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INCONEL®

INCOLOY®

INCOFLUX®

INCO-CORED®

INCO-WELD®

MONEL®

NDUR-ALL™

NI-ROD®

NIMONIC®

DURANICKEL®

686CPT®

725NDUR®

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the Special Metals
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Special Metals Welding Products Company is the world's leading developer and manufacturer of wrought nickel alloys and nickel based welding consumables for joining nickel alloys, high performance steels, cast irons and dissimilar metals as well as overlaying on steel for corrosion or erosion protection.

Special Metals Welding Products Company holds the leading position worldwide in supporting the needs of industry by providing solutions to real engineering problems. Investment in new alloy development, in association with outstanding technical and commercial support, combine to maintain the reputation of Special Metals Welding Products Company for the quality of its products and the service that it provides.

In addition to the extensive range of nickel based alloys, Special Metals Welding Products Company offers a wide range of welding consumables for stainless steel, aluminum and copper alloys, as well as cobalt-based products for hard surfacing.

A comprehensive collection of industrially recognized trade names is made available by Special Metals Welding Products Company.

INCONEL®
INCOLOY®
INCO-CORED®
INCO-WELD®
INCOFLUX®
MONEL®

NDUR-ALL™
NI-ROD®
NIMONIC®
NILO®
DURANICKEL®
686CPT®
725NDUR®

Nickel Alloy Welding Consumables

Shielded Metal Arc Welding (SMAW) / Manual Metal Arc Welding	2
Gas Metal Arc (GMAW) / Metal Inert Gas Welding	3
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Gas Metal Arc Welding (GMAW) / Metal Inert Gas Welding	16
Gas Tungsten Arc Welding (GTAW) / Tungsten Inert Gas Welding	17
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	Main Classifying Elements %				Typical Applications
	Ni	Cr	Mo	Others	
Nickel Nickel 141	92 min	-	-	Ti 2.5	Nickel 200 and 201 and nickel-clad steel. Overlaying on steel. Joining nickel to steel.
Nickel-Copper MONEL 190	65	-	-	Cu bal, Mn 4.0 max	MONEL alloy 400 to itself and to steel. Overlaying on steel.
Copper-Nickel MONEL 187	29 min	-	-	Cu bal, Mn 2	Copper-nickel alloys and selected bronzes to themselves and to MONEL alloy 400 or Nickel 200.
Nickel-Chromium INCO-WELD A	62 min	15	1.5	Mn 2.5 Nb 2	Moderate creep service: dissimilar metal welding, austenitic and ferritic steels and high nickel alloys. 9% Ni steel.
INCONEL 182	59 min	15	-	Mn 7 Nb 1.5	INCONEL alloys 600 and 601, and INCOLOY alloy 800, to themselves and to carbon and stainless steels. Overlaying on steel.
INCONEL 152	Bal	30	-	Mn 3.5 Nb 2	INCONEL alloy 690 and overlaying on steel, particularly for nuclear applications.
Nickel-Chromium-Molybdenum INCONEL 112	55 min	21	9	Nb 3.5	INCONEL alloy 625, INCOLOY alloy 825, INCOLOY alloy 25-6MO, and MONEL alloy 400; super-austenitics and INCOLOY alloy 020. Dissimilar welding of nickel alloys and stainless steels. Overlaying.
INCO-WELD C-276	Bal	16	16	W 3.7	INCO-WELD alloy C-276 and other Ni-Cr-Mo corrosion-resisting alloys. Alloy-clad steel. Overlaying on steel.
INCONEL 122*	59	20.5	14	W 3.2	INCONEL alloy 622 and other Ni-Cr-Mo corrosion-resisting alloys, clad steels, duplex, super-duplex and super-austenitic stainless steels. Overlaying on steel.
INCO-WELD 686CPT	Bal	21	16	W 3.7	INCONEL alloy 686 and other Ni-Cr-Mo alloys, clad steels, duplex, super-duplex and super-austenitic stainless steels. Overlaying on steel.
Nickel-Chromium-Cobalt-Molybdenum INCONEL 117	Bal	24	9	Co 12	Severe creep service: INCONEL alloy 617, INCOLOY alloys 800, 800H, 800HT and 803, HP 45 and other cast heat-resisting alloys and dissimilar metals for high-temperature service up to 2100°F.
Nickel-Iron-Chromium INCO-WELD C	P R O P R I E T A R Y				The electrode for general maintenance and repair welding. Stainless, medium-C, low alloy, spring and mild steels.
Cast Iron NIROD 55	53	-	-	Fe 45	Gray, ductile and Ni-Resist cast irons. Cast irons to wrought alloys. For high-sulfur, phosphorus, or lubricant-contaminated castings. (Excellent restrike)
NIROD 55X	55	-	-	Fe bal	Gray, ductile and Ni-Resist cast irons. Cast irons to wrought alloys. For high-sulfur, phosphorus, or lubricant-contaminated castings. (Resistant to side-wall arcing; best out-of-position)
NIROD	95	-	-	-	Cast irons, particularly in thin section or for maximum machinability. (Excellent restrike)
NIROD 99X	95	-	-	-	Cast irons, particularly in thin section or for maximum machinability. (Resistant to side-wall arcing; best out-of-position)

Available in sizes from 3/32" (2.4 mm) to 3/16" (4.8 mm), supplied in 10 lb (4.54 kg) hermetically sealed tubes (packets).

* Not available for sale in all countries

	Main Classifying Elements %				Typical Applications
	Ni	Cr	Mo	Also	
Nickel Nickel 61	93 min	-	-	Ti 3 Al 1	Nickel 200 and 201 and nickel-clad steel. Overlaying on steel. Joining nickel to steel.
Nickel-Copper MONEL 60	65	-	-	Cu bal Ti 2	MONEL alloy 400 to itself and to steel. Overlaying on steel with SAW. (Buffer layer filler metal 61 required with GMAW)
Copper-Nickel MONEL 67	30	-	-	Cu bal	Copper-nickel alloys and selected bronzes to themselves and to MONEL alloy 400 or Nickel 200.
Nickel-Iron NILO CF36	36	-	-	Fe bal, Nb 1.5	NILO alloy 36, INVAR. Superior crack resistance and CTE match.
NILO CF42	42	-	-	Fe bal, Nb 1.5	NILO alloy 42. Superior cracking resistance and CTE match to NILO 42.
Nickel-Chromium INCONEL 82	67 min	20	-	Nb 2.5 Mn 3.0 Fe 2	Moderate creep service: INCONEL alloys 600 and 601, and INCOLOY alloy 800 to themselves and to carbon and stainless steels. Overlaying on steel.
INCONEL 52	Bal	30	-	Fe 9	INCONEL alloy 690 and overlaying on steel, particularly for nuclear applications.
INCONEL 92	67 min	16	-	Ti 3 Fe 4 Mn 2.5	INCONEL and INCOLOY alloys to stainless and carbon steels and MONEL alloys; MONEL alloys and Nickel 200 to stainless steels; stainless steels to carbon steels.
NC-80/20	80	20	-	-	BRIGHTRAY electrical resistance alloys; INCONEL alloy 600, INCOLOY alloy DS and NIMONIC alloy 75 to themselves and to each other. 9% Nickel steel.
Nickel-Chromium-Molybdenum INCONEL 625	58 min	21	9	Nb 3.5, Fe 1.0 max	INCONEL alloy 625, INCOLOY alloy 825, INCOLOY alloy 25-6MO and MONEL alloy 400. Dissimilar welding of nickel alloys and stainless steels. Overlaying.
INCO-WELD 725NDUR	58	21	8	Nb 3.5 Ti 1.5	INCONEL alloy 725, INCOLOY alloy 925 and high-strength, low-alloy steels. Heat treatable. Overlaying on steel.
INCO-WELD C-276	Bal	16	16	W 3.7	INCO-WELD alloy C-276 and other Ni-Cr-Mo corrosion-resisting alloys. Alloy-clad steel. Overlaying on steel.
INCONEL 622*	Bal	21	14	Fe 2.5 W 3.2	INCONEL alloy 622 and other Ni-Cr-Mo corrosion-resisting alloys, clad steels, duplex, super-duplex and super-austenitic stainless steels. Overlaying on steel.
INCO-WELD 686CPT	Bal	21	16	W 3.7	INCONEL alloy 686 and other Ni-Cr-Mo alloys, clad steels, duplex, super-duplex and super-austenitic stainless steels. Overlaying on steel.
Nickel-Chromium-Cobalt-Molybdenum INCONEL 617	Bal	22	9	Co 12	Severe creep service: INCONEL alloy 617, INCOLOY alloys 800, 800H, 800HT and 803, HP 45 and other cast heat-resisting alloys and dissimilar metals for high-temperature service up to 2100°F.
Cast Iron NIROD 44	44	-	-	Fe 45 Mn Ti	Ductile (S-G) and malleable cast irons to themselves, to mild steel or to stainless steels for high strength applications.
NIROD 55	55	-	-	Fe 45	Gray, ductile and Ni-Resist cast irons. Cast irons to wrought alloys. For high-sulfur, phosphorus, or lubricant-contaminated castings.
NIROD 99	99 min	-	-	-	Cast irons, particularly in thin section or for maximum machinability.

Available in sizes from .031" (0.8 mm) to .062" (1.6 mm), on D-100, D-200, D-300, K-300 etc. Spools in weights from 1.5 lbs (0.7 kgs) to 33 lbs (15 kgs)

* Not available for sale in all countries.

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	Main Classifying Elements %				Typical Applications
	Ni	Cr	Mo	Also	
Nickel Nickel 61	93 min	-	-	Ti 3, Al 1	Nickel 200 and 201 and nickel-clad steel. Overlaying on steel. Joining nickel to steel.
Nickel-Copper MONEL 60	65	-	-	Cu bal Ti 2	MONEL alloy 400 to itself and to steel. Overlaying on steel with SAW. (Buffer layer filler metal 61 required with GMAW).
Copper-Nickel MONEL 67	30	-	-	Cu bal	Copper-nickel alloys and selected bronzes to MONEL alloy 400 or Nickel 200.
Nickel-Iron NILO CF36	36	-	-	Fe bal, Nb 1.5	NILO alloy 36, INVAR. Superior crack resistance and CTE match.
NILO CF42	42	-	-	Fe bal, Nb 1.5	NILO alloy 42. Superior cracking resistance and CTE match to NILO 42.
Nickel-Chromium INCONEL 82	67 min	20	-	Nb 2.5 Mn 3	Moderate creep service: INCONEL alloys 600 and 601, and INCOLOY alloy 800 to themselves and to carbon and stainless steels. Overlaying on steel.
INCONEL 92	67 min	16	-	Ti 3 Fe 4 Mn 2.5	INCONEL and INCOLOY alloys to stainless and carbon steels and MONEL alloys; MONEL alloys and Nickel 200 to stainless steels; stainless steels to carbon steels.
INCONEL 52	Bal	30	-	Fe 9	INCONEL alloy 690 and overlaying on steel, particularly for nuclear applications.
INCONEL 601	60	23	-	Al 1.5	INCONEL alloy 601
INCONEL 718	53	19	3	Nb 5	INCONEL alloy 718, 706 and X-750.
INCONEL 72	55	43	-	-	INCONEL alloys 671 and 690. Overlaying.
NC-80/20	80	20	-	-	BRIGHTRAY electrical resistance alloys; INCONEL alloy 600, INCOLOY alloy DS and NIMONIC alloy 75 to themselves and to each other. 9% Ni steel.
Nickel-Chromium-Molybdenum INCONEL 625	58 min	21	9	Nb 3.5 Fe 1.0 max	INCONEL alloy 625, INCOLOY alloy 825, INCOLOY alloy 25-6MO and MONEL alloy 400. Dissimilar welding of nickel alloys and stainless steels. Overlaying.
INCO-WELD 725NDUR	58	21	8	Nb 3.5	INCONEL alloy 725, INCOLOY alloy 925 and high-strength, low-alloy steels. Heat treatable. Overlaying on steel.
INCO-WELD C-276	Bal	16	16	W 3.7	INCO-WELD alloy C-276 and other Ni-Cr-Mo corrosion-resisting alloys. Alloy clad steel. Overlaying on steel.
INCONEL 622*	Bal	21	14	Fe 2.5 W 3.0	INCONEL alloy 622 and other Ni-Cr-Mo corrosion-resisting alloys, clad steels, duplex, super duplex and super-austenitic stainless steels. Overlaying on steel.
INCO-WELD 686CPT	Bal	21	16	W 3.7	INCONEL alloy 686 and other Ni-Cr-Mo alloys, clad steel, duplex, super duplex and super-austenitic stainless steels. Overlaying on steel.
Nickel-Chromium-Cobalt-Molybdenum INCONEL 617	Bal	22	9	Co 12	Severe creep service: INCONEL alloy 617, INCOLOY alloys 800, 800H, 800HT and 803, HP 45 and other cast heat-resisting alloys and dissimilar metals for high-temperature service up to 2100°F.
Cast Iron NIROD 44	44	-	-	Fe 45, Mn 11	Ductile (S-G) and malleable cast irons to themselves, to mild steel or to stainless steels for high-strength applications.
NIROD 55	55	-	-	Fe 45	Gray, ductile and Ni-Resist cast irons. Cast irons to wrought alloys. For high-sulfur, phosphorus, or lubricant-contaminated castings.
NIROD 99	99 min	-	-	-	Cast irons, particularly in thin section or for maximum machinability.
NIMONIC NIMONIC 263	Bal	20	6	Co 20, Ti Al	NIMONIC alloy 263.
NIMONIC 90	Bal	20	-	Co 17, Ti Al	NIMONIC alloy 90.
NIMONIC 71	40	18	5	Ti, Al, Fe bal	NIMONIC alloy PE.TI.
NIMONIC PK33	Bal	19	7	Co 14, Ti, Al	NIMONIC alloy PK.33.

Available in sizes from .031" (0.8 mm) to .125" (3.2 mm) diameter, 36" lengths in 10 lb (4.54 kg) packs or 1000 mm lengths in 11 lb (5 kg) packs; various spool sizes.

* Not available for sale in all countries

	Main Classifying Elements %				Typical Applications
	Ni	Cr	Mo	Also	
Nickel-Chromium INCO-CORED 82AP	67 min	20	-	Nb 2.5	Moderate creep service: INCONEL alloys 600 and 601 and INCOLOY alloy 800, to themselves and to carbon and stainless steels. Overlaying on steel. 9% Ni Steel. (All-Position)
INCO-CORED 82DH	67 min	20	-	Nb 2.5	Moderate creep service: INCONEL alloys 600 and 601 and INCOLOY alloy 800, to themselves and to carbon and stainless steels. Overlaying on steel. 9% Ni Steel. (Down-Hand)
Nickel-Chromium-Molybdenum INCO-CORED 625AP	58 min	21	9	Nb 3.5	INCONEL alloy 625, INCOLOY alloy 825, INCOLOY alloy 25-6MO and MONEL alloy 400. Super-austenitics and INCOLOY alloy 020. Dissimilar welding nickel alloys and stainless steels. Overlaying on steel. 9% Ni Steel. (All-Position)
INCO-CORED 625DH	58 min	21	9	Nb 3.5	INCONEL alloy 625, INCOLOY alloy 825, INCOLOY alloy 25-6MO and MONEL alloy 400. Super-austenitics and INCOLOY alloy 020. Dissimilar welding nickel alloys and stainless steels. Overlaying on steel. 9% Ni Steel. (Down-Hand)
Cast Iron NIROD FC 55	50	-	-	Fe 44 Mn 4	Gray, ductile, Ni-Resist and malleable cast irons to themselves, to mild steel or to high-nickel alloys using automatic or semi-automatic processes.

Available in .045" (1.1 mm), 30 lb (13.6 kg) wire baskets. NIROD FC55 also available from .045" (1.1 mm) wire basket to .093" (2.4 mm) coils.

**NICKEL ALLOY WELDING CONSUMABLES
FOR STRIP CLADDING USING SUBMERGED-ARC STRIP (SAS)
OR ELECTROSLAG SURFACING (ESS)**

	Flux	Main Classifying Elements %				Typical Applications
		Ni	Cr	Mo	Also	
Nickel Nickel 61	-	93 min	-	-	Ti 3, Al 1	Overlaying on steel to achieve a Nickel 200 type deposit.
Nickel-Copper MONEL 60	-	65	-	-	Cu bal Ti 2	Overlaying on steel to achieve a MONEL alloy 400 type deposit.
Copper-Nickel MONEL 67	-	30	-	-	Cu bal	Overlaying on steel to achieve a 70%Cu/30%Ni type deposit. (Requires Nickel or MONEL Buffer)
Nickel-Chromium INCONEL 82	SAS1, ESS1	67 min	20	-	Nb 2.5 Mn 3 Fe 2	Overlaying on steel to achieve an INCONEL alloy 600 type deposit.
INCO-WELD 52SCC	SAS2, ESS2	Bal	30	-	Fe 8	Overlaying on steel to achieve an INCONEL alloy 690 type deposit.
Nickel-Chromium-Molybdenum INCONEL 625	SAS1, ESS1	58 min	21	9	Nb 3, Fe 1.0 max	Overlaying on steel to achieve an INCONEL alloy 625 deposit.
INCO-WELD 686CPT	ESS1	Bal	21	16	W 3.7	Overlaying on steel to achieve an INCONEL alloy 686 deposit.

Available in 60 lb (27 kg) coils 30, 60, 90 mm wide by 0.5 mm thick.

	Main Classifying Elements %				Typical Applications	
	Flux	Ni	Cr	Mo		Also
Nickel Nickel 61	6, NT100	93 min	-	-	Ti 3, Al 1	Nickel 200 and 201 and nickel-clad steel. Overlaying onto steel. Joining nickel to steel.
Nickel-Copper MONEL 60	5, 8, NT110	65	-	-	Cu bal Ti 2	MONEL alloy 400 to itself and to steel. Overlaying on steel.
Nickel-Iron NILO CF36	6 NT100	36	-	-	Fe bal, Nb 1.5	NILO alloy 36, INVAR: Superior crack resistance and CTE match.
NILO CF42	6	42	-	-	Fe bal, Nb 1.5	NILO alloy 42. Superior cracking resistance and CTE match to NILO 42.
Nickel-Chromium INCONEL 82	4, 6, NT100	67 min	20	-	Nb 2.5 Mn 3 Fe 2	Moderate creep service: INCONEL alloys 600 and 601 and INCOLOY alloy 800, to themselves and to carbon and stainless steels. Overlaying on steel.
Nickel-Chromium-Molybdenum INCONEL 625	7, NT100	58 min	21	9	Nb 3.5, Fe 1.0 max	INCONEL alloy 625, INCOLOY alloy 825, INCOLOY alloy 25-6MO and MONEL alloy 400. Dissimilar welding nickel alloys and stainless steels. Overlaying.
INCO-WELD C-276	Bal	16	16		W 3.7	INCO-WELD alloy C-276 and other Ni-Cr-Mo corrosion-resisting alloys. Alloy-clad steel. Overlaying on steel.
INCONEL 622*	Bal	21	14		Fe 2.5 W 3.2	INCONEL alloy 622 and other Ni-Cr-Mo corrosion-resisting alloys, clad steels, duplex, super-duplex and super-austenitic stainless steels. Overlaying on steel.
INCO-WELD 686CPT	Bal	21	16		W 3.7	INCONEL alloy 686 and other Ni-Cr-Mo alloys, clad steels, duplex, super-duplex and super-austenitic stainless steels. Overlaying on steel.
Cast Iron NIROD FC 55	5	50	-	-	Fe 44, Mn 4	Gray, ductile, Ni-Resist and malleable cast irons to themselves, to steel or to high-nickel alloys using automatic or semi-automatic processes.
NIROD 44	6, NT100	44	-	-	Fe 45, Mn 11	Ductile (S-G) and malleable cast irons to themselves, to mild steel or to stainless steels for high-strength applications.
NIROD 99	6, NT100	99 min	-	-	-	Cast irons, particularly in thin section or for maximum machinability.
Copper-Nickel MONEL 67	8, NT110*	30	-	-	Cu bal	Copper-nickel alloys and selected bronzes to MONEL alloy 400 or Nickel alloy 200

* NT110 may be used with MONEL 67 once a barrier layer of Nickel 61 or MONEL 60 (with subarc process) has been applied first. Available in .062" (1.6 mm) to .125" (3.2 mm) diameter, D-300, K-300 spools and coils in weights 12.5 to 30 kg.

FLUX FOR JOINING AND / OR SURFACING

Flux	Comments
INCOFLUX 4	INCONEL filler metal 82
INCOFLUX 5	MONEL filler metal 60, NIROD FC 55 flux-cored wire
INCOFLUX 6	Nickel filler metal 61, INCONEL filler metal 82, NIROD filler metals 44 and 99, NILO filler metals CF36 and CF42
INCOFLUX 7	INCONEL filler metal 625
INCOFLUX 8	MONEL filler metal 60 and MONEL filler metal 67
INCOFLUX NT100	Nickel filler metal 61, INCONEL filler metals 82 and 625, NIROD filler metals 44 and 99, and NILO filler metal CF36
INCOFLUX NT110	MONEL filler metal 60 and MONEL filler metal 67
INCOFLUX SAS1	INCONEL weldstrips 82 and 625
INCOFLUX SAS2	INCONEL weldstrip 52SCC
INCOFLUX ESS1	INCONEL weldstrips 82 and 625 and INCO-WELD weldstrip 686CPT
INCOFLUX ESS2	INCO-WELD weldstrip 52SCC

Available in 50 lb (22.7 kg) or 60 lb (27.2 kg) hermetically sealed polyethylene buckets; approximately 2.2 lbs (1 kg) of flux is required for 2.2 lbs (1 kg) of wire deposited.

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	Main Classifying Elements %				Typical Applications
	Ni	Cr	Mo	Also	
Nickel DURANICKEL 301TSW NIROD 99TSW	93 min 99 min	- -	- -	Al 4.5	Nickel 200 type deposit; high bond strength. Nickel 200 type deposit.
Nickel-Copper MONEL 40TSW	65	-	-	Cu bal	MONEL alloy 400 type deposit.
Copper-Nickel MONEL 67TSW	30	-	-	Cu bal	70%Cu/30% Ni deposit.
Nickel Chromium NiCrTSW	80	20	-	-	80%Ni/20% Cr deposit.
Nickel-Chromium-Molybdenum INCONEL 625TSW INCO-WELD C-276TSW	58 min Bal	21 16	9 16	Nb 3.5 W 3.5	INCONEL alloy 625 type deposit. INCO-WELD alloy C-276 type deposit.

Available in .063" (1.6 mm) on spools in weights of 30 lb (13.6 kg). Other sizes and packaging options available upon special request.

Length of Consumable									
Wire (mig, tig, s-a)			Flux-Cored Wire			Weldstrip (0.5 mm thick)			
dia.	ft/lb	m/kg	dia.	ft/lb	m/kg	width	m/kg		
.031"	0.8 mm	807	246	045"	1.1 mm	285	87	30	8.5
.035"	0.9 mm	636	194	047"	1.2 mm	282	86	60	4.3
.039"	1.0 mm	515	157	062"	1.6 mm	167	51	90	2.8
.047"	1.2 mm	357	109	078"	2.0 mm	105	32		
.062"	1.6 mm	207	63	093"	2.4 mm	72	22		
.078"	2.0 mm	131	40						
.093"	2.4 mm	92	28						
.118"	3.0 mm	62	19						
.125"	3.2 mm	49	15						
.157"	4.0 mm	33	10						
.197"	5.0 mm	23	7						

Number of Covered Electrodes per 10lb. (4.54 kg) packet

dia.	length	no./packet		
3/32"	2.4 mm	9"	229 mm	430
3/32"	2.4 mm	12"	305 mm	370
1/8"	3.2 mm	14"	356 mm	130
5/32"	4.0 mm	14"	356 mm	90
3/16"	4.7 mm	14"	356 mm	60

Note: The values given in this brochure are approximate and for information only. Available diameters and exact values vary for each alloy.

Nickel Alloy Welding Consumables
SUGGESTED SELECTIONS

Filler Metals For Gas Metal Arc, Gas Tungsten Arc and Submerged-Arc Welding

	Nickel 200	MONEL alloy 400	INCONEL alloy 600	INCONEL alloy 625	INCONEL alloy 686	INCOLOY alloys 803, 800 and 800H/HT	INCOLOY alloy 825	Carbon, Low alloy & Nickel Steels	3 - 30% Chromium Steels	Austenitic Stainless Steels	Duplex and Super Duplex Stainless Steels	Cast high-temperature alloys	Copper-Nickel alloys
Nickel 200	Nickel 61 Nickel 141	MONEL 60 Nickel 61	INCONEL 82 Nickel 61	INCONEL 625 INCONEL 82 Nickel 61	I-W 686CPT INCONEL 625 INCONEL 82 Nickel 61	INCONEL 82 Nickel 61	INCONEL 625 INCONEL 82 Nickel 61	INCONEL 82 Nickel 61	INCONEL 82 Nickel 61	INCONEL 82 Nickel 61	I-W 686CPT INCONEL 82	INCONEL 82 Nickel 61	MONEL 60 MONEL 67 Nickel 61
MONEL alloy 400	MONEL190 Nickel 141	MONEL 60 INCONEL 625 INCONEL 112 MONEL 190	INCONEL 82 INCONEL 112 INCONEL 182	INCONEL 625 INCONEL 82 Nickel 61	I-W 686CPT INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82 MONEL 60	INCONEL 625 INCONEL 82 MONEL 60	INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	MONEL 60 MONEL 67 Nickel 61
INCONEL alloy 600	INCO-WELD A INCONEL 112 INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182	INCONEL 82 INCO-WELD A INCONEL 182	INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	INCONEL 617 INCONEL 825 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 617 INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 82	INCONEL 617 INCONEL 625 INCONEL 82	INCONEL 82 Nickel 61
INCONEL alloy 625	INCO-WELD A INCONEL 112 INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182	INCONEL 625 INCONEL 112	I-W 686CPT INCONEL 625	INCONEL 617 INCONEL 625 INCONEL 82	INCONEL 625	INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625	INCONEL 617 INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82 Nickel 61
INCONEL alloy 686	INCO-WELD A I-W 686CPT Nickel 141	I-W 686CPT INCO-WELD A INCONEL 112	INCO-WELD A INCONEL 82 INCONEL 686PT	I-W 686CPT INCONEL 112	I-W 686CPT INCONEL 617 INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 617 INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625	I-W 686CPT INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	I-W 686CPT	I-W 686CPT INCONEL 617 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82 Nickel 61
INCOLOY alloys 800, 803 and 800H/HT	INCO-WELD A INCONEL 112 INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 112 INCONEL 117	INCO-WELD A INCONEL 112 INCONEL 117 INCONEL 182	INCO-WELD A I-W 686CPT	INCONEL 617 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 617 INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 82	INCONEL 617 INCONEL 625 INCONEL 82	INCONEL 82 Nickel 61
INCOLOY alloy 825 & Super Austenitic Stainless Steel	INCO-WELD A Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 112 INCONEL 182	INCONEL 112 INCONEL 122 I-W 686CPT	I-W 686CPT INCONEL 112 INCONEL 122	INCO-WELD A INCONEL 112	INCONEL 625 I-W 686CPT INCONEL 112 INCONEL 122	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 82 Nickel 61
Carbon, Low alloy & Nickel Steels	INCO-WELD A INCONEL 112 INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182 MONEL 190	INCONEL 112 INCONEL 182	INCONEL 112 INCO-WELD A	INCO-WELD A I-W 686CPT INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 117	INCO-WELD A INCONEL 112 INCONEL 182	INCONEL 625 INCONEL 82 INCO-WELD A INCONEL 112	INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 82	INCONEL 625 INCONEL 82	INCONEL 82 Nickel 61
3 - 30% Chromium Steels	INCO-WELD A INCONEL 112 INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 112 INCONEL 117	INCONEL 112 INCO-WELD A	INCO-WELD A I-W 686CPT INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 117	INCO-WELD A INCONEL 112 INCONEL 182	INCO-WELD A INCO-WELD 112	INCONEL 625/52 INCONEL 82 INCO-WELD A INCONEL 112/152	INCONEL 625 INCONEL 82	I-W 686CPT INCONEL 625 INCONEL 82	INCONEL 625 INCONEL 82 INCONEL 617	INCONEL 82 Nickel 61
Austenitic Stainless Steels	INCO-WELD A INCONEL 112 INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182 MONEL 190	INCO-WELD A INCONEL 112 INCONEL 117 INCONEL 182	I-W 686CPT INCO-WELD A	INCO-WELD A I-W 686CPT INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 112 INCONEL 117	INCO-WELD A INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 112 INCONEL 182	I-W 686CPT INCONEL 82/625 I-W A,686CPT INCONEL 112	I-W 686CPT INCONEL 82	INCONEL 82	INCONEL 82 Nickel 61
Duplex and Super Duplex Stainless Steels	I-W 686CPT INCO-WELD A Nickel 141	I-W 686CPT INCO-WELD A Nickel 141	I-W 686CPT INCO-WELD A	I-W 686CPT INCONEL 112	I-W 686CPT	I-W 686CPT INCO-WELD A	I-W 686CPT INCONEL 112	I-W 686CPT INCONEL 112	I-W 686CPT INCO-WELD A	I-W 686CPT INCO-WELD A	I-W 686CPT INCO-WELD A	I-W 686CPT INCONEL 82	I-W 686CPT INCONEL 82
Cast high-temperature alloys	INCO-WELD A INCONEL 112 INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 INCONEL 182 MONEL 190	INCONEL 117 INCONEL 117	INCO-WELD A INCONEL 117	I-W 686CPT INCONEL 117	INCO-WELD A INCONEL 117	INCO-WELD A INCONEL 112	INCO-WELD A INCONEL 112 INCONEL 182	INCO-WELD A INCONEL 112 INCONEL 117	INCO-WELD A INCONEL 112 INCONEL 117	INCO-WELD A INCONEL 112 INCONEL 117	INCONEL 617 INCONEL 82 INCO-WELD A INCONEL 117	INCONEL 82 Nickel 61
Copper-Nickel alloys	MONEL 187 MONEL 190 Nickel 141	MONEL 187 MONEL 190 Nickel 141	INCO-WELD A INCONEL 182 Nickel 141	INCO-WELD A INCONEL 112 Nickel 141	I-W 686CPT Nickel 141	INCO-WELD A INCONEL 182 Nickel 141	INCO-WELD A INCONEL 182 Nickel 141	INCO-WELD A INCONEL 182 Nickel 141	INCO-WELD A INCONEL 182 Nickel 141	INCO-WELD A INCONEL 182 Nickel 141	I-W 686CPT INCO-WELD A	INCO-WELD A INCONEL 182 Nickel 141	MONEL 67 MONEL 187

Available Specifications

Grade	AWS	DIN 1736	B52901
Nickel Nickel 141 welding electrode Nickel 61 filler metal Nickel 61 weldstrip	A5.11 ENi-1 A5.14 ERNi-1	EL-NiTi3 SG-NiTi4 UP-NiTi4	Part 5 NA32 Part 5 NA32
Nickel-Copper MONEL 190 welding electrode MONEL 60 filler metal MONEL 60 weldstrip	A5.11 ENiCu-7 A5.14 ERNiCu-7	EL-NiCu30Mn SG-NiCu30MnTi UP-NiCu30MnTi	Part 5 NA33 Part 5 NA33
Copper-Nickel MONEL 187 welding electrode MONEL 67 weldstrip MONEL 67 filler metal	A5.6 EcuNi A5.7 ERcuNi	S-CuNi30Mn UP-CuNi30Fe S-CuNi30Fe	Part 3 C18 Part 3 C18
Nickel-Iron NiLO CF36 filler metal NiLO CF42 filler metal			
Nickel-Iron-Chromium INCONEL 718 filler metal	A5.14 ERNiFeCr-2	SG-NiCr19NbMoTi	
Nickel-Chromium INCO-WELD A welding electrode INCONEL 182 welding electrode INCONEL 82 filler metal INCONEL 82 weldstrip INCO-CORED 82AP flux-cored wire INCO-CORED 82DH flux-cored wire INCONEL 92 filler metal INCONEL 152 welding electrode INCONEL 52 filler metal INCO-WELD 52SCC weldstrip INCONEL 601 filler metal INCONEL filler metal 72 NC 80/20 filler metal	A5.11 ENiCrFe-2 A5.11 ENiCrFe-3 A5.14 ERNiCr-3 A5.14 ERNiCrFe-6 A5.11 ENiCrFe-7 A5.14 ERNiCrFe-7 A5.14 ERNiCrFe-11 A5.14 ERNiCr-4	EL-NiCr15FeNb EL-NiCr15FeMn SG-NiCr20Nb UP-NiCr20Nb SG-NiCr23Al SG-NiCr20	Part 5 NA35 Part 5 NA35 Part 5 NA39 Part 5 NA34
Nickel-Chromium-Molybdenum INCONEL 112 welding electrode INCONEL 625 filler metal INCONEL 625 weldstrip INCO-CORED 625AP flux-cored wire INCO-CORED 625DH flux-cored wire INCO-WELD C-276 welding electrode INCO-WELD C-276 filler metal INCONEL 122 welding electrode INCONEL 622 filler metal INCO-WELD 686CPT welding electrode INCO-WELD 686CPT filler metal INCO-WELD 686CPT weldstrip INCO-WELD 725NDUR filler metal	A5.11 ENiCrMo-3 A5.14 ERNiCrMo-3 A5.11 ENiCrMo-4 A5.14 ERNiCrMo-4 A5.11 ENiCrMo-10 A5.14 ERNiCrMo-10 A5.11 ENiCrMo-14 A5.14 ERNiCrMo-14 A5.14 ERNiCrMo-15	EL-NiCr20Mo9Nb SG-NiCr21Mo9Nb UP-NiCr21Mo9Nb EL-NiMo16Cr16W SG-NiMo16Cr16W SG-NiCr21Mo16W	Part 5 NA43 Part 5 NA43 Part 5 NA48
Nickel-Chromium-Cobalt-Molybdenum INCONEL 117 welding electrode INCONEL 617 filler metal	A5.11 ENiCrCoMo-1 A5.14 ERNiCrCoMo-1	EL-NiCr21Co12Mo SG-NiCr22Co12Mo	

Available Specifications

Grade	AWS	DIN 1736	B52901
Cast Iron NiROD 44 filler metal NiROD 55 welding electrode NiROD 55X welding electrode NiROD 55 filler metal NiROD FC 55 flux-cored wire NiROD welding electrode NiROD 99X welding electrode NiROD 99 filler metal	A5.15 ERNiFeMn-CI A5.15 ENiFe-CI A5.15 ENiFeT3-CI A5.15 ENi-CI		
NIMONIC NIMONIC 263 filler metal NIMONIC 90 filler metal NIMONIC PE ti filler metal NIMONIC PK33 filler metal			Part 5 NA38 Part 5 NA36 Part 5 NA37

**STAINLESS STEEL WELDING CONSUMABLES
FOR SHIELDED METAL ARC WELDING (SMAW)
MANUAL METAL ARC WELDING**

	Main Classifying Elements %					Typical Applications
	C	Mn	Si	Cr	Ni	
INCO-WELD 308L 15, -16	0.03	1.6	0.4	19.6	9.7	For welding types 304, 304L, 308 and 308L
INCO-WELD 308L-17	0.02	0.7	0.8	19.5	10	
INCO-WELD 308H 15, -16	0.05	1.7	0.5	19.8	9.6	
INCO-WELD 309L 15, -16	0.03	1.8	0.5	23.5	13	For welding 304H types and similar applications where high temperature creep strength is required. For welding carbon steel to stainless steel for service below 600°F (326°C) and for the first layer when cladding
INCO-WELD 309L-17	0.02	0.7	0.7	23.5	12.5	
INCO-WELD 309MoL 15, -16	0.03	1.7	0.7	23	13	
INCO-WELD 310 15, -16	0.15	1.8	0.4	26	21	For welding 310 type stainless steels. For welding high yield steels and abrasion resisting steels and dissimilar steels
INCO-WELD 312 15, -16	0.12	1.7	0.5	29	9.5	
INCO-WELD 316L 16	0.03	1.6	0.4	19	12.5	For welding 316 and 316L stainless steels
INCO-WELD 316-17	0.02	0.7	0.6	18	12	
INCO-WELD 317L 15, -16	0.03	1.7	0.5	19	12.7	For welding 317 stainless steel with a maximum 0.04% carbon in weld deposit.
INCO-WELD 317L-17	0.02	0.6	0.7	18.5	12	
INCO-WELD 320UR	0.03	2	0.2	19.5	33.1	Mo 2.2 Cu 3.5
INCO-WELD 347 15, -16	0.04	1.8	0.6	19.5	9.5	For welding stainless steel of similar composition. "Low residual" grade is less crack sensitive than regular 320 electrodes. For welding types 347 and 321 stainless steels.
INCO-WELD 347-16	0.06	0.8	0.4	12	4.5	
INCO-WELD 410NiMo 16	0.03	0.7	0.4	12	4.5	Mo 0.5
INCO-WELD 2209-16	<0.030	0.8	0.9	22.5	9	For welding of duplex stainless steels. Mo 3.0 N 0.17
INCO-WELD 2209-17	<0.030	0.8	0.8	22	9	Mo 3.0 N 0.15

Available in sizes 3/32" (2.4 mm) in hermetically sealed tubes of 8 lbs (3.6 kgs) each: 1/8" (3.2 mm), 5/32" (4.0 mm), and 3/16" (4.8 mm) in hermetically sealed tubes of 10 lbs (4.5 kgs) each.

**STAINLESS STEEL WELDING CONSUMABLES
FOR GAS METAL ARC WELDING (GMAW)
METAL INERT GAS (MIG) WELDING**

	Main Classifying Elements %				Typical Applications
	Cr	Ni	Mo	Also	
INCO-WELD 308H, 308L, 308LSI	21.0	10.0	-	-	18/8 type stainless steels; 304 type.
INCO-WELD 309, 309L, 309LSI	24	13	-	-	309 type; dissimilar metal welding; weld overlaying.
INCO-WELD 309LMo	24	13	2.5	-	Overlaying on steel.
INCO-WELD 310	26.5	21.5	-	-	25/20 type stainless steels; 310 type.
INCO-WELD 312	30	9	-	-	30/9 castings and dissimilar metals.
INCO-WELD 316H, 316L, 316LSI	19	12.5	2.5	-	316 type; weld overlaying; provides good chloride pitting corrosion resistance.
INCO-WELD 347	20	10	-	Nb 10 x C	Stabilized stainless steels such as 18/8/Nb or 18/8/7/L.

Available in sizes from .031" (0.8 mm) to .062" (1.6 mm), on D 100, D 200, D 300, K 300 etc.
Spools in weights from 1.5 lb (0.7 kg) to 35 lb (15 kg).

**STAINLESS STEEL WELDING CONSUMABLES
FOR GAS TUNGSTEN ARC WELDING (GTAW)
TUNGSTEN INERT GAS (TIG) WELDING**

	Main Classifying Elements %				Typical Applications
	Cr	Ni	Mo	Also	
INCO-WELD 308H, 308L, 308LSI	21.0	10.0	-	-	18/8 type stainless steels; 304 type.
INCO-WELD 309, 309L, 309LSI	24	13	-	-	309 type; dissimilar metal welding; weld overlaying.
INCO-WELD 309LMo	24	13	2.5	-	Weld overlaying on steel.
INCO-WELD 310	26.5	21.5	-	-	25/20 type stainless steels; 310 type.
INCO-WELD 312	30	9	-	-	30/9 castings and dissimilar metals.
INCO-WELD 316H, 316L, 316LSI	19	12.5	2.5	-	316 type; weld overlaying; provides good chloride pitting corrosion resistance.
INCO-WELD 317	19.5	14	3.5	-	Improved corrosion resistance over 316.
INCO-WELD 347	20	10	-	Nb 10 x C	Stabilized stainless steels such as 18/8/Nb or 18/8/7/L.

Available in sizes from .031" (0.8 mm) to .156" (4.0 mm) diameter; 36" lengths or 1000 mm lengths in 10 lb tubes or 5 kg packs; various spool sizes.

**STAINLESS STEEL WELDING CONSUMABLES
FOR SUBMERGED-ARC WELDING (SAW)**

	Main Classifying Elements %				Typical Applications
	Cr	Ni	Mo	Also	
INCO-WELD 308H, 308L, 308LSI	21.0	10.0	-	-	18/8 type stainless steels; 304 type.
INCO-WELD 309, 309L, 309LSI	24	13	-	-	309 type; dissimilar metal welding; weld overlaying.
INCO-WELD 309LMo	24	13	2.5	-	Weld overlaying on steel.
INCO-WELD 310	26.5	21.5	-	-	25/20 type stainless steels; 310 type.
INCO-WELD 312	30	9	-	-	30/9 castings and dissimilar metals.
INCO-WELD 316H, 316L, 316LSI	19	12.5	2.5	-	316 type; weld overlaying; provides good chloride pitting corrosion resistance.
INCO-WELD 347	20	10	-	Nb 10 x C	Stabilized stainless steels such as 18/8/Nb or 18/8/7/L.

Available in sizes from .062" (1.6 mm) to .125" (3.2 mm). D 300, K 300 spools and coils: 27.5 lbs (12.5 kg) to 66 lb (30 kg).

AVAILABLE SPECIFICATIONS

Grade	AWS A5.9	BS2901 Part 2	Grade	AWS A5.4
INCO-WELD 308L	ER308L	308S92	INCO-WELD 308L 15	E308L 15
INCO-WELD 308LSI	ER308SI	308S93	INCO-WELD 308L 16	E308L 16
INCO-WELD 308H	ER308H	308S96	INCO-WELD 308L 17	E308L 17
INCO-WELD 309L	ER309L	309S92	INCO-WELD 308H 15	E308H 15
INCO-WELD 309SI	ER309SI	309S93	INCO-WELD 308H 16	E308H 16
INCO-WELD 309	ER309	309S94	INCO-WELD 309L 15	E309L 15
INCO-WELD 309LMo	ER309LMo		INCO-WELD 309L 16	E309L 16
INCO-WELD 310	ER310	310S94	INCO-WELD 309L 17	E309L 17
INCO-WELD 312	ER312	312S94	INCO-WELD 309MoL 15	E309MoL 15
INCO-WELD 316L	ER316L	316S92	INCO-WELD 309MoL 16	E309MoL 16
INCO-WELD 316SI	ER316SI	316S93	INCO-WELD 310 15	E310 15
INCO-WELD 316H	ER316H	316S96	INCO-WELD 310 16	E310 16
			INCO-WELD 312 15	E312 15
			INCO-WELD 312 16	E312 16
			INCO-WELD 316L 16	E316L 16
			INCO-WELD 316L 17	E316L 17
			INCO-WELD 317L 15	E317L 15
			INCO-WELD 317L 16	E317L 16
			INCO-WELD 317L 17	E317L 17
			INCO-WELD 320UR	E320UR
			INCO-WELD 347 15	E347 15
			INCO-WELD 347 16	E347 16
			INCO-WELD 410 16	E410 16
			INCO-WELD 410NiMo 16	E410NiMo 16
			INCO-WELD 2209-16	E2209-16
			INCO-WELD 2209-17	E2209-17

Other specifications available upon request.

ALUMINUM ALLOY WELDING CONSUMABLES
FOR GAS METAL ARC WELDING (GMAW)
METAL INERT GAS WELDING

	Main Classifying Elements %					Typical Applications
	Al	Si	Mn	Mg		
Aluminum						
INCO-WELD 1050	>99.5	-	-	-	-	For use when a commercially pure deposit is required, particularly when color matching is required for anodizing.
INCO-WELD 1080	>99.8	-	-	-	-	
Aluminum-Silicon						
INCO-WELD 4043	Bal	5.5	-	-	-	General purpose, high strength, crack resistance. Not recommended when the finished work is to be anodized.
INCO-WELD 4047	Bal	12.0	-	-	-	
Aluminum-Magnesium						
INCO-WELD 5154	Bal	-	0.3	3.5	-	Provide excellent color matching after anodizing, high weld ductility, strength and corrosion resistance.
INCO-WELD 5183	Bal	-	0.7	4.9	-	
INCO-WELD 5356	Bal	-	0.1	5.0	-	
INCO-WELD 5556	Bal	-	0.7	5.2	-	

Available in sizes from .031" (0.8 mm) to .062" (1.6 mm), on D-100, D-200, D-300, K-300 etc. Spools in weights from 1.1 lb (0.5 kg) to 18.7 lb (8.5 kg).

ALUMINUM ALLOY WELDING CONSUMABLES
FOR GAS TUNGSTEN ARC WELDING (GTAW)
TUNGSTEN INERT GAS WELDING

	Main Classifying Elements %					Typical Applications
	Al	Si	Mn	Mg		
Aluminum						
INCO-WELD 1050	>99.5	-	-	-	-	For use when a commercially pure deposit is required particularly when color matching is required for anodizing.
INCO-WELD 1080	>99.0	-	-	-	-	
Aluminum-Silicon						
INCO-WELD 4043	Bal	5.5	-	-	-	General purpose, high strength, crack resistant. Not recommended when the finished work is to be anodized.
INCO-WELD 4047	Bal	12.0	-	-	-	
Aluminum-Magnesium						
INCO-WELD 5154	Bal	-	0.3	3.5	-	Provide excellent color matching after anodizing, high weld ductility, strength and corrosion resistance.
INCO-WELD 5183	Bal	-	0.7	4.9	-	
INCO-WELD 5356	Bal	-	0.1	5.0	-	
INCO-WELD 5556	Bal	-	0.7	5.2	-	

Available in sizes from .031" (0.8 mm) to .197" (5.0 mm) diameter; 39" (1000 mm) lengths in 5.5 lb (2.5 kg) packs; various spool sizes.

AVAILABLE SPECIFICATIONS

Grade	AWS A5.10	B52901 Part 4	Diameter		Approximate length of wire	
					ft/lb	m/kg
INCO-WELD 1050	-	1050A	.031"	0.8 mm	2,335	712
INCO-WELD 1080	-	1080A	.039"	1.2 mm	2,120	456
INCO-WELD 4043	ER4043	4043A	.047"	1.2 mm	1,036	316
INCO-WELD 4047	ER4047	4047A	.062"	1.6 mm	603	184
INCO-WELD 5154	-	5154A	.078"	2.0 mm	381	116
INCO-WELD 5183	ER5183	5183	.093"	2.4 mm	269	82
INCO-WELD 5356	ER5356	5356	.118"	3.0 mm	177	54
INCO-WELD 5556	ER5556	5556A	.125"	3.2 mm	144	44
			.157"	4.0 mm	92	28
			.197"	5.0mm	62	19

Other specifications available upon request.

COBALT-BASED HARD SURFACING CONSUMABLES
COVERED ELECTRODES FOR SHIELDED METAL
ARC WELDING (SMAW)

	Main Classifying Elements %							Typical Applications	
	C	Cr	Co	W	Ni	Fe	Si		Mo
NDUR-ALL 1	2.3	30	Bal.	13	<3	<3	0.8	-	Seaming rolls, valve seats, wear pads, pump sleeves, seals, bearings, bushings, saw blades.
NDUR-ALL 6	1.1	28	Bal.	4	<3	<3	1.1	-	
NDUR-ALL 12	1.4	29	Bal.	8	<3	<3	1.5	-	Extrusion dies, scissor blades, saw blades, guides bars, wood cutting tools. Hot trimming dies and forging dies, high pressure/high temperature valves, hot shears, valve seats and pump impellers.
NDUR-ALL 21	0.25	27	Bal.	-	2.5	<3	1 max	5	

Available in diameters of 1/8" (3.2 mm); 5/32" (4.0 mm), and 3/16" (4.8 mm) in lengths of 14" (356 mm).

COBALT-BASED HARD SURFACING CONSUMABLES
BAR ROD FOR GAS TUNGSTEN ARC WELDING (GTAW)
AND OXY-ACETYLENE (O-A) WELDING

	Main Classifying Elements %							Typical Applications	
	C	Cr	Co	W	Ni	Fe	Si		Mo
NDUR-ALL 1	2.3	30	Bal.	13	<3	<3	0.8	-	Seaming rolls, valve seats, wear pads, pump sleeves, seals, bearings, bushings, saw blades.
NDUR-ALL 6	1.1	28	Bal.	4	<3	<3	1.1	-	
NDUR-ALL 12	1.4	29	Bal.	8	<3	<3	1.5	-	Extrusion dies, scissor blades, saw blades, guides bars, wood cutting tools. Hot trimming dies and forging dies, high pressure/high temperature valves, hot shears, valve seats and pump impellers.
NDUR-ALL 21	0.25	27	Bal.	-	2.5	<3	1 max	5	

Available in diameters of 1/8" (3.2 mm); 5/32" (4.0 mm), and 3/16" (4.8 mm) in lengths of 14" (356 mm).

AVAILABLE SPECIFICATIONS

GRADE	AWS (5.13) COVERED ELECTRODE	BAR ROD
NDUR-ALL 1	ECOCrC	RCOCrC
NDUR-ALL 6	ECOCrA	RCOCrA
NDUR-ALL 12	ECOCrB	RCOCrB
NDUR-ALL 21	ECOCrE pending	RCOCrE pending

Copper-Nickel
MONEL 187

Main Classifying Elements %					Typical Applications
Cu	Al	Si	Sn	Ni	
Bal	-	-	-	30	Copper-nickel alloys to themselves and to MONEL alloy 400 or Nickel 200.

COPPER ALLOY WELDING CONSUMABLES
FOR GAS METAL ARC WELDING (GMAW)
METAL INERT GAS WELDING

Copper
INCO-WELD Cu

Main Classifying Elements %					Typical Applications
Cu	Al	Si	Sn	Ni	
Bal	-	-	-	-	Deoxidized and electrolytic tough pitch copper

Aluminum-Bronze
INCO-WELD CuAlA2
INCO-WELD AlBz8

Bal	9.7	-	-	-	Aluminum bronzes to themselves and to steel; copper to steel
Bal	8.5	-	-	-	Aluminum bronzes to themselves and to steel; copper to steel

Silicon-Bronze
INCO-WELD CuSiA

Bal	-	3.2	-	-	Copper/silicon and copper/zinc alloys to themselves and to steel.
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Tin-Bronze
INCO-WELD CuSnA
INCO-WELD C11

Bal	-	-	5.0	-	Bronze, brass and copper
Bal	-	-	6.7	-	Bronze, brass and copper

Copper-Nickel
MONEL 67

Bal	-	-	-	30	Copper-nickel alloys to themselves and to MONEL alloy 400 or Nickel 200.
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Available in sizes from .031" (0.8 mm) to .062" (1.6 mm), on D-100, D-200, D-300, K-300 etc.
Spools in weights from 1.5 lb (0.7 kg) to 33 lb (15 kg)

Copper
INCO-WELD Cu

Main Classifying Elements %					Typical Applications
Cu	Al	Si	Sn	Ni	
Bal	-	-	-	-	Deoxidized and electrolytic tough pitch copper

Aluminum-Bronze
INCO-WELD CuAlA2
INCO-WELD AlBz8

Bal	9.7	-	-	-	Aluminum bronzes to themselves, to steel and copper to steel
Bal	8.5	-	-	-	Aluminum bronzes to themselves, to steel and copper to steel

Silicon-Bronze
INCO-WELD CuSiA

Bal	-	3.2	-	-	Copper/silicon and copper/zinc alloys to themselves and to steel.
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Tin-Bronze

INCO-WELD CuSnA	Bal	-	-	5.0	-	Bronze, brass and copper.
INCO-WELD C11	Bal	-	-	6.7	-	Bronze, brass and copper.

Copper-Nickel
MONEL 67

Bal	-	-	-	30	Copper/nickel alloys to themselves and to MONEL 400 or Nickel 200.
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Available in sizes from .031" (0.8 mm) to .156" (4.0 mm) diameter, 39" (1000 mm) lengths in 11 lb (5 kg) packs.

AVAILABLE SPECIFICATIONS

Grade	AWS	BS 2901 Part 3	DIN 1733
INCO-WELD AlBz8	-	-	CuAl8
INCO-WELD CuSnA	A5.7 ERCuSnA	C10	-
INCO-WELD C11	-	C11	-
INCO-WELD Cu	A5.7 ERCu	C7	-
INCO-WELD CuSiA	A5.7 ERCuSiA	C9	-
INCO-WELD CuAlA2	A5.7 ERCuAlA2	-	-
MONEL 67	A5.7 ERCuNi	C18	-
MONEL 187	A5.6 ECuNi	-	-

Other specifications available upon request.