy @ -196°C
Revofil 308L	≥510	≥30	≥40J
Revofil 309L	≥510	≥25	≥40J
Revofil 316L	≥510	≥25	≥40J

Stainless Steel Flux for SAW Welding

REVOFLUX 500

REVOFLUX 500 is a special agglomerated flux for welding austenitic stainless steel. It contains a well balance alloying element to maintain the stability of the ferrite in weld metal. It gives a high resistance to crack, corrosion and mechanical properties. The flux in combination with wire gives a good weldability, excellent slag detachability, and good smooth weld bead appearance. It is use in combination with stainless steel wire grade 308L, 309L, 316L, 309LMO, 347 and 2209 in submerged arc welding.

Classification: EN760 SA FB 2 53 AC

Grain Size: 2-20 Mesh

Basicity Index: 2.2

SiO ₂ +TiO ₂	Al ₂ O ₃ +MnO	CaO+MgO	CaF ₂
15.0	20.0	0.40	25.0

The flux must be bake at 300 ~350C for 2 hours before use.

TYPICAL CHEMICAL ANALYSIS OF WELD-METAL (%)

	C	Mn	Si	Ni	Cr	Mo	Nb
Revofil 308L	0.03	1.58	0.65	9.20	19.20	-	-
Revofil 309L	0.03	1.48	0.62	13.32	23.25	-	-
Revofil 316L	0.03	1.70	0.40	11.20	19.00	2.5	-
Revofil 309LMO	0.03	1.80	0.40	13.32	23.25	2.5	-
Revofil 347	0.07	1.60	0.40	9.50	19.50	-	1.00
Revofil 2209	0.03	1.70	0.40	9.50	23.00	3.0	-

TYPICAL WELD-METAL MECHANICAL PROPERTIES

	Tensile Strength (N/mm ²)	Elongation (%)	Charpy
Revofil 308L	≥510	≥30	≥40J @ -196°C
Revofil 309L	≥510	≥25	≥40J @ -20°C
Revofil 316L	≥510	≥25	≥40J @ -196°C
Revofil 309LMO	≥510	≥25	≥40J @ -20°C
Revofil 347	≥510	≥25	≥40J @ -40°C
Revofil 2209	≥690	≥20	≥40J @ -40°C



Nickel Alloy Consumables for GTAW, GMAW and SAW Welding

Product Name	ASME/AWS	Applications and Characteristics	Typical Chemical Analysis %		Typical Mechanical Properties	
					Tensile Strength MPa	EL %
Revolfil 625	A5.14 ERNiCrMo-3	For welding of Alloy 625, Alloy 825, Alloy 25-6MO, and other molybdenum-containing stainless steels. This filler metal is used for surfacing of steel, welding nickel steels, and welding various corrosion-resistant alloys such as alloy 20.	C Mn Si Cr Ni Mo Fe	0.01 0.034 0.08 22.4 Rem 8.73 1.0 max	780	35
Revolfil 622	A5.14 ERNiCrMo-10	For welding of Alloys 22, 622 and 625, Alloy 25-6MO, and Alloy 825. Dissimilar joints involving Ni-Base alloy, and carbon steel, low-alloy and stainless steels.	C Mn Si Cr Ni Mo	0.01 0.35 0.06 21.5 Rem 13.5	790	40
Revolfil C-276	A5.14 ERNiCrMo-4	For welding of Alloy C-276 and other Ni-Cr-Mo alloys. Dissimilar welding applications include welding alloy C-276 to other Ni-Base alloys, to stainless steels, and to low-alloy steels.	C Mn Si Cr Ni Mo	0.01 0.6 0.03 15.2 Rem 16.2	690	30
Revolfil 67	A5.7 ERCuNi	For welding of Alloy 450 and other Cu-Ni alloys. It is used for surfacing of steel and the weld metal has excellent resistance to corrosion in sea water. Dissimilar joints involving Cu-Base alloys and Cu-Ni alloys.	C Mn Si Ni Cu	0.015 0.6 0.01 30.5 Rem	340	30
Revolfil 60	A5.14 ERNiCu-7	For welding of Alloy 400. It is used for surfacing of steel and the weld metal has excellent resistance to corrosion in sea water. Revofil 60 is use as an under layer.	C Mn Si Ni Cu	0.08 3.0 1.15 63.8 Rem	485	30

Nickel Alloy Consumables for GTAW, GMAW and SAW Welding

Product Name	ASME/AWS	Applications and Characteristics	Typical Chemical Analysis %		Typical Mechanical Properties	
					Tensile Strength MPa	EL %
Revolfil 61	A5.14 ERNi-1	For welding of Alloy 200 and 201. Dissimilar joints involving Alloy 200 to stainless, carbon steel, Ni-Base Alloy and Cu-Ni. Also for joining Cu-Ni to carbon steel, Ni-Base alloys.	C Mn Si Ni Fe	0.08 0.6 0.5 95.2 1.0 max	410	20
Revolfil 59	A5.14 ERNiCrMo-13	For welding of Alloy 625, Alloy 825, Alloy 25-6MO, and other molybdenum-containing stainless steels. This filler metal is used for surfacing of steel, welding nickel steels, and welding various corrosion-resistant alloys such as alloy 20.	C Mn Si Cr Ni Fe	0.05 0.22 0.5 Rem 1.5 16.0	760	25
Revolfil 99	A5.15 ERNiCl	For welding welding of cast irons. This filler is extensively used to repair cast irons. It is used for surfacing and buildup. However, dilution from casting influences the mechanical properties of the metal. The weld metal are easily machinable. A preheat and interpass of 175°C is recommended during welding.	C Mn Si Cr Ni	0.01 0.5 0.1 23.0 Rem	460	30
Revolfil 82	A5.14 ERNiCr-3	For welding of Alloy 600, 601 and 690, alloy 800 and 800HT. This filler is used for surfacing of steel and the deposited weldmetal has high strength and good corrosion resistance, including oxidation resistance and high creep rupture strength at elevated temperatures. It is also used in dissimilar welding such as joining austenitic stainless steel to carbon steels for high temperature service, Ni-Cu alloys to carbon steel, Ni-Cu alloys to nickel-base alloys.	C Mn Si Cr Ni Fe Cu	0.10 3.0 0.5 20.0 72.0 1.3 0.01	550	30
Revolfil 617	A5.14 ERNiCrCoMo-1	For welding of Alloy 617. Dissimilar joints involving high temperature applications. Examples are Alloy 600, Alloy 601, Alloy 800HT, Alloy 802 and cast alloys such as HK-40, HP and HP-45 Modified.	C Mn Si Cr Ni Fe Mo	0.08 1.0 0.6 23.0 Rem 2.5 8.5	620	25



**Carbon and Low Alloyed Consumables
REVOROD(GTAW) and REVOFIL(GMAW, SAW)**

Product	EN440/12070/ 1253 AWS A5.18/5.28	Applications and Characteristics	Base Materials	Typical Chemical Analysis %		Mechanical Properties		EI %	Charpy Value (J)	
						Tensile Strength MPa	Yield Strength MPa		RT	
70S2	G2Ti ER70S-2	For joining and surfacing of mild steel.	S255N-P355N, P235GH-P265GH, P295GH, P355GH	C Si Mn Al Ti Zr	0.03 0.55 1.20 0.10 0.10 0.07	≥560	≥480	≥22	≥100	
70S3	G2Si1 ER70S-3	For joining and surfacing of mild steel.	S185-S275JR, S355JO-E335, S255N-P355N, P235GH-P265GH, P310GH	C Si Mn	0.09 0.60 1.15	≥500	≥420	≥22	≥80	
70S6	G3Si1 ER70S-6	For joining and surfacing of mild steel.	S185-S275JR, S355JO-E335, S255N-P355N, P235GH-P265GH, P310GH	C Si Mn	0.09 0.87 1.47	≥500	≥420	≥22	≥80	-50°C ≥47
70S6HT	G4Si1 ER70S-6	For joining and surfacing of mild steel.	S185-S275JR, S355JO-E335, S255N-P355N, P235GH-P265GH, P310GH	C Si Mn	0.09 0.95 1.67	≥530	≥460	≥22	≥80	-20°C ≥47
1NiMo	~Mn3Ni1Mo ER100S-G	For welding of high strength fine grain structural steels. Yield strength to 690MPa. For Yield strength >620 MPa only suitable for plate thickness up to 15mm and fillet weld.	S690QL1, S420N-S500N, P420NH-P500NH, S420NL-S500NL	C Si Mn Ni Mo	0.08 0.57 1.76 1.00 0.39	≥710	≥640	≥18	≥100	-40°C ≥47
1NiMo(SR)	ER100S-G	For welding fine grain low temperatures steels where impact values are required In both as welded and PWHT condition	AISI 4130	C Si Mn Ni Mo	0.09 0.75 1.60 0.6 0.25	≥770	≥680	≥24	≥80	
						PWHT: 695	635°C x 2h 590		26	-60°C ≥47
1NiCrMo	Mn3Ni1CrMo ER110S-G	For welding of high strength fine grain structural steels. Yield strength to 690MPa	S690QL1, S420N-S500N, P420NH-P500NH, S420NL-S500NL	C Si Mn Cr Ni Mo V	0.09 0.52 1.57 0.30 1.40 0.25 0.09	≥790	≥690	≥16	≥80	-40°C ≥47
2NiCrMo	Mn4Ni2CrMo ER120S-G	For welding high strength fine grain structural steels.	S890QL	C Si Mn Cr Ni Mo	0.09 0.80 1.80 0.31 2.20 0.55	≥940	≥885	≥14	≥70	-60°C ≥47

**Low Temperature Consumables
REVIOROD(GTAW) and REVOFIL(GMAW, SAW)**

Product	EN440/12070/ 12534 Material No. AWS 5.18/5.28	Applications and Characteristics	Base Materials	Typical Chemical Analysis %		Mechanical Properties Tensile Strength MPa		EI %	Charpy Value (J)	
									RT	
80SG	ZMn3Ni1Cu ER80S-G	For welding of weather resistant fine grain structural steels.	S235JRW- S355J2G1W, 9CrNiCuP3-2-4	C Si Mn Ni Cu	0.08 0.80 1.40 0.81 0.40	≥550	≥450	≥22	≥80	-40°C ≥47
80S-Ni1	G3Ni1 ER80S-Ni1	For welding of fine grain low temperature steels. Application down to -60°C.	P355NL1- P460NL1	C Si Mn Ni	0.09 0.51 1.05 0.95	≥560	≥470	≥24		-60°C ≥47
80S-Ni2	G2Ni2 ER80S-Ni2	For welding of fine grain low temperature steels. Application down to -60°C.	S255N-S380N, 14Ni6, 12Ni14, S255NL	C Si Mn Ni	0.09 0.51 1.12 2.42	≥570	≥420	≥22	≥100	-60°C ≥47
ENi3	A5.23 ENi3 A5.28	For welding fine grain low temperatures steels where high impact values are required	12Ni14	C Si Mn Ni	0.09 0.17 1.05 3.20	≥550	≥460	≥22	≥130	-80°C ≥47



REVOLLOY®
Welding Products

Heat Resistance Consumables
REVOROD(GTAW) and REVOFIL(GMAW, SAW)

Product	EN440/12070/ 12534 Material No. AWS 5.18/5.28	Applications and Characteristics	Base Materials	Typical Chemical Analysis %		Mechanical Properties		EI %	Charpy Value (J)	
						Tensile Strength MPa	Yield Strength MPa		RT	
70SA1	G2Mo/G MoSi 1.5424 ER70S-A1	For elevated temperatures. For service temperature up to 500°C.	S235JRW, S355J2G1W, 9CrNiCuP3-2-4	C Si Mn Mo	0.10 0.60 1.15 0.51	≥560	≥460	≥22	≥60	-20°C ≥47
80S-D2	G4Mo ER80S-D2	For elevated temperatures. For service temperature up to 500°C.	P235G1TH- P255G1TH, P310GH, 16Mo3	C Si Mn Mo	0.09 0.70 1.95 0.50	≥550	≥470	≥17	≥90	-29°C ≥47
CrMo1	G CrMo1Si 1.7339 ER80S-G	For elevated temperatures. For service temperature up to 500°C. X-Factors ≤ 15ppm	13CrMo4-5	C Si Mn Cr Mo	0.10 0.60 1.00 1.20 0.52	≥450	≥300	≥20	≥100	-10°C ≥47
CrMo2	G CrMo2Si ER90S-G	For elevated temperatures service, application up to 600°C	10CrMo9-10, 10CrSiMoV7	C Si Mn Cr Mo	0.09 0.60 0.93 2.49 1.00	≥540	≥355	≥22	≥80	
80S-B2	ER80S-B2	For elevated temperatures service. Application up to 500°C, X-Factors ≤ 15ppm	13CrMo4-5	C Si Mn Cr Mo	0.09 0.55 0.56 1.28 0.52	≥550	≥470	≥19		
90S-B3	ER90S-B3	For elevated temperatures service. Application up to 600°C.	10CrMo9-10	C Si Mn Cr Mo	0.09 0.55 0.56 2.35 1.08	≥620	≥540	≥17		

Carbon and Low Alloy Consumables For FCAW Welding

Product	ASME/ AWS	Applications and Characteristics	Base Materials	Typical Chemical Analysis %		Mechanical Properties		El %	Charpy Value (J)	
						Tensile Strength MPa	Yield Strength MPa		RT	
RevoCor 36	A5.20 E71T-1CJ	RevoCor 36 is a rutile flux cored wire for single or multiple pass welding of carbon, carbon manganese steels and similar type of steel with pure CO ₂ shielding gas. It is widely used for shipbuilding, storage vessel, structural fabrication, machinery, piping , etc...	S235N-P355N, P235GH-P265GH, P295GH, P355GH	C Si Mn P S	0.05 0.45 1.35 0.01 0.01	≥560	≥480	≥30	≥100	-20°C≥80
RevoCor 38Ni	A5.20 E71T-9CJ	RevoCor 38Ni is a rutile flux cored wire for single or multiple pass welding of carbon, carbon manganese steels and similar type of steel with pure CO ₂ shielding gas. It is widely used for shipbuilding, storage vessel, structural fabrication, machinery, piping , etc...	S185-S275JR, S355JO-E335, S255N-P355N, P235GH-P265GH,	C Si Mn P S Ni	0.05 0.40 1.28 0.01 0.01 0.41	≥580	≥480	≥30	≥120	-40°C≥120 -50°C≥85

Carbon and Low Alloy Consumables For SAW Welding

Product	ASME/ AWS	Applications and Characteristics	Typical Chemical Analysis %	
Revofil EM12K	A5.17 EM12K	Revofil EM12K wire is suitable for single and multiple pass welding of 490MPa high tensile steel on shipbuilding, offshore structures, pressure vessel and general structural steel.	C Si Mn P S	0.07 0.57 1.25 ≤0.02 ≤0.02
Revofil EH12K	A5.17 EH12K	Revofil EH12K wire is suitable for single and multiple pass welding of 490MPa high tensile steel on shipbuilding, offshore structures, pressure vessel and general structural steel.	C Si Mn P S	0.07 0.10 1.45 ≤0.02 ≤0.02



Carbon & Low Alloy Steel Flux for SAW Welding

REVOFLUX 510

REVOFLUX 510 is an agglomerated-aluminate-basic type flux for general structural steel. The behaviour of manganese is neutral with slight silicon pick-up. The deposited metal contains a low level of diffusible hydrogen with good wetting, excellent weldability, bead appearance with easy slag detachability. It is suitable for submerged-arc twin-wire, tandem and multiple-wire welding as well as for welding with two-run technique, such as production of large pipes. It is use in combination with Revofil EM12K steel wire in submerged arc welding.

Classification: EN760 SA AB 1 67 AC H5

Grain Size: 10-60 Mesh

Basicity Index: 1.3

SiO ₂ +TiO ₂	Al ₂ O ₃ +MnO	CaO+MgO	CaF ₂
20.0	35.0	20.0	15.0

The flux must be bake at 300 ~350C for 2 hours before use.

TYPICAL CHEMICAL ANALYSIS OF WELD-METAL (%)

	C	Mn	Si	Mo
Revofil EM12K (AWS A5.17: F7A2-EM12K)	0.03	1.28	0.30	-
Revofil EH12K (AWS A5.17: F7A4-EH12K)	0.03	1.48	0.35	-

TYPICAL WELD-METAL MECHANICAL PROPERTIES

	Tensile Strength (N/mm ²)	Elongation (%)	Charpy
Revofil EM12K (AWS A5.17: F7A2-EM12K)	≥500	≥22	≥47J @ -30°C
Revofil EH12K (AWS A5.17: F7A4-EH12K)	≥550	≥22	≥47J @ -40°C

Carbon & Low Alloy Steel Flux for SAW Welding

REVOFLUX 520

REVOFLUX 520 is an agglomerated-fluoride-basic type flux for general structural steel. The behaviour of manganese is neutral with slight silicon pick-up. The deposited metal contains a low level of diffusible hydrogen with good wetting, excellent weldability, bead appearance with easy slag detachability. It is suitable for submerged-arc twin-wire, tandem and multiple-wire welding as well as for welding with two-run technique, such as production of large pipes. It is used in combination with Revofil EH12K steel wire in submerged arc welding.

Classification: EN760 SA FB 1 65 AC H5

Grain Size: 10-60 Mesh

Basicity Index: 1.8

SiO ₂ +TiO ₂	Al ₂ O ₃ +MnO	CaO+MgO	CaF ₂
20.0	25.0	30.0	20.0

The flux must be baked at 300 ~350°C for 2 hours before use.

TYPICAL CHEMICAL ANALYSIS OF WELD-METAL (%)

	C	Mn	Si	Mo
Revofil EM12K (AWS A5.17: F7A2-EM12K)	0.03	1.28	0.30	-
Revofil EH12K (AWS A5.17: F7A4-EH12K)	0.05	1.45	0.30	-
Revofil S2Mo (AWS A5.23: F8A4-EA2-A2)	0.07	1.30	0.20	0.50

TYPICAL WELD-METAL MECHANICAL PROPERTIES

	Tensile Strength (N/mm ²)	Elongation (%)	Charpy @ -40°C
Revofil EM12K (AWS A5.17: F7A2-EM12K)	≥500	≥22	≥47J
Revofil EH12K (AWS A5.17: F7A4-EH12K)	≥500	≥22	≥60J
Revofil S2Mo (AWS A5.23: F8A4-EA2-A2)	≥500	≥22	≥80J

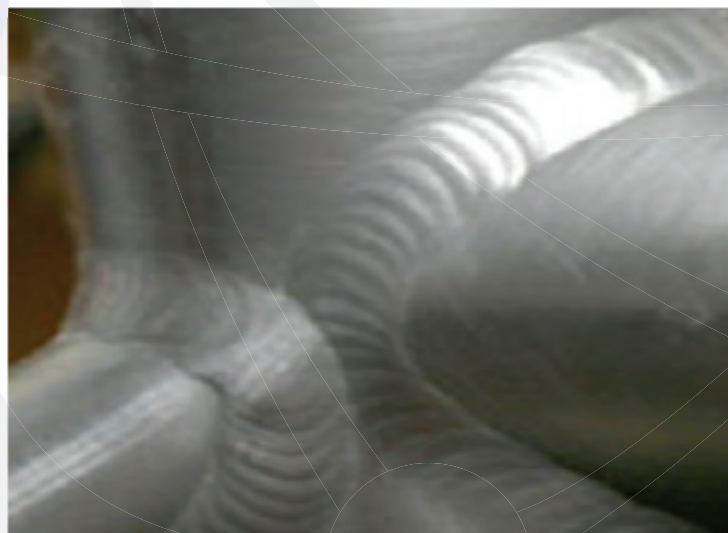


Titanium Consumables For GTAW & GMAW

Product Name	ASME/AWS A5.16	UNS Number	AMS	ASTM B348	C	O	N	H	Fe	Other
Revolfil Ti1	ERTi-1	R50100	AMS 4951	Grade-1	0.03	0.03-0.10	0.012	0.005	0.08	
Revolfil Ti2	ERTi-2	R50120	AMS 4951	Grade-2	0.03	0.08-0.16	0.015	0.008	0.12	
Revolfil Ti3	ERTi-3	R50125	AMS 4951	Grade-3	0.03	0.13-0.20	0.020	0.008	0.16	
Revolfil Ti4	ERTi-4	R50130	AMS 4951	Grade-4	0.03	0.18-0.32	0.025	0.008	0.25	
Revolfil Ti5	ERTi-5	R56400	AMS 4954	Grade-5	0.05	0.12-0.20	0.030	0.015	0.22	V 3.5-5.5 Al 5.5-6.5
Revolfil Ti7	ERTi-7	R52401	N/A	Grade-7	0.03	0.08-0.16	0.015	0.008	0.12	Pd 0.12-0.25
Revolfil Ti9	ERTi-9	R56321	N/A	Grade-9	0.03	0.06-0.12	0.012	0.005	0.20	V 2.0-3.0 Al 2.5-3.5
Revolfil Ti12	ERTi-12	R53401	N/A	Grade-12	0.03	0.08-0.16	0.015	0.008	0.15	Mo 0.2-0.4 Ni 0.2-0.4
Revolfil Ti23	ERTi-23	R56408	AMS 4956	Grade-5 ELI	0.03	0.03-0.11	0.012	0.005	0.20	V 3.5-4.5 Al 5.5-6.5

Available Size & Packing

Size (mm)	Φ0.8	Φ1.0	Φ1.2	Φ1.6	Φ2.0	Φ2.4	Φ3.0	Φ3.2	Packing
Size (inch)	0.031"	0.039"	0.047"	0.062"	0.079"	0.093"	0.12"	0.125"	
Straight				*	*	*	*	*	2.5Kgs
Spool	*	*	*	*	*	*			5Kgs



Aluminium Consumables for GTAW & GMAW

Product Name	AWS A5.10	BS 2901 Pt4	ISO 18273	DIN 1732	WERKSTOFF No.
Revofil Alu 4043	ER 4043	4043A	Al 4043 AlSi 5	Al Si 5	3.0259
Revofil Alu 4047	ER 4047	4047A	Al 4047 AlSi 12	Al Si 12	3.2245
Revofil Alu 5183	ER 5183	5183	Al 5183 AlMg4,5Mn 0,7(A)	AlMg 4,5 Mn	3.2585
Revofil Alu 5356	ER 5356	5356	Al 5356 AlMg5Cr(A)	AlMg 5	3.3548
Revofil Alu 5554	ER 5554	5554	Al 5554 Al Mg2,7Mn	AlMg 2,7 Mn	3.3556
Revofil Alu 5556	ER 5556	5556A	Al 5556A AlMg5Mn1Ti	-	3.3538

Available Size & Packing

Size (mm)	Φ0.8	Φ1.0	Φ1.2	Φ1.6	Φ2.0	Φ2.4	Φ3.2	Packing
Size (inch)	0.031"	0.039"	0.047"	0.062"	0.079"	0.093"	0.125"	
Straight				*	*	*	*	5Kgs
Spool	*	*	*	*	*	*	*	7Kgs

Aluminium Consumables for SMAW

Product Name	AWS A5.10	DIN 1732
Revolloy Alu	E4043	Al Si 5
Revolloy Alu1100	E1100	Al99.5



REVOLLOY®
Welding Products

Copper & Copper Alloy Consumables for GTAW and GMAW Welding

Product Name	ASME/AWS	Applications and Characteristics	Typical Chemical Analysis %			
Revofil CuAlA1	AWS A5.7 ERCuAl-A1	An iron-free aluminum bronze alloy recommended for use in overlaying bearing and corrosion-resistant surfaces.	Cu Zn Mn Si	Bal. 0.20 0.50 0.10	Al Pb Others	7.2 0.02 0.50
Revofil CuAlA2	AWS A5.7 ERCuAl-A2	A versatile aluminum bronze alloy recommended for joining same and dissimilar metals such as copper to bronze, carbon steel, etc. Also for overlay of bearing, wear and corrosion resistant surfaces.	Cu Zn Fe Si	Bal. 0.02 1.5 0.10	Al Pb Others	9.3 0.02 0.50
Revofil CuMnNiAl	AWS A5.7 ERCuMnNiAl	A manganese nickel-aluminum bronze. For joining and overlaying corrosion-resistant alloys like MIL-B-21230A alloy 2 and other marine applications.	Cu Zn Mn Fe Si	Bal. 0.15 12.0 2.6 0.10	Ni Al Pb Others	2.5 8.0 0.02 0.50
Revofil CuNiAl	AWS A5.7 ERCuNiAl	A nickel-aluminum recommended for corrosion, erosion and cavitation applications requiring joining or overlaying alloys like MIL-B-21230A alloy 1.	Cu Zn Mn Fe Si	Bal. 0.10 2.1 3.6 0.10	Ni Al Pb Others	5.0 8.8 0.02 0.50
Revofil Cu	AWS A5.7 ERCu	A deoxidized copper recommended for joining copper to copper and overlaying copper plate, castings and wrought products where maximum electrical and thermal conductivity are required.	Cu Sn Mn Si	98.0 1.0 0.50 0.50	Al Pb Others	0.01 0.02 0.50
Revofil CuNi10	EN 14640 S Cu 7061 (CuNi10)	Suitable for joining copper and surfacing Cu-Ni alloy of the 90/10 type and similar grade, as well as brass alloy (Cu-Zn) which are resistant to oxidation by seawater. Typical application includes equipment for water treatment plants, exchangers, condensers, etc...	Cu Mn Si Ni	Bal. 0.81 0.16 10.0	Fe Ti Others	0.80 0.40 0.50
Revofil CuSiA	AWS A5.7 ERCuSi-A	Silicon Bronze is recommended for the welding of copper, copper-silicon, and copper-zinc base metals to themselves, and also to steel. Silicon Bronze can be used to surface areas subject to corrosion and extensively in welding galvanized steel.	Cu Sn Zn Mn Fe Si	Bal. 1.0 1.0 1.5 0.5 2.8~4.0	Al Pb Others	0.01 0.02 0.50

Available Size & Packing

Size (mm)	Φ0.9	Φ1.2	Φ1.6	Φ2.0	Φ2.4	Φ3.2	Packing
Size (inch)	0.035"	0.045"	0.062"	0.079"	0.093"	0.125"	
Straight			*	*	*	*	4.54Kgs
Spool	*	*	*				15Kgs

**Copper Brazing Alloy Consumables
REVOROD**

Product	Typical Chemical Analysis %		Operating Temp. °C	Density g/cm³	Melting Range °C	Tensile Strength MPa	International Standard				Application And Characteristics
							AWS A5.8	DIN EN 1044	BS1845	DIN 8513	
BR470	Cu Zn Si Others	59.0 39.7 0.20 1Sn	900	8.4	888-899	400	RBCuZn-A	-	-	-	Used on steel, copper, copper alloys, nickel, nickel alloys & stainless steel where corrosion resistance is not important.
BR680	Cu Zn Si Others	58.0 39.4 0.10 0.6Ni 0.3Mn 0.9Sn 0.7Fe	900	8.2	866-882	430	RBCuZn-B	-	-	-	Used for brazing steel, cast iron, copper, copper alloys, nickel, nickel alloys. Used with torch, induction and furnace processes.
BR681	Cu Zn Si Others	59.0 39.5 0.10 1Sn 0.4Mn	890	8.4	866-888	380	RBCuZn-C	-	CZ 7A	L-CuZn39Sn	Used on steel, copper, copper alloys, nickel, nickel alloys and stainless steel. It is used with torch, induction and furnace process.
BR MANBRO	Cu Zn Si Others	60.0 39.6 0.20 0.2Mn	-	8.4	900-915	-	-	-	-	-	Used for copper, cast and malleable iron brazing.

**Tungsten Carbide Brazing Consumables
REVOROD**

BR NIBRO	Ag Cu Zn Ni Others	- 50.0 39.7 10.0 0.3Sn	910	8.7	890-920	480	RBCuZn-D	CU305	CZ 8	L-CuNi10Zn42	Used for brazing tungsten carbide. It is also used with steel, cast iron and malleable iron, nickel and nickel alloy.
-----------------	--------------------------------	------------------------------------	-----	-----	---------	-----	----------	-------	------	--------------	-----------------------------------------------------------------------------------------------------------------------



**Silver Brazing Alloy Consumables
REVOROD**

Product	Typical Chemical Analysis %		Operating Temp. °C	Density g/cm³	Melting Range °C	Tensile Strength MPa	International Standard				Application And Characteristics
							AWS A5.8	DIN EN 1044	BS1845	DIN 8513	
FC35	Ag Cu Zn Others	35.0 32.0 33.0 -	740	9.0	450	680-720	BAG-35	-	-	-	Intermediate temperature filler metal for use with ferrous & non-ferrous materials.
FC35EN	Ag Cu Zn Others	34.0 36.0 27.0 3Sn	710	9.0	450	630-730	-	AG106	-	L-Ag34Sn	The presence of tin improves fluidity & wetting. Used for brazing the assembly of copper tubes in the refrigeration industry & on containers in food industry.
FC45	Ag Cu Zn Others	45.0 30.0 25.0 -	730	9.1	545	670-740	BAG-5	AG203	AG15	L-Ag44	An excellent filler metal for brazing brass parts (such as ship piping, band instruments, aircraft engine oil cooler, brass lamp, etc).
FC15	Ag Cu P	15.0 80.0 5.0	710	8.4	250	650-800	BCuP-5	CP102	CP1	L-Ag15P	A self fluxing brazing rod that has low melting point with good flow. Used where narrow joint include uneven junctions, refrigeration industry, on parts such as couplings, manifolds, brass distributions, capillary pipes. It exhibits good mechanical characteristics at low temperature.
FC56	Ag Cu Zn Sn	56.0 22.0 17.0 5.0	650	9.5	410	620-650	BAG-7	AG102	BACuAg8	-	A self fluxing brazing rod that has low melting point with good flow. Used for food equipment where cadmium must be avoided. It is used by the dairy & food industry. Gives a closer colour match to that of stainless steel.

Hardfacing Consumables for SMAW Welding

Product	Applications and Characteristics	Typical Weld Deposit Analysis %		Typical Weld Deposit Hardness	
				HRC	HV10
RevoWel HC70	<p>REVOWEL HC70 is a basic coated hard surfacing electrode. The deposited weld metal of this electrode produces a fine dispersion of hard primary chromium carbides resistant to coarse abrasion in particular gouging abrasion and moderate impact loading at temperatures up to 650°C. Deposited weld metal can be finished by grinding and are best limited to two layers because of relief checking. Typical applications include the hard surfacing excavator parts in earth moving, mining and dredging such as chutes, swing hammers, bucket teeth and lips, dozer end plates and sugar mill rolls, etc...</p> <p>This electrode is suitable for down-hand and horizontal welding position. The power supply is direct current, electrode positive.</p>	C Si Mn Cr	3.30 1.00 1.50 25.0	60	690
RevoWel HC75	<p>REVOWEL HC75 is a basic coated hard surfacing electrode. The deposited weld metal of this electrode produces a fine dispersion of hard primary chromium carbides resistant to coarse abrasion in particular gouging abrasion and moderate impact loading at temperatures up to 500°C. Deposited weld metal can be finished by grinding and are best limited to two layers. Typical applications include the hardfacing repair on worn out machine parts, excavator parts in earth moving, mining and dredging such as chutes, swing hammers, bucket teeth and lips, dozer end plates and sugar mill rolls, etc...</p> <p>This electrode is suitable for down-hand and horizontal welding position. The power supply is direct current, electrode positive.</p>	C Si Mn Cr	3.40 1.00 0.30 32.0	59	678
RevoWel HCMn	<p>REVOWEL HCMn is a work hardening type coated electrode for austenitic manganese steel. The deposited weld metal of this electrode exhibits high toughness for fast hardening on high impact working conditions. It is suitable for build-up and repairs welding of Manganese steel.</p> <p>REVOWEL HCMn is suitable for repair welding of coned mining crusher, impactor bars, etc...</p> <p>This electrode is suitable for down-hand welding position. The power supply is direct current, electrode positive.</p>	C Si Mn Cr	0.79 0.58 14.18 2.92	23 47 (After work hardening)	265 540



Hardfacing/Wear Resistant Flux for SAW Welding

REVOFLUX 400

REVOFLUX 400 is an agglomerated fluoride-basic flux for high basicity for surfacing of roller for continuous casting, steel rolling, transport, etc... The behaviour of the flux has low silicon pick-up and it can be used for both single wire and multi-wire. It is suitable for combining with high alloy wire (solid wire or cored wire) for surfacing.

EN760 SA FB 2 55 AC H5

Grain Size: 10-60 Mesh

Basicity Index: 2.7

$\text{SiO}_2 + \text{TiO}_2$	$\text{Al}_2\text{O}_3 + \text{MnO}$	$\text{CaO} + \text{MgO}$	CaF_2
15.0	20.0	40.0	25.0

The flux must be bake at 300 ~350C for 2 hours before use.

TYPICAL CHEMICAL ANALYSIS OF WELD-METAL (%)

	C	Mn	Si	Cr
RevoCor 420S	0.18	1.20	0.50	9.20

TYPICAL WELD-METAL CHARACTERISTICS

Abrasion Resistance	Thermal Fatigue Resistance	Machining	Welding Layer	Hardfacing Stress Crack	Hardness HRC
Good	Excellent	Tungsten Carbide Tools can be used	3	Non	50

Stainless Steel Welding Parameters

Typical Welding Parameters for Stainless Steel Coated Electrodes

Diameter (mm)	Length (mm)	Voltage (V)	Flat (A)	Vertical & Overhead (A)
2.6	300	24 - 28	60 - 85	50 - 75
3.2	350	26 - 30	85 - 120	75 - 105
4.0	350	28 - 32	115 - 150	95 - 130
5.0	350	28 - 32	150 - 200	-

Typical Welding Parameters for Stainless Steel GTAW, GMAW and SAW

Process	Diameter (mm)	Voltage (V)	Amperage (A)	Shielding Gas
GTAW	0.9	12 - 15	60 - 90	100% Argon
	1.1	13 - 16	80 - 110	
	1.6	14 - 18	90 - 130	
	2.4	15 - 20	120 - 175	
	3.2	15 - 20	150 - 220	
GMAW	0.9	26 - 29	160 - 210	99% Argon + 1% Oxygen Or 97% Argon + 3% CO ₂
	1.1	28 - 32	180 - 250	
	1.6	29 - 33	200 - 280	
SAW	2.4	28 - 30	275 - 350	Suitable Flux must be used
	3.2	29 - 32	350 - 450	
	4.0	30 - 33	400 - 550	

Typical Welding Parameters for Nickel Alloy Bare Wire

Process	Diameter (mm)	Voltage (V)	Amperage (A)	Shielding Gas
GTAW	0.9	12 - 15	60 - 90	100% Argon
	1.1	13 - 16	80 - 110	
	1.6	14 - 18	90 - 130	
	2.4	15 - 20	120 - 175	
	3.2	15 - 20	150 - 220	
GMAW	0.9	26 - 29	150 - 190	75% Argon + 25% Helium
	1.1	28 - 32	180 - 220	
	1.6	29 - 33	200 - 250	
SAW	2.4	28 - 30	275 - 350	Suitable Flux must be used
	3.2	29 - 32	350 - 450	
	4.0	30 - 33	400 - 550	



Carbon & Low Alloy Steel Welding Parameters

Typical Welding Parameters for Carbon & Low Alloy GTAW, GMAW and SAW

Process	Diameter (mm)	Voltage (V)	Amperage (A)	Shielding Gas
GTAW	0.9	10 - 12	50 - 70	100% Argon
	1.1	10 - 12	70 - 100	
	1.6	12 - 15	100 - 125	
	2.4	15 - 20	125 - 175	
	3.2	15 - 20	175 - 250	
GMAW Spray Transfer	0.9	28 - 32	165 - 200	99% Argon + 2% Oxygen Or 75% Argon + 25% CO ₂
	1.1	30 - 34	180 - 220	
	1.6	30 - 34	230 - 260	
GMAW Short Circuiting Transfer	0.9	22 - 25	100 - 140	75% Argon + 25% CO ₂
	1.1	23 - 26	120 - 150	

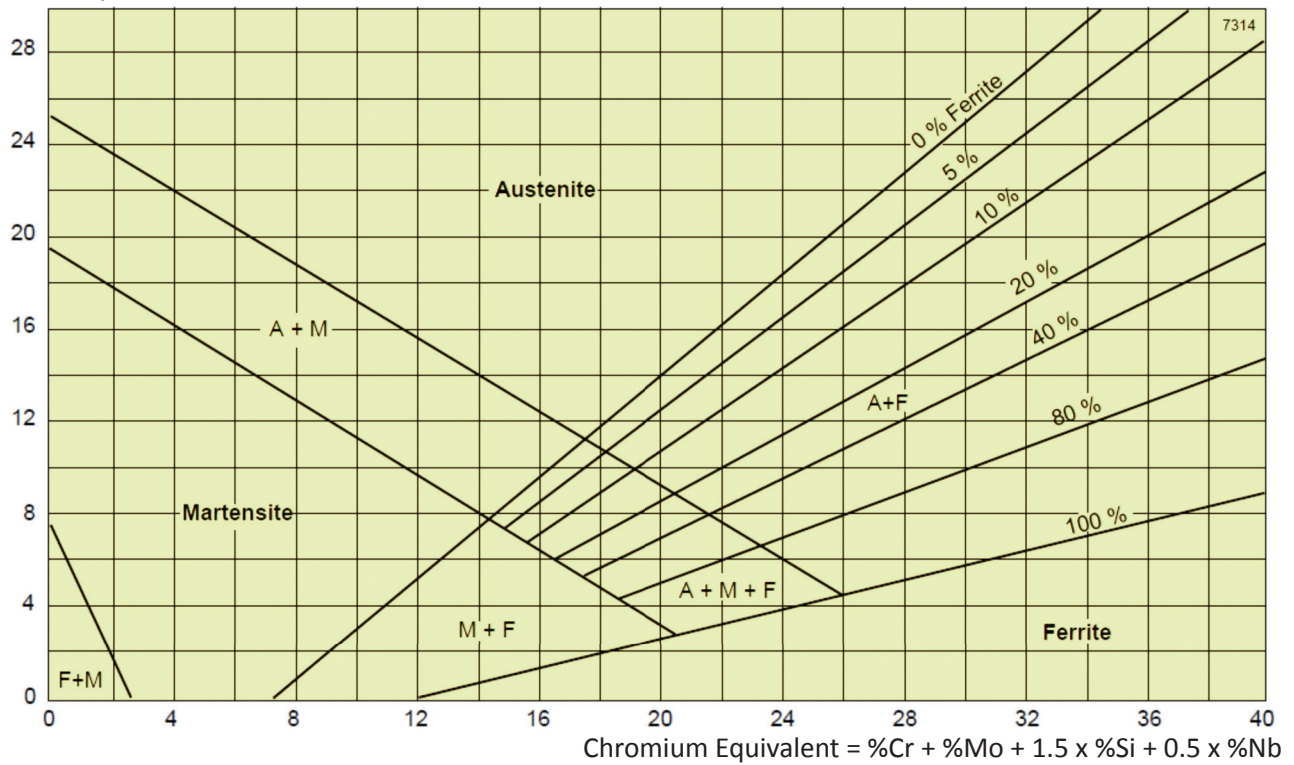
Typical Welding Parameters for Carbon & Low Alloy FCAW

Diameter (mm)	Flat		Vertical-Up		Overhead	
	Voltage (V)	Amperage (A)	Voltage (V)	Amperage (A)	Voltage (V)	Amperage (A)
0.9	24 - 28	130 - 250	16 - 23	90 - 180	20 - 28	130 - 240
1.2	26 - 30	150 - 280	22 - 26	150 - 250	24 - 29	150 - 250
1.6	28 - 32	180 - 400	21 - 27	180 - 300	24 - 30	180 - 310



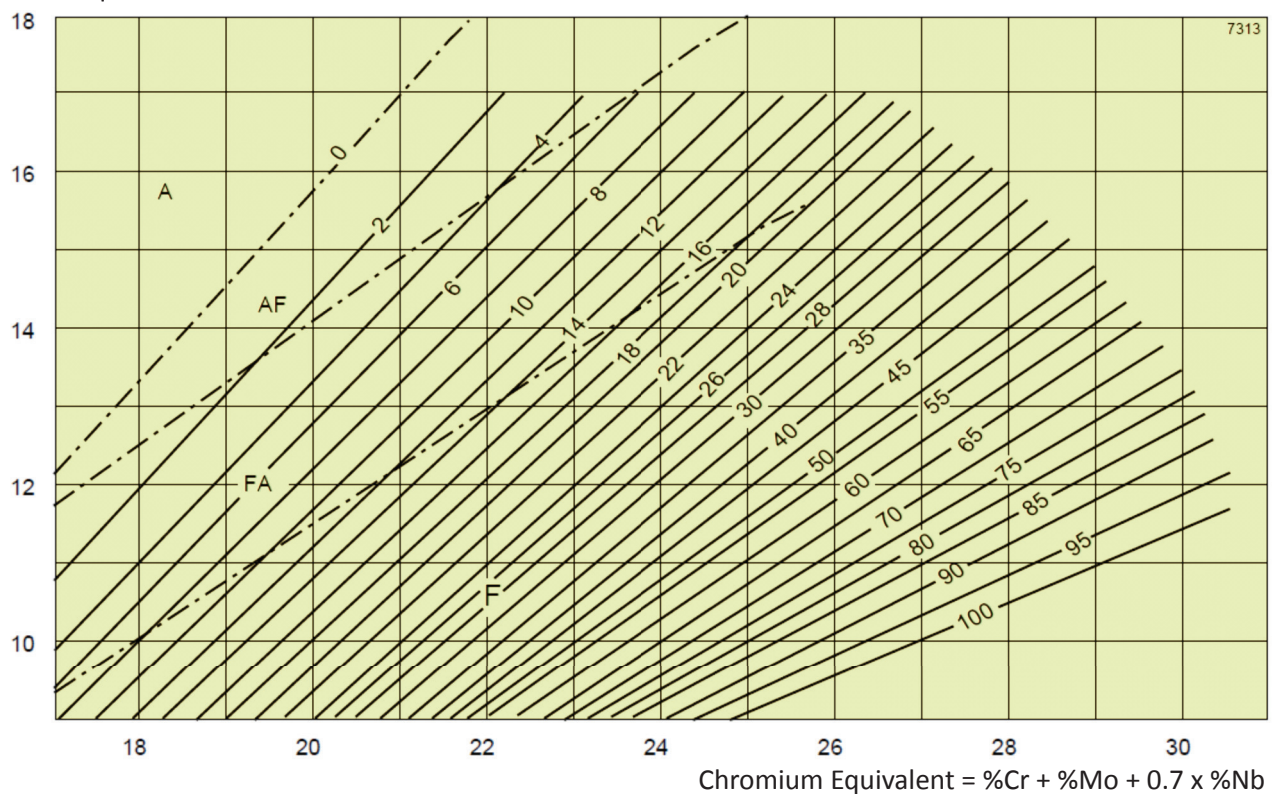
Schaeffler diagrams

Nickel Equivalent = $\%Ni + 30 \times \%C + 0.5 \times \%Mn$



WRC diagram

Nickel Equivalent = $\%Ni + 35 \times \%C + 20 \times \%N + 0.25 \times \%Cu$





REVOLLOY®
Welding Products

Brinell/Rockwell Hardness Conversion Chart

Brinell Hardness	Rockwell Hardness			Tensile Strength (Approximate)
Tungsten Carbide Ball 3000 KG	A Scale 60KG	B Scale 100KG	C Scale 150KG	
401	72.0	-	43.1	202,000
388	71.4	-	41.8	195,000
375	70.6	-	40.4	188,000
363	70.0	-	39.1	182,000
352	69.3	-	37.9	176,000
341	68.7	-	36.6	170,000
331	68.1	-	35.5	166,000
321	67.5	-	34.3	160,000
311	66.9	-	33.1	155,000
302	66.3	-	32.1	150,000
293	65.7	-	30.9	145,000
285	65.3	-	29.9	141,000
277	64.6	-	28.8	137,000
269	64.1	-	27.6	133,000
262	63.6	-	26.6	129,000
255	63.0	-	25.4	126,000
248	62.5	-	24.2	122,000
241	61.8	100.0	22.8	118,000
235	61.4	99.0	21.7	115,000
229	60.8	98.2	20.5	111,000
223	-	97.3	20.0	-
217	-	96.4	18.0	105,000
212	-	95.5	17.0	102,000
207	-	94.6	16.0	100,000
201	-	93.8	15.0	98,000
197	-	92.8	-	95,000
192	-	91.9	-	93,000
187	-	90.7	-	90,000
183	-	90.0	-	89,000
179	-	89.0	-	87,000
174	-	87.8	-	85,000
170	-	86.8	-	83,000
167	-	86.0	-	81,000
163	-	85.0	-	79,000
156	-	82.9	-	76,000
149	-	80.8	-	73,000
143	-	78.7	-	71,000
137	-	76.4	-	67,000
131	-	74.0	-	65,000
126	-	72.0	-	63,000
121	-	69.8	-	60,000
116	-	67.6	-	58,000
111	-	65.7	-	56,000

Distributed By:

