

CHOSUN WELDING CONSUMABLES

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ISO 9001 Approved



CHOSUN

CHOSUN WELDING CONSUMABLES



CHOSUN WELDING Company is currently manufacturing more than 150 types of welding consumables for a variety of common and special applications.

Our electrodes and wires have been successfully accepted throughout the world.

We now provide you with the cutting edge welding consumables certified by the quality system of ISO9001.

Our experienced research and development team constantly strives to produce new and innovative products to fulfill the rapidly changing demands of welding technology.

Chosun meets the highest standards in filler metals world-wide.



YEARLY PRODUCTION CAPACITY

- Coated Arc Welding
 - Electrode 60,000 M/T
- CO₂ Gas Shielded Arc Welding
 - Solid Wire 25,000 M/T
- CO₂ Gas Shielded Arc Welding
 - Flux Cored Wire 25,000 M/T
- Submerged Arc Welding Wire & Flux
 - 6,000 M/T
- Stainless Steel MIG & TIG Wire
 - 3,000 M/T

CHOSUN

1 Coated Arc Welding Electrodes

1) For Mild Steel

Type of Covering	Product Name	Classification	Electrode Size (φmm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)					Typical Mechanical Properties				Applications	Approval
						C	Mn	Si	P	S	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J 0°C		
Ilmenite Type	CS-200	KS E 4301 JIS D 4301 DIN E 4343AR7 BS E 4343AR24	2.6 ~ 6.0	AC or DC(±)	F.V.OH.H	0.08	0.42	0.10	0.016	0.010	400 (41)	470 (48)	32	110	Welding of shipbuilding, bridges, railway cars, pressure vessels and other general structures.	ABS, BV, DNV, GL, KR, LR, NK, KS, JIS
	CS-201	KS E 4301 JIS D 4301 DIN E 4343AR7 BS E 4343AR24	2.6 ~ 6.0	AC or DC(±)	F.V.OH.H	0.10	0.50	0.13	0.020	0.010	430 (44)	480 (49)	30	110	Welding of heavy-duty structures such as ships, vehicles, buildings and bridges.	KS, JIS
	CS-204	KS E 4301 JIS D 4301 DIN E 4343AR7 BS E 4343AR24	2.6 ~ 6.0	AC or DC(±)	F.V.OH.H	0.08	0.43	0.22	0.015	0.010	400 (41)	440 (45)	33	110	For highly efficient welding in all position. Welding of heavy duty structures such as ships, vehicles, buildings and bridges.	KS, JIS
	CS-200Z	KS E 4301 JIS D 4301 DIN E 4343AR7 BS E 4343AR24	2.6 ~ 6.0	AC or DC(±)	F.V.OH.H	0.09	0.44	0.10	0.016	0.010	400 (41)	470 (48)	32	110	Low fume type electrodes for welding of heavy duty structures such as ship hulls, vehicles, buildings and bridges.	KS, JIS
Lime-Titania Type	LT-25	KS E 4303 JIS D 4303 DIN E 4343RR(B)8 BS E 4343AR24	2.6 ~ 6.0	AC or DC(±)	F.V.OH.H	0.07	0.37	0.15	0.014	0.012	420 (43)	480 (49)	32	110	For general welding of mild steel. It deposits smooth and flat bead with easy manipulation particularly in vertical and overhead positions.	JIS
	LTI-25	KS E 4303 JIS D 4303 DIN E 4343RR(B)8 BS E 4343AR24	2.6 ~ 6.0	AC or DC(±)	F.V.OH.H	0.08	0.36	0.15	0.013	0.013	410 (42)	450 (46)	32	120	For highly efficient welding of mild steel such as cars, vehicles, agricultural machinery, buildings and bridges.	JIS
High Cellulose Type	CL-100	KS E 4311 JIS D 4311 AWS E 6010 DIN E 4343C4 BS E 4343C10	2.6 ~ 6.0	DC(±)	F.V.OH.H	0.12	0.48	0.22	0.014	0.011	420 (43)	490 (50)	30	100	Welding of pipes and general structures. Particularly suitable for the vertical downward welding, root bead, hot pass, filler and capping passes.	ABS, BV, DNV, GL, LR, NK, KS, JIS
	CL-101	KS E 4311 JIS D 4311 AWS E 6011 DIN E 4343C4 BS E 4343C16	2.6 ~ 6.0	DC(±)	F.V.OH.H	0.10	0.45	0.20	0.015	0.012	410 (42)	470 (48)	30	110	For welding of pipes, building tanks, shipbuilding and general structures. As this electrode is prone to absorb moisture, store it with care.	ABS, BV, DNV, GL, LR, KS, JIS
High Titania Type	CR-12	KS E 4313 JIS D 4313 AWS E 6012 DIN E 4332R3 BS E 4332R22	2.0 ~ 6.0	AC or DC(-)	F.V.OH.H	0.09	0.34	0.18	0.017	0.011	440 (45)	500 (51)	26	58	Welding of shells of railway vehicles, cars, light vehicles and other steel sheet structures and general light structural steels.	KS, JIS
	CR-13	KS E 4313 JIS D 4313 AWS E 6013 DIN E 4332R3 BS E 4332R21	2.0 ~ 6.0	AC or DC(±)	F.V.OH.H	0.08	0.38	0.28	0.017	0.011	430 (44)	480 (49)	29	80	Welding of machines, vehicles and light structural steels. Surface dressing of heavy steel structures.	ABS, BV, DNV, GL, KR, LR, NK, KS, JIS
	CR-13V	KS E 4313 JIS D 4313 AWS E 6013 DIN E 4332R(C)3 BS E 4332R11	2.0 ~ 5.0	AC or DC(±)	F.V.OH.H V-down	0.08	0.38	0.29	0.016	0.012	440 (45)	500 (51)	27	64	Welding of steel sheet structures in ships, railway vehicles and cars. Particularly suitable for vertical downward welding.	KS, JIS
Low Hydrogen Type	LH-100	KS E 4316 JIS D 4316 AWS E 7016 DIN E 5154B(R)10 BS E 5154B26(H)	2.0 ~ 6.0	AC or DC(+)	F.V.OH.H	0.08	0.96	0.45	0.012	0.009	470 (48)	550 (56)	33	160 at -20 °C	Welding of general heavy structural steels for ships, construction, bridges and pressure vessels.	ABS, BV, DNV, GL, KR, LR, NK, KS, JIS
	LH-100V	KS E 4316 JIS D 4316 AWS E 7048 DIN E 5143B16(H)	3.2 ~ 5.5	AC or DC(+)	F.V.OH.H V-down	0.08	0.92	0.55	0.012	0.010	450 (46)	560 (57)	32	100 at -20 °C	Vertical downward welding of ships, buildings and bridges. Crack resistibility of weld metal is very good.	ABS, BV, DNV, GL, KR, LR, NK, KS, JIS
	LH-28W	KSE 4316 JIS D 4316 AWS E 7016 DIN E 5143B(R)10 BS E 5143B24(H)	2.6 ~ 5.0	AC or DC(+)	F.V.OH.H	0.08	0.86	0.64	0.012	0.010	470 (48)	560 (57)	31	90 at -20 °C	One side welding of pipes and general butt joints of mild steel and 50kgf/mm ² class high tensile steel.	ABS, KS, JIS
Iron Power Titania Type	CR-14	(KS E 4313) AWS E 7014 DIN E 5121RR8 BS E 5121RR1101	2.6 ~ 6.0	AC or DC(±)	F.V.OH.H	0.08	0.58	0.27	0.014	0.011	470 (48)	560 (57)	29	80	For highly efficient welding of ship structures, railway vehicles, cars and general steel sheet constructions.	KS, JIS

1) For Mild Steel

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)					Typical Mechanical Properties				Applications	Approval
						C	Mn	Si	P	S	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J 0 °C		
Iron Powder Titania Type	CR-24	KS E 4324 JIS D 4324 AWS E 7024 DIN E 5122RR11 BS E 512RR13034	3.2~6.4	AC or DC(±)	F.H-Fil	0.08	0.70	0.35	0.018	0.012	480 (49)	560 (57)	28	70	For highly efficient welding of horizontal and flat-fillet welding and surface dressing of multi-layer welds. Good slag removal.	ABS, BV, DNV, GL, KR, LR, NK, JIS
Iron Powder Iron Oxide Type	CF-120	KS E 4327 JIS D 4327 AWS E 6027 DIN E 4343AR11 BS E 4343AR13035	3.2~7.0	AC or DC(-)	F.H-Fil	0.07	0.65	0.34	0.018	0.012	400 (41)	470 (48)	34	80	Horizontal and flat-fillet welding of ship structures, bridges, structural steels of building and general structures. For gravity and auto contact welding	ABS, BV, DNV, GL, KR, LR, NK, KS, JIS
	CF-120Z	KS E 4327 JIS D 4327 AWS E 6027 DIN E 4343AR11 BS E 4343AR13035	3.2~7.0	AC or DC(-)	F.H-Fil	0.07	0.70	0.36	0.018	0.010	410 (42)	470 (48)	32	80	Low fume type electrode of highly efficient fillet welding. It has the same usability as that of CF-120.	KS, JIS
Cutting and Gouging	CG-100	-	3.2~5.0	AC or DC(-)	-	-	-	-	-	-	-	-	-	For gouging, cutting and drilling of general carbon steel.	-	

2) For High Tensile Steel

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties				Applications	Approval
						C	Mn	Si	Cr	Mo	Ni	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J -20 °C		
Low Hydrogen Type	LC-300	KS D 5016 JIS D 5016 AWS E 7016 DIN E 5154B(R)10 BS E 5154B26(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	0.98	0.53	-	-	-	490 (50)	560 (57)	32	170	Welding of 50kgf/mm ² class high tensile steel in ships, bridges, buildings and pressure vessels.	ABS, BV, DNV, GL, KR, LR, NK, KS, JIS
	LC-300Z	KS D 5016 JIS D 5016 AWS E 7016 DIN E 5154B(R)10 BS E 5154B26(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	0.95	0.52	-	-	-	480 (49)	560 (57)	31	170	Low fume type electrode for welding of 50kgf/mm ² class high tensile steel. Its fume generation is about 20-30% lower than conventional electrodes.	KS, JIS
	LC-300L	KS D 5016 JIS D 5016 AWS E 7016 DIN E 5154B(R)10 BS E 5154B26(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	0.96	0.54	-	-	-	500 (51)	580 (59)	31	180	Extra low hydrogen type electrode for welding of 50kgf/mm ² class high tensile steel of pressure vessels, bridges, off-shore construction and ships.	KS, JIS
	LC-300V	KS D 5016 JIS D 5016 AWS E 7048 DIN E 5155B9	3.2~6.0	AC or DC(+)	F.V.OH.H V-down	0.08	1.03	0.55	-	-	-	500 (51)	580 (57)	28	140	Vertical downward welding of ships, buildings and bridges.	KS, JIS
	LC-400	KS D 5316 JIS D 5316 AWS E 7016 DIN E 5154B(R)10 BS E 5154B26(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	0.92	0.48	-	0.13	-	540 (55)	630 (64)	29	130	Welding of 55kgf/mm ² class high tensile steel for pressure vessels and bridges.	KS, JIS
	LC-600	KS D 5816 JIS D 5816 AWS E 9016-G	2.6~6.0	AC or DC(+)	F.V.OH.H	0.08	1.10	0.52	-	0.23	0.56	570 (58)	670 (68)	28	150	Welding of 60kgf/mm ² class high tensile steel of pressure vessels, penstocks, bridges, offshore constructions, vehicles and machinery.	BV, DNV, GL, KR, NK, KS, JIS
	LC-700	KS D 7016 JIS D 7016 AWS E 10016-G	2.6~6.0	AC or DC(+)	F.V.OH.H	0.08	1.49	0.61	0.21	0.21	1.52	660 (67)	770 (78)	25	130	Welding of 70kgf/mm ² class high tensile steel(ASTM A514 and A517 etc.) for pressure vessels, penstocks, bridges and offshore constructions.	JIS
	LC-800	KS D 8016 JIS D 8016 AWS E 11016-G	2.6~5.0	AC or DC(+)	F.V.OH.H	0.07	1.49	0.63	0.24	0.43	1.84	730 (74)	830 (85)	22	120	Welding of 80kgf/mm ² class high tensile steel(ASTM A514 and A517 etc.) for pressure vessels, penstocks, bridges, offshore constructions and industrial machinery.	JIS
Iron-Powder Low-Hydrogen Type	LC-300T	KS D 5016 JIS D 5016 AWS E 7048 DIN E 5154B(R)10 BS E 5154B26(H)	3.2~5.0	AC or DC(+)	F.V.OH.H	0.08	0.74	0.32	-	-	-	460 (47)	540 (55)	32	130	For tack welding of 50kgf/mm ² class high tensile steel for ships, buildings and bridges. It has good arc restrike characteristics.	KS, JIS

2) For High Tensile Steel

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties				Applications	Approval
						C	Mn	Si	Cr	Mo	Ni	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J-20 °C		
Iron-Powder Low-Hydrogen Type	LC-318	KS D 5016 JIS D 5016 AWS E 7018 DIN E 5154B(R)10 BS E 5154B11026(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	0.96	0.61	—	—	—	470 (48)	560 (57)	32	160	For highly efficient welding of 50kgf/mm ² class high tensile steel of ships, bridges, building and pressure vessels.	ABS, BV, DNV, GL, KR, LR, NK, CWB, KS, JIS
	LC-328	KS D 5026 JIS D 5026 AWS E 7028 DIN E 5143B12 BS E 5143B13036(H)	4.0~7.0	AC or DC(+)	F.H-Fil	0.07	1.06	0.73	0.52	—	—	510 (52)	580 (59)	30	100	Flat and horizontal fillet welding of 50kgf/mm ² class high tensile steel for structures, large size steel castings and strength member of ship hulls.	ABS, BV, DNV, GL, KR, LR, NK, KS, JIS
	LC-418	KS D 5316 JIS D 5316 AWS E 8018-G	3.2~6.0	AC or DC(+)	F.V.OH.H	0.06	0.80	0.43	—	Cu 0.53	0.51	520 (53)	620 (63)	28	150 at 0 °C	For highly efficient welding of 55kgf/mm ² class high tensile steel.	KS, JIS
	LC-618	KS D 5816 JIS D 5816 AWS E 9018-G	3.2~6.0	AC or DC(+)	F.V.OH.H	0.07	1.40	0.40	—	0.32	0.52	570 (58)	660 (67)	23	160	For highly efficient welding of 60kgf/mm ² class high tensile steel for pressure vessels, bridges and offshore constructions.	KS, JIS
	LC-618M	KS D 5816 JIS D 5816 AWS E 9018-M	3.2~6.0	AC or DC(+)	F.V.OH.H	0.06	1.15	0.48	—	0.16	1.61	600 (61)	680 (69)	28	80 at -51 °C	For attachment welds(fillets) in T1, HY80 and HY90, and other high tensile quenched and tempered steels.	KS, JIS
	LC-718	KS D 7016 JIS D 7016 AWS E 10018-M	2.6~6.0	AC or DC(+)	F.V.OH.H	0.06	1.30	0.37	0.18	0.32	1.60	660 (67)	730 (74)	25	70 at -51 °C	Welding of 70kgf/mm ² class high tensile steel for pressure vessels, penstocks, bridges and machinery.	JIS
	LC-118	KS D 8016 JIS D 8016 AWS E 11018-M	3.2~6.0	AC or DC(+)	F.V.OH.H	0.08	1.58	0.32	0.30	0.40	1.80	720 (73)	820 (84)	23	70 at -51 °C	Welding of 80kgf/mm ² class high tensile steel for pressure vessels, penstocks, offshore constructions and machinery.	JIS
	LC-128	AWS E 12018-M	3.2~5.0	AC or DC(+)	F.V.OH.H	0.06	1.80	0.45	0.64	0.41	2.0	860 (87)	940 (95)	20	50 at -51 °C	Welding of 90-100kgf/mm ² class high tensile steel.	—

3) For Low Temperature Impact Toughness

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties				Applications	Approval
						C	Mn	Si	Cr	Mo	Ni	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J		
Low Hydrogen Type	LC-300NS	KS D 5016 JIS D 5016 AWS E 7016-G DIN E 5155B(R)10 BS E 5156B26(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	1.28	0.38	0.018	0.002	0.47	500 (51)	610 (62)	29	130 at -60 °C	Extra low hydrogen type electrode for low temperature up to -60 °C . Welding of aluminium-killed steel used for offshore structures, LPG tankers and LPG storage tanks.	DNV, LR, KS, JIS
	LPA-100	KS DL 5016-4AP1 JIS 5016-4AP1 AWS E 8016-G	2.6~6.0	AC or DC(+)	F.V.OH.H	0.06	1.10	0.54	—	—	1.65	530 (54)	620 (63)	30	110 at -46 °C	Welding of aluminium-killed steel for low temperature used for LPG tankers and LPG storage tanks.	—
	LPA-118	AWS E 8018-C3	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	0.89	0.37	—	—	1.00	530 (54)	600 (61)	30	130 at -40 °C	Welding of 55kgf/mm ² class high tensile steel and 1%Ni steel for low temperature that require good notch toughness down to -40 °C	—
	LPA-200	KS DL 5016-6AP2 JIS DL 5016-6AP2 AWS E 8016-C1 BS 2 Ni B	2.6~6.0	AC or DC(+)	F.V.OH.H	0.06	0.89	0.45	—	—	2.41	500 (51)	610 (62)	30	120 at -60 °C	Welding of aluminium-killed steel and 2.5% Ni steel used for machinery and equipment for low temperature.	—
Low Hydrogen Type	LN-50	AWS E 8016-C4	2.6~5.0	AC or DC(+)	F.V.OH.H	0.06	1.20	0.49	—	—	1.78	540	620	29	110 at -51 °C	Welding of aluminium-killed steel for low temperature used for LPG tankers and LPG storage tanks.	—
	LN-100	AWS E 8016-C2	2.6~5.0	AC or DC(+)	F.V.OH.H	0.06	0.62	0.20	—	—	3.66	504	566	29.7	127 at -60 °C 97 at -73 °C	Welding of 3.5% Ni steel used for LNG tankers. LNG storage tanks and ethylene production equipments to be used at about -73 °C	—
Low Hydrogen Type	LC-318N	KS D 5016 JIS D 5016 AWS E 7018-1 DIN E 5154B(R)10 BS E 5154B11026(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	1.48	0.36	0.025	0.003	—	490 (50)	570 (58)	33	130 at -45 °C	For highly efficient welding of 50kgf/mm ² class high tensile steel. Particularly impact value is excellent at -46 °C	KS, JIS
	LN-300	KS DL 5016-10AP3 AWS E 8016-C2 JIS DL 5016-10AP3	2.6~6.0	AC or DC(+)	F.V.OH.H	0.04	0.42	0.32	—	—	3.53	550 (56)	620 (63)	31	100 at -75 °C	Welding of 3.5% Ni steel used for LNG tankers. LNG storage tanks and ethylene production equipments to be used at about -100 °C	—

4) For Weather Proof Steel

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties				Applications
						C	Mn	Si	Cu	Mi	Nr	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J-20 °C	
Low Hydrogen Type	LCW-300	AWS E 7016-G JIS DA5016G	2.6~6.0	AC or DC(+)	F.V.OH.H	0.07	0.65	0.46	0.35	0.30	0.25	510 (52)	570 (58)	31	180	Welding of 50kg/mm ² class high tensile strength weather proof steel for structures, buildings, vehicles and bridges.
	LCW-400	AWS E 8016-G JIS DA5816W	3.2~6.0	AC or DC(+)	F.V.OH.H	0.07	0.77	0.47	0.36	0.46	0.53	520 (53)	620 (63)	27	130	Welding of 55kg/mm ² class high tensile strength weather proof steel for pressure vessels, penstoks, bridges and rolling stocks.
Iron Powder Low Hydrogen Type	LCW-318	AWS E 7018-W JIS DA5026G	3.2~6.0	AC or DC(+)	F.H	0.06	0.58	0.54	0.43	0.28	0.23	520 (53)	580 (59)	29	100	Weather proof steel. Vehicles and bridges.
	LCW-418	AWS E 8018-W JIS DA5826W	3.2~6.0	AC or DC(+)	F.H	0.06	0.80	0.50	0.39	0.54	0.55	520 (52)	620 (63)	27	130	Weather proof steel for bridges, structures and rolling stocks.

5) For Low Alloy Heat Resistant Steel

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties				Applications
						C	Mn	Si	Cr	Mo	Ni	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Heat Treatment	
Cellulose Type	CM-70	AWS E 7010-A1 (BS MoC)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.09	0.54	0.20	-	0.5	-	470 (48)	560 (57)	28	620°C × 1hr SR	Welding of 0.5%Mo heat resistant steel, pipes and pipelines such as AP15LX-X52 -X60.
Low Hydrogen Type	LC-300B	KS D 5016 JIS D 5016 AWS E 7016 DIN E 5154B(R)10 BS E 5154B26(H)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.08	0.97	0.56	-	0.13	-	450 (46)	540 (55)	32	620°C × 1hr SR	Extra low hydrogen type electrode. Welding of boilers for generating electric power and pressure vessels for nuclear plant.
	CM-76	KS DT 1216 JIS DT 1216 AWS E 7016-A1 DIN E MoB26 (BS MoBH)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.06	0.74	0.52	-	0.53	-	540 (55)	630 (64)	28	620°C × 1hr SR	Welding of 0.5%Mo steel used for high temperature and high pressure boilers, chemical and oil refining industries.
Low-Hydrogen Type	CM-86	AWS E 8016-B1	2.6~6.0	AC or DC(+)	F.V.OH.H	0.08	0.75	0.45	0.52	0.53	-	580 (59)	670 (68)	29	620°C × 1hr SR	Welding of 0.5%Cr-0.5%Mo steel used for high temperature and high pressure boiler, chemical and oil refining industries.
	CM-50	KS DT 2516 JIS DT 2516 AWS E 502-16 DIN E CrMo5B26 (BS 5 CrMoB)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.06	0.62	0.43	4.95	0.51	-	400 (41)	520 (53)	32	850°C × 2hr SR	Welding of 5%Cr-0.5%Mo steel such as ASTM A387 Gr5 used in oil refining, chemical industries and electric power plant.
	CM-90	JIS DT 2616 AWS E 505-16 DIN E CrMo9B26 (BS 9 CrMoB)	2.6~5.0	AC or DC(+)	F.V.OH.H	0.07	0.48	0.33	9.51	1.14	-	500 (51)	670 (68)	26	740°C × 10hr SR	Welding of 9%Cr-1%Mo steel used for super-heater tube of high temperature and high pressure boiler, heater tube of oil refining industries.
	CM-96	KS DT 2316 JIS DT 2316 AWS E 8016-B2 DIN E CrMo1B26 (BS 1 CrMoBH)	2.6~5.0	AC or DC(+)	F.V.OH.H	0.07	0.72	0.51	1.26	0.51	-	550 (56)	640 (65)	25	690°C × 1hr SR	Welding of 1.25%Cr-15%Mo steel used for super heater tube, steam pipes and headers of boilers for electric power plant and equipment of oil refining industry.
	CM-106	KS DT 2416 JIS DT 2416 AWS E 9016-B3 DIN E CrMo2B26 (BS 2 CrMoBH)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.08	0.80	0.42	2.30	1.06	-	670 (68)	750 (76)	23	690°C × 1hr SR	Welding of 2.25%Cr-1%Mo steel used for super heater tubes and steam pipes of electric power plant, and equipments of oil refining industries.
Iron Power Low Hydrogen Type	CM-78	KS DT 1216 JIS DT 1216 AWS E 7018-A1 (BS MoB)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.06	0.75	0.5	-	0.5	-	530 (54)	610 (62)	29	620°C × 1hr SR	Welding of 50kgf/mm ² class low alloy high tensile steel and 0.5%Mo steel used for boiler, pressure pipes and tubes and other pressure vessels.
	CM-98	KS DT 2318 JIS DT 2318 AWS E 8018-B2 (BS 1 CrMoB)	2.6~6.0	AC or DC(+)	F.V.OH.H	0.08	0.75	0.65	1.25	0.51	-	600 (61)	690 (70)	25	690°C × 1hr SR	Welding of 1.25%Cr-0.5%Mo steel used for thick steam pipes and repairing of cast iron.
	CM-108	KS DT 2418 JIS DT 2418 AWS E 9018-B3	2.6~6.0	AC or DC(+)	F.V.OH.H	0.06	0.76	0.48	2.26	1.07	-	660 (67)	740 (75)	22	690°C × 1hr SR	Welding of 2.25%Cr-1%Mo steel in the form of pipes, castings, forgings and tubes in boiler and power piping work.

6) For Hardsurfacing

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Hardness (Hv)	Applications
						C	Mn	Si	Cr	Mo	B		
Low-Hydrogen Type	CH-13CR	JIS DF4A-500-B	3.2~6.0	AC or DC(+)	F.	0.26	0.72	0.50	13.2	1.05	Ni 0.89	500	For corrosion and high temperature abrasion. Hardfacing of valve seats, agitator propellers, and turbine blades.
	CH-50	JIS DF2A-300-B DIN E 1-300	3.2~6.0	AC or DC(+)	F.V.OH.H	0.17	1.28	0.66	0.53	—	—	300	For light intermetallic abrasion. Hardfacing of gears, shafts and wheels.
	CH-60	JIS DF2A-350-B DIN E 1-350	3.2~6.0	AC or DC(+)	F.V.OH.H	0.24	1.39	0.67	1.13	—	—	350	For intermetallic abrasion. Hardfacing of rails, cast steel rollers and parts of bulldozers.
	CH-70	JIS DF2B-500-B DIN E 1-500	3.2~6.0	AC or DC(+)	F.V.H	0.39	1.98	0.52	2.19	—	—	520	For intermetallic abrasion and soil abrasion. Hardfacing of idlers, rollers and truck links of bulldozers.
	CH-70K	JIS DF3B-600-B DIN E 6-60	3.2~6.0	AC or DC(+)	F	0.45	0.33	1.39	7.86	—	—	630	For intermetallic abrasion and soil abrasion. Hardfacing of sprockets, tractor-links, crusher case etc.
	CH-80	JIS DF3C-600-B DIN E 6-60	3.2~6.0	AC or DC(+)	F	0.58	1.77	0.69	3.41	1.01	—	630	For soil abrasion. Hardfacing of cutter knives, liner, mixer-blades and casings.
	CH-80K	JIS DF3C-700-B DIN E 6-65	4.0~6.0	AC or DC(+)	F	0.71	1.24	1.65	5.21	W 2.11	0.15	700	For heavy soil abrasion. Hardfacing of cutter knives, shovel-teeth and casings.
	CH-90	JIS DFMA-200-B DIN E 7-250K	3.2~6.0	AC or DC(+)	F	0.82	13.4	0.52	—	—	—	220	For welding of 13% Mn steel. Hardfacing of crusher hammers, rail crossings and crusher jaws.
	CH-210	JIS DFME-200-B DIN E 8-200	3.2~5.0	AC or DC(+)	F	0.31	13.50	0.64	14.52	—	—	230	For high temperature abrasion and impact abrasion. Hardfacing of rail crossings, 13%Mn steel and bullet proof steel plates.
	CH-230	JIS DF2A-300-B DIN E 1-300	3.2~6.0	AC or DC(+)	F.V.OH.H	0.21	1.49	0.73	1.89	—	—	300	For light intermetallic abrasion. Hardfacing of gears, shafts and crane wheels.
	CH-350	JIS DF2A-350-B DIN E 1-350	3.2~6.0	AC or DC(+)	F.V.OH.H	0.26	1.43	0.52	1.08	0.32	—	350	For intermetallic abrasion. Hardfacing of rollers, gears and sprockets of bulldozers.
CH-800M	JIS DF5A-700-B AWS E Fe5-B DIN E 4-60st	3.2~4.0	AC or DC(+)	F	0.82	0.56	0.95	4.58	7.05	W : 1.90 V : 1.35	760	For heavy impact abrasion (high speed steel type). Repairing of cutter knives, dies, crusher jaws.	
Titania Type	CH-200	JIS DF2A-250-R DIN E 1-250	3.2~6.0	AC or DC(+)	F.V.OH.H	0.13	0.66	0.60	1.14	—	—	250	For light intermetallic abrasion. Hardfacing of shafts, rollers and crane tires.
	CH-350R	JIS DF2A-350-R DIN E 1-350	3.2~6.0	AC or DC(+)	F.V.OH.H	0.11	0.65	0.60	2.30	—	—	350	For intermetallic abrasion. Hardfacing of wheels, shafts, and gears.
	CH-80R	JIS DF3B-600-R DIN E 6-60	3.2~6.0	AC or DC(+)	F	0.42	0.65	0.89	4.53	1.58	—	600	For soil abrasion. Hardfacing of cutter knives, liner, mixer-blades and casings.
Lime Titania Type (Stellite)	CST-1	JIS D CoCrC AWS E CoCrC	3.2~5.0	AC or DC(+)	F	2.16	0.49	1.01	31.21	W 12.69	Co Bal	600	For corrosion and high temperature abrasion. Hardfacing of valve heads, seal rings of high pressure pump, crushers
	CST-6	JIS D CoCrA AWS E CoCrA	3.2~5.0	AC or DC(+)	F	0.86	0.55	0.98	30.36	W 4.50	Co Bal	420	For corrosion and high temperature abrasion. Hardfacing of valve seats, forging dies, crushers, screw.
	CST-12	JIS D CoCrB AWS E CoCrB	3.2~5.0	AC or DC(+)	F	1.41	0.53	0.96	31.65	W 8.64	Co Bal	480	For Corrosion and high temperature abrasion. Hardfacing of sleeves of high pressure pump, cutting knives, liners.

7) For Stainless Steel

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties of Weld Metal		Applications	Approval
						C	Mn	Si	Cr	Ni	Mo	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %		
Iron Powder Titania Type	NC-308	JIS D 308-16 AWS E 308-16 DIN E 199R26 BS 19.9R	2.0~5.0	AC or DC(+)	F.V.OH.H	0.06	1.10	0.72	19.70	9.90	—	600(61)	47	Welding of 18%Cr-8%Ni stainless steel. AISI(SUS)301, 302, 304, etc.	ABS, DNV, KR, KS
	NC-308L	JIS D 308L-16 AWS E 308L-16 DIN E 199nCR26 BS 19.9LR	2.0~5.0	AC or DC(+)	F.V.OH.H	0.030	1.10	0.73	19.55	9.98	—	560(57)	48	Welding of low carbon 18%Cr-8%Ni stainless steel. AISI(SUS)304L intergranular corrosion resistivity is excellent.	ABS, DNV, GL, LR, CWB, KS
	NC-308EL	0.020				1.05	0.71	19.30	9.95	—	550(56)	50			

7) For Stainless Steel

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties of Weld Metal		Applications	Approval
						C	Mn	Si	Cr	Ni	Mo	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %		
Lime Titania Type	NC-309	JIS D 309-16 AWS E 309-16 DIN E 2212R26 BS 23.12R	2.0~5.0	AC or DC(+)	F.V.OH.H	0.07	1.30	0.75	23.90	12.85	—	590(60)	39	Welding of 22%Cr-12%Ni steel. AISI(SUS)309S and dissimilar metals such as stainless steel to mild steel or low alloy steel.	ABS, DNV, KR, KS
	NC-309L	JIS D 309L-16 AWS E 309L-16 DIN E 2312nCR26 BS 23.12LR	2.0~5.0	AC or DC(+)	F.V.OH.H	0.030	1.30	0.75	23.80	12.90	—	570(58)	42	Welding of 22%Cr-12%Ni stainless steel and dissimilar metals such as stainless steel to mild steel or low alloy steel. Clad steel side welding of low carbon 18%Cr-8%Ni steel.	ABS, DNV, KS
	NC-309EL	JIS D 309EL-16 AWS E 309EL-16 DIN E 2312nCR26 BS 23.12LR	2.0~5.0	AC or DC(+)	F.V.OH.H	0.022	1.25	0.74	24.10	12.85	—	560(57)	43		—
	NC-309Mo	JIS D 309Mo(L)-16 AWS E 309Mo-16 BS 23.12.2(L)R	2.6~5.0	AC or DC(+)	F.V.OH.H	0.07	1.23	0.70	22.75	13.40	2.35	650(66)	36	For welding of 22%Cr-12%Ni-Mo steel. Build up welding of Cr-Mo steel or carbon steel.	ABS, DNV
	NC-309MoL	JIS D 309Mo(L)-16 AWS E 309Mo-16 BS 23.12.2(L)R	2.6~5.0	AC or DC(+)	F.V.OH.H	0.030	1.20	0.71	22.85	13.51	2.35	630(64)	38	welding of AISI(SUS)316 to carbon steel and AISI(SUS)316 clad steel.	DNV, LR
	NC-318	JIS D 318-16 AWS E 318-16	2.6~5.0	AC or DC(+)	F.V.OH.H	0.05	1.02	0.8	18.9	11.9	Nb+Ta 0.52	604(615)	40.2	For welding of 18%Cr-12%Ni-2% Mo-Nb or Ti stainless steel. As it contains Mo, it is resistible against non-oxidizing acid like diluted sulphuric acid and superior resistibility to intergranular corrosion can be obtained due to Nb content.	—
	NC-310	JIS D 310-16 AWS E 310-16 DIN E 2520R26 BS 25.20R	2.6~5.0	AC or DC(+)	F.V.OH.H	0.10	1.58	0.35	26.11	20.85	—	600(61)	40	Welding of 25%Cr-20%Ni stainless steel, dissimilar metals such as 18%Cr-8%Ni steel to carbon steel and 13%Cr, 18%Cr-8%Ni stainless steel and 13%Cr, 18% Cr-8%Ni stainless clad steel.	—
	NC-312	JIS D 312-16 AWS E 312-16	2.6~5.0	AC or DC(+)	F.V.OH.H	0.09	1.55	0.38	29.10	9.50	—	760(77)	28	Welding of 29%Cr-9%Ni cast steel, dissimilar metals such as stainless steel to carbon steel or low alloy steel and austenitic manganese steel to low alloy steel. Oxidation resistibility and crack resistibility are good.	—
	NC-316	JIS D 316-16 AWS E 316-16 DIN E 19123R BS 19.12R	2.0~5.0	AC or DC(+)	F.V.OH.H	0.06	1.05	0.73	18.85	12.35	2.30	580(59)	44	Welding of 18%Cr-12%Ni-2%Mo stainless steel AISI(SUS)316	ABS, DNV, KS
	NC-316L	JIS D 316L-16 AWS E 316L-16 DIN E 19123nCR26 BS 19.12LR	2.6~5.0	AC or DC(+)	F.V.OH.H	0.030	1.06	0.70	18.50	12.45	2.35	570(58)	45	Welding of low carbon 18%Cr-12%Ni-2%Mo stainless steel AISI(SUS)316L	ABS, DNV, GL, KR, LR, CWB, KS
	NC-316EL	JIS D 316EL-16 AWS E 316EL-16 DIN E 19123nCR26 BS 19.12LR	2.6~5.0	AC or DC(+)	F.V.OH.H	0.021	1.10	0.70	18.50	12.53	2.41	570(58)	47		—
	NC-317L	JIS D 317L-16 AWS E 317L-16 DIN E 19144LR BS 19.13.4LR	2.6~5.0	AC or DC(+)	F.V.OH.H	0.028	1.15	0.68	18.70	13.42	3.45	590(60)	43	Welding of 18%Cr-12%Ni-3%Mo stainless steel for apparatus handling sulfuric acid, sulfurous acid etc. AISI(SUS)317, 317L.	DNV
	NC-347	JIS D 347-16 AWS E 347-16 DIN E 199NbR26 BS 19.9NbR	2.6~5.0	AC or DC(+)	F.V.OH.H	0.035	1.05	0.78	19.50	9.66	Nb+Ta 0.45	650(66)	37	Welding of stabilized 18%Cr-8%Ni-Nb steel, 18%Cr-8%Ni-Ti steel and extra-low carbon 18%Cr-8%Ni steel, AISI(SUS) 347, 321, etc.	—
	NC-410	JIS D 410-16 AWS E 410-16	2.6~5.0	AC or DC(+)	F.V.OH.H	0.08	0.28	0.37	12.85	0.11	—	520(53)	33	Welding of AISI(SUS) 403, 410 stainless steel and AISI(SUS) 420 J1J2 welding of hardfacing for corrosion resistance.	PWHT 850°C × 2hr
	NC-410NiMo	AWS E410NiMo-16	2.6~5.0	AC or DC(+)	F.V.OH.H	0.03	0.73	0.67	12.17	4.30	0.50	920(93)	19	Welding of AISI(SUS)403, 410, 420 and cast steel of 13%Cr-Ni welding of required corrosion resistance and wear resistance.	PWHT 610°C × 1hr
NC-430	JIS D 430-16 AWS E 430-16	2.6~5.0	AC or DC(+)	F.V.OH.H	0.06	0.28	0.40	17.35	—	—	560(57)	27	Welding of 17% Cr stainless steel such as AISI(SUS) 430.	PWHT 770°C × 2hr	

8) For Cast Iron

Type of Covering	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)					Typical Mechanical Properties of Weld Metal		Applications
						C	Mn	Si	Ni	Fe	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	
Graphite Type	CI-400	KS DFC NiFe JIS DFC NiFe AWS E NiFe-CI DIN E NiFeG3	2.6~5.0	AC or DC(+)	F.H-F	0.98	1.02	0.32	55.1	Bal	560(57)	—	For welding of nodular cast iron, repairing and joining of various kinds of cast iron products. Also suitable for underlaying of hardfacing.
	CI-500	KS DFC Ni JIS DFC Ni AWS E Ni-CI DIN E NiG3	2.6~5.0	AC or DC(+)	F.H-F	0.86	0.72	0.28	Bal	1.85	440(45)	—	For repairing and joining of various kinds of cast iron products. Hardening of the weld metal and fusion zone in cast iron is smallest.
	CI-600	KS(DFC Fe) JIS(DFC Fe) AWS EST	2.6~5.0	AC or DC(+)	F.H-F	1.34	0.47	0.65	—	Bal	510(52)	33	For repairing of various kinds of cast iron products.

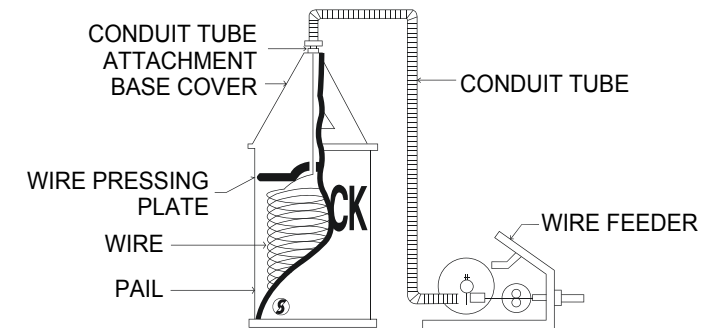
2 Solid Wire for Gas Metal Arc Welding

Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)					Typical Mechanical Properties of Weld Metal				Applications	Approval
					C	Mn	Si	P	S	Yield Strength N/mm ² (kgf/mm ²)	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J		
MC-50	JIS YGW11 AWS ER70S-G	1.0, 1.2, 1.4, 1.6, 2.0	DC(+)	F.V.OH.H	0.09	1.09	0.46	0.013	0.012	470(48)	560(57)	30	120 at 0°C	For welding of mild steel and 50kgf/mm ² class high tensile steel. Arc stability is good at high current range. As the deposition rate is high and penetration is deep, suitable for highly efficient welding.	ABS, BV, DNV, GL, KR, LR, NK, JIS
MC-50T	JIS YGW 12 AWS ER70S-6	0.9, 1.0, 1.2	DC(+)	F.V.OH.H	0.09	1.08	0.50	0.013	0.012	460(47)	540(55)	31	140 at 0°C	For welding of mild steel and 50kgf/mm ² class high tensile steel. All Position welding of automobiles, vehicles, ships, electric products, bridges and steel sheets.	ABS, BV, DNV, GL, KR, LR, NK, CWB, JIS
MC-50S	JIS YGW 12 AWS ER70S-4	0.9, 1.0, 1.2, 1.4, 1.6	DC(+)	F.V.OH.H	0.09	0.98	0.44	0.015	0.012	470(48)	550(56)	30	120 at 0°C	For welding of mild steel and 50kgf/mm ² class high tensile steel. Butt or fillet MAG welding of structures such as vehicles, ships, industrial machinery, buildings and bridges.	-
MC-50A	JIS YGW 16 AWS ER70S-3	0.9, 1.0, 1.2, 1.4, 1.6	DC(+)	F.V.OH.H	0.08	0.98	0.48	0.014	0.012	450(46)	540(55)	30	140 at -18°C	For welding of mild steel and 50kgf/mm ² grade high strength steels. Shielding gas is 75~85% Ar + 15~25 % CO ₂ . Butt and fillet welding of vehicles, buildings, ships, bridge, machinery etc.	-

CS-PACK

Application CS-PACK is a pail-package of a continuous wire for gas shielded metal arc welding, in which the wire is piled up from the bottom to the top of a coil wound by the unique way. CS-PACK wire reduces the loss time for changing the wire, which is effective particularly for robotic welding and other automatic welding.

Item	Weight	200kg			250kg			300kg		
		Product name and Sizes	Dimension	Total Weight	Product name and Sizes	Dimension	Total Weight	Product name and Sizes	Dimension	Total Weight
Product name and Sizes	MC-50	1.2φ, 1.4φ	513φ × 810mm	about 215kg	1.2φ, 1.4φ, 1.6φ	663φ × 810mm	about 265kg	1.2φ, 1.4φ, 1.6, 20φ	656φ × 520mm	about 315kg
	MC-50T	0.9φ, 1.0φ, 1.2φ			1.2φ					
	UC Series	1.6φ			1.6φ			1.6φ		
CS-PACK	Dimension	513φ × 810mm			663φ × 810mm			656φ × 520mm		
	Total Weight	about 215kg			about 265kg			about 315kg		
Exclusive Pulled out device	Dimension	495φ × 300mm			656φ × 520mm					
	Weight	about 1.9kg			about 3.2kg					
Prepared by user				Conduit tube						



3 Submerged Arc Welding Wires & Fluxes

1) For Stainless Steel

Flux Type	Product Name	Classification	Electrode Size (φ mm)	Welding Position	Typical Chemical Composition of Weld Metal (%)								Typical Mechanical Properties of Weld Metal			Applications	Approval
					C	Mn	Si	P	S	Cr	Ni	Mo	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J 0°C		
Agglomerated Type	PFS-1×UC-308	JIS FSS-B1/Y308	2.4~4.8	F, H-F	0.06	1.85	0.54	0.021	0.009	19.65	9.71	-	590(60)	41	83	For butt welding of 18%Cr-8%Ni stainless steel and overlay welding of 19%Cr-9%Ni stainless steel on mild steel or low alloy steel.	ABS
	PFS-1×UC-308L	JIS FSS-B1/Y308L	2.4~4.8	F, H-F	0.03	1.74	0.55	0.022	0.007	19.58	10.02	-	560(57)	42	86		
	PFS-1×UC-309	JIS FSS-B1/Y309	2.4~4.8	F, H-F	0.07	1.64	0.62	0.020	0.011	24.03	12.67	-	600(61)	38	74	For butt welding of 22%Cr-12%Ni stainless steel, welding fo dissimilar joints such as stainless steel to mild steel or low alloy steel, welding of 304 type clad steel.	
	PFS-1×UC-309L	JIS FSS-B1/Y309L	2.4~4.8	F, H-F	0.03	1.56	0.57	0.023	0.009	24.21	12.85	-	560(57)	41	79		
	PFS-1×UC-316	JIS FSS-B1/Y316	2.4~4.8	F, H-F	0.06	1.39	0.51	0.024	0.009	18.52	11.87	2.21	570(58)	38	93	For butt welding of 18%Cr-12%Ni-2%Mo stainless steel, and overlay welding on mild steel or low alloy steel.	ABS
	PFS-1×UC-316L	JIS FSS-B1/Y316L	2.4~6.4	F, H-F	0.03	1.57	0.60	0.021	0.009	19.49	12.15	2.28	550(56)	43	96		

2) For Carbon Steel

Flux Type	Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)					Typical Mechanical Properties of Weld Metal			Applications	Approval
						C	Mn	Si	P	S	Tensile Strength N/mm ² (kgf/mm ²)	Elongation %	Impact Value J		
Agglomerated Type	CA-502 × UC-36	AWS F7A(P)0-EH14	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.08	1.17	0.83	0.021	0.012	559(57)	30	37 at -18°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. Super high speed welding in plate of thin and medium thickness. Slag removal and bead appearance are very good.	ABS, BV, DNV, GL, KR, LR, NK
	CA-502H × UC-36	AWS F7A(P)2-EH14	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.06	1.47	0.61	0.034	0.005	579(59)	30	60 at -29°C 49 at -40°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. Super high speed welding in plate of thin and medium thickness. Slag removal and bead appearance are very good.	ABS, BV, DNV, GL, KR, LR, NK
	CA-506S × UC-36	AWS F7A(P)6-EH14	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.07	1.37	0.34	0.021	0.011	578(59)	Fractured at Base metal	102 at -40°C 87 at -50°C	For single and multi-layer welding of aluminum-killed steel for low temperature service. LPG storage tanks, steel pipe, chemical vessels, low temperature service equipment and other structure for cold regions. Excellent notch toughness at low temperature down to -60°C	ABS, BV, DNV, GL, LR
	CA-508 × UC-36	AWS F7A(P)8-EH14	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.07	1.35	0.23	0.015	0.009	574(59)	30	104 at -40°C 78 at -60°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. For fillet and butt welding of structural steel H-beams, ships, machines, bridge, boilers and general fabrications.	ABS, BV, DNV, GL, KR, LR, NK
	CA-512 × UC-43	AWS F7A(P)2-EL8	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.08	1.61	0.49	0.024	0.014	574(59)	31	68 at -20°C 58 at -29°C	For single layer welding in thick plate with single or multi-wire system in the ship building industry. The weld metal shows high impact value and good crack resistance.	ABS, BV, DNV, GL, KR, LR, NK
	CA-514 × UC-43	AWS F7A(P)4-EL8	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.08	1.32	0.38	0.024	0.010	530(54)	31	70 at 0°C 52 at -40°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. For fillet and butt welding of LPG tank, spiral pipe, shipbuilding, boilers, bridge, machines and general steel structures.	ABS, BV, DNV, LR
	CA-522 × UC-12K	AWS F7A(P)2-EM12K	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.08	1.67	0.5	0.024	0.013	589(60)	30	59 at 0°C 37 at -29°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. Butt and filler welding of structural steel, spiral pipes, shipbuilding, structures for ocean areas, thick pressure vessels.	ABS, BV, DNV, LR
	CA-526 × UC-12K	AWS F7A(P)6-EM12K	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.07	1.32	0.38	0.021	0.010	549(56)	30	72 at -29°C 47 at -50°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. Butt and fillet welding of ship, machines, vehicles, pressure vessels, bridges and steel structures.(high speed welding in thin plate)	ABS, BV, DNV, LR
Fused Type	G-50 × UC-36	JIS S 502-H AWS F7A2-EH14	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.12	1.36	0.16	0.011	0.013	500(51)	30	35 at 0°C 26 at -20°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. Butt and fillet welding of ship, machines, vehicles, pressure vessels, bridges and steel structures.	
	G-60 × UC-36	JIS S 502-H AWS F7A2-EH14 F6P2-EH14	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.10	1.28	0.23	0.016	0.015	480(49)	31	43 at 0°C 23 at -20°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. Butt and fillet welding of ship, machines, vehicles, pressure vessels, bridges and steel structures.	
	MF-38 × UC-36	JIS S 502-H AWS F7A(P)6-EH14	2.4 ~ 6.4	AC or DC(+)	F, H-F	0.12	1.33	0.30	0.015	0.009	510(52)	Fractured at Base metal	98 at 0°C 26 at -20°C	For single and multi-layer welding of mild steel and 50kgf/mm ² class high tensile steel. Good impact property of weld metal.	

4 Flux Cored Wire for Gas Shielded Arc Welding

1) For Carbon Steel

Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)									Typical Mechanical Properties of Weld Metal					Applications	Approval
					C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %	Impact Value J	Heat Treatment		
CSF-71T	AWS E71T-1 JIS YFW-C50DR	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.03	0.58	1.42	0.013	0.010	-	-	-	-	550	610	26.5	90 at 0°C 53 at -18°C	-	Titania type FCW for all position welding of mild steel and 50 kgf/mm ² class high tensile steel.	ABS, BV, DNV, GL, KR, LR, NK, CCS, TUV, CWB
CSM-70T	AWS E70T-1/1M JIS YFW-C50DM	1.2, 1.4, 1.6	DC(+)	F, H-F	0.03	0.55	1.55	0.012	0.011	-	-	-	-	560	598	27.0	86 at 0°C 50 at -18°C	-	Metal type FCW for H, H-Fillet welding.	ABS, BV, DNV, GL, KR, LR, NK, CWB
CSF-70T5	AWS E70T-5/5MJ JIS YFW-A502B	1.2, 1.4, 1.6	DC(+)	F, H-F	0.058	0.65	1.40	0.015	0.01	-	-	-	-	460	540	30.0	125 at -20°C 90 at -40°C 78 at -50°C	As weld	Welding for heavy fabrication of a number of mild steels where superior toughness and crack resistance.	
														455	542	30.0	220 at -20°C 140 at -40°C 120 at -50°C	620°C × 2hr		
CSM-70M	AWS E70C-6M JIS YFW-A50DM	1.2, 1.4, 1.6	DC(+)	F, H-F	0.049	0.595	1.55	0.021	0.015	-	-	-	-	480	540	28.0	59 at -29°C	-	Metal type FCW for H, H-Fillet welding of 82%Ar-18% CO ₂ Shielding gas.	
CSM-70C	AWS E70C-6C JIS YFW-C50DM	1.2, 1.4, 1.6	DC(+)	F, H-F	0.049	0.75	1.60	0.021	0.015	-	-	-	-	490	550	28.0	85 at -18°C 65 at -29°C	-	Metal type FCW for H, H-Fillet welding of 100% CO ₂ Shielding gas.	
CSF-91T	AWS E91T1-G E81T1-Ni1 JIS YFW-C602R	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.04	0.37	1.23	0.011	0.009	-	0.98	-	0.24	590	654	25.0	102 at -20°C 60 at -40°C	-	Welding of 60 kgf/mm ² high tensile strength steels for steel frames, bridges, pressure vessels.	DNV
CSM-90T	AWS E90T1-G JIS YFW-C602M	1.2, 1.4, 1.6	DC(+)	F, H-F	0.05	0.52	1.50	0.012	0.010	-	0.90	-	0.20	600	680	26.0	87 at -20°C 69 at -30°C	-		
CSF-71U	AWS E71T-9 JIS YFL-C504R	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.042	0.48	1.35	0.015	0.08	-	0.4	-	-	500	584	28.0	130 at -20°C 95 at -40°C	As weld	Titania type FCW for all position welding of mild steels, good toughness at -20°C	ABS, BV, DNV, GL, KR, LR, NK, CCS
														400	564	30.0	105 at -20°C 68 at -40°C	620°C × 1hr		
CSF-81K2	AWS E81T1-K2 JIS YFL-C506R	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.034	0.43	1.24	0.013	0.011	-	1.02	-	0.23	565	617	26.8	120 at -20°C 82 at -40°C 50 at -60°C	-	Welding of 55 kgf/mm ² high tensile steels for good low temperature toughness (ASTM A302,553 Class1, A537)	ABS, BV, DNV, GL, KR, LR, NK, CCS
CSF-81A1	AWS E81T1-A1 JIS YFM-C	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.034	0.54	1.05	0.015	0.012	-	-	-	0.51	555	625	24.0	45 at 18°C 25 at -10°C	As weld	For welding of 0.5%Cr low alloy steel.	ABS
														540	608	26.5	30 at 18°C 20 at -10°C	620°C × 1hr		
CSF-81B2	AWS E81T1-B2 JIS YF1CM-C	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.065	0.58	0.62	0.018	0.013	-	-	1.27	0.52	660	727	21.1	-	As weld	For welding of 1.25%Cr-0.5%Mo low alloy steel	ABS
														560	622	23.8	-	620°C × 1hr		
CSF-81B2L	AWS E81T1-B2L JIS YF1CM-C	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.040	0.42	0.62	0.010	0.009	-	-	1.132	0.55	600	675	23.0	-	As weld		
														550	645	25.0	-	620°C × 1hr		
CSF-91B3	AWS E91T1-B3 JIS YF2CM-C	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.062	0.52	0.60	0.013	0.011	-	-	2.24	1.02	685	817	17.5	-	As weld	For welding of 2.25%Cr-1.0%Mo low alloy steel	
														580	667	20.0	-	620°C × 1hr		
CSF-91B3L	AWS E91T1-B3L JIS YF2CM-C	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.030	0.59	0.53	0.017	0.007	-	-	2.20	1.12	665	735	20.0	-	As weld		
														610	690	21.0	-	620°C × 1hr		
CSF-71W	JIS YFA-50W	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.032	0.57	1.48	0.012	0.010	0.53	0.61	0.51	-	530	590	28	59 at 0°C	-	For welding of 50 kgf/mm ² class high tensile strength weather proof steel for structures, buildings, vehicles and bridges	
CSF-81W	AWS E81T1-W2 JIS YFA-58W	1.2, 1.4, 1.6	DC(+)	F, V, OH, H	0.023	0.61	1.07	0.010	0.006	0.46	0.59	0.49	-	600	650	27	71 at -30°C	-	For welding of 60 kgf/mm ² class high tensile strength weather proof steel for structures, buildings, vehicles and bridges	
CSM-80W	AWS E80T1-W2 JIS YFA-58W	1.2, 1.4, 1.6	DC(+)	F, H-F	0.058	0.50	1.14	0.013	0.014	0.52	0.56	0.48	-	615	668	24.6	39 at -30°C	-		
CSF-250H	JIS YF2A-C-250	1.2, 1.6	DC(+)	F, H-F	0.12	0.31	1.11	0.016	0.009	-	-	1.20	-	Hardness (Hv) : 260			Hardfacing of shafts, gears and wheels			
CSF-350H	JIS YF2A-C-350	1.2, 1.6	DC(+)	F, H-F	0.15	0.44	1.21	0.016	0.009	-	-	1.71	0.21	Hardness (Hv) : 340			Hardfacing of shafts, gears and wheels			
CSF-450H	JIS YF2A-C-450	1.2, 1.6	DC(+)	F, H-F	0.15	0.37	1.13	0.017	0.007	-	-	2.87	0.39	Hardness (Hv) : 450			Hardfacing of sleeves of high pressure pump, cutting knives, liners			
CSF-600H	JIS YF3B-C-600	1.2, 1.6	DC(+)	F, H-F	0.41	3.01	0.53	0.015	0.012	-	-	7.14	0.83	Hardness (Hv) : 610			Hardfacing of cutter knives, shovel-teeth and casings			
CSF-700H	JIS YF3B-C-700	1.2, 1.6	DC(+)	F, H-F	0.34	2.61	0.52	0.012	0.016	-	-	8.24	-	Hardness (Hv) : 690			Hardfacing of cutter knives, shovel-teeth and casings			
CSF-800H	JIS YF3B-C-800	1.2, 1.6	DC(+)	F, H-F	0.41	2.87	0.55	0.015	0.011	-	-	7.85	-	Hardness (Hv) : 780			Hardfacing of cutter knives, shovel-teeth and casings			

2) For Stainless Steel

Product Name	Classification	Electrode Size (φ mm)	Current and Polarity	Welding Position	Typical Chemical Composition of Weld Metal (%)						Typical Mechanical Properties of Weld Metal					Applications	Approval
					C	Si	Mn	Cr	Ni	Mo	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %	Impact Value J	Heat Treatment		
CSF-308HP	AWS E308HT1-1/4 JIS YF-308C	1.2, 1.6	DC(+)	F, V, OH, H	0.06	0.60	1.04	19.5	10.0	—	400	574	40.2	61 at 0°C	—	For welding of 18%Cr-8%Ni Stainless steel (SUS 304H, 307H, 308H)	
CSF-308MoP	AWS E308MoT1-1	1.2, 1.6	DC(+)	F, V, OH, H	0.03	0.60	1.00	19.6	10.0	2.5	495	676	35.0	—	—	For welding of 18%Cr-8%Ni-2%Mo Stainless steel	
CSF-308L	AWS E308LT0-1/4 JIS YF-308LC	1.2, 1.6	DC(+)	F, H-F	0.03	0.65	1.35	19.3	9.6	—	430	570	40.0	48 at 0°C	—	For welding of low carbon 18%Cr-8%Ni Stainless steel (SUS 304,304L,301,302,305,308)	ABS, BV, DNV, GL, KR, LR, NK, TUV
★CSF-308LP	AWS E308LT1-1/4 JIS YF-308LC	1.2, 1.6	DC(+)	F, V, OH, H	0.03	0.60	1.45	20.0	9.8	—	415	570	42.0	45 at 0°C 55 at -196°C	—		CWB, ABS, BV, DNV, LR
CSF-309HP	AWS E309HT1-1/4 JIS YF-309C	1.2, 1.6	DC(+)	F, V, OH, H	0.06	0.56	1.05	22.4	12.5	—	430	600	35.0	—	—	For welding of 22%Cr-12%Ni Stainless steel (SUS309)	
CSF-309L	AWS E309LT0-1/4 JIS YF-309LC	1.2, 1.6	DC(+)	F, H-F	0.03	0.56	1.51	23.6	12.8	—	424	580	39.0	48 at 0°C	—	For welding of 22%Cr-12%Ni steel and heat Resistant steel and dissimilar joint such as a stainless steel to carbon steel or low alloy steel.	ABS, BV, DNV, GL, KR, LR, NK, TUV
CSF-309LP	AWS E309LT1-1/4 JIS YF-309LC	1.2, 1.6	DC(+)	F, V, OH, H	0.028	0.64	1.33	23.6	13.0	—	427	585	38.0	50 at 0°C	—	Under layer welding on claded side groove of claded stainless steel or carbon steel where Stainless steel weld metal is overlaid	CWB, ABS, BV, DNV, LR
CSF-309MoL	AWS E309LMoT0-1/4 JIS YF-309MoLC	1.2, 1.6	DC(+)	F, H-F	0.03	0.55	1.4	23.0	13.0	2.5	560	680	33.0	32 at 0°C	—	For welding of 22%Cr-12%Ni-2%Mo Stainless steel (SUS 309S)	ABS
CSF-309MoLP	AWS E309LMoT1-1/4 JIS YF-309MoLC	1.2, 1.6	DC(+)	F, V, OH, H	0.026	0.661	0.74	22.6	12.8	2.3	535	695	34.0	30 at 0°C	—		
CSF-312P	AWS E312T1-1	1.2, 1.6	DC(+)	F, V, OH, H	0.12	0.7	1.20	29.0	9.3	—	610	768	25.4	—	—	For welding of 29%Cr-9%Ni cast steel, dissimilar metals such as stainless steel to carbon steel or low alloy steel and austenitic manganese steel to low alloy steel	
CSF-316L	AWS E316LT0-1/4 JIS YF-316LC	1.2, 1.6	DC(+)	F, H-F	0.03	0.60	1.45	18.51	12.38	2.21	425	575	43.0	—	—	For welding of low carbon 18%Cr-12%Ni-2%Mo Stainless steel (SUS 316,316L)	ABS, BV, DNV, GL, KR, LR, NK, TUV
★CSF-316LP	AWS E316LT1-1/4 JIS YF-316LC	1.2, 1.6	DC(+)	F, V, OH, H	0.03	0.60	1.20	18.6	12.5	2.50	420	580	42.0	68 at 0°C 40 at -196°C	—		CWB, ABS, BV, DNV, LR
CSF-317L	AWS E317LT0-1/4 JIS YF-317LC	1.2, 1.6	DC(+)	F, H-F	0.030	0.55	1.35	19.6	12.43	3.30	580	615	35.0	42 at 0°C	—	For welding of 18%Cr-12%Ni-3%Mo-N Stainless steel (SUS 317,317L)	ABS
CSF-317LP	AWS E317LT1-1/4 JIS YF-317LC	1.2, 1.6	DC(+)	F, V, OH, H	0.031	0.58	1.10	19.2	12.6	3.04	450	620	36	52 at 0°C	—		
CSF-347	AWS E347T0-1/4 JIS YF-347C	1.2, 1.6	DC(+)	F, H-F	0.03	0.375	1.40	19.6	10.0	—	486	665	36.2	—	—	For welding of 18%Cr-8%Ni-Cb Stainless steel (SUS 347, 304, 304L, 321)	ABS
CSF-347P	AWS E347T1-1/4 JIS YF-347C	1.2, 1.6	DC(+)	F, V, OH, H	0.03	0.65	1.10	19.5	10.0	—	474	624	40.4	—	—		
CSF-409Ti	AWS E409T0-G	1.2, 1.6	DC(+)	F, H-F	0.032	0.62	0.58	11.25	—	—	402	502	25.0	—	—	For welding of 409Ti Stainless steel	
CSF-410	AWS E410T0-1/4 JIS YF-410C	1.2, 1.6	DC(+)	F, H-F	0.064	0.283	0.409	12.5	—	—	—	560	22.0	—	750°C × 2hr	For welding of 13%Cr Stainless steel (SUS 403,410,410S,420J1,420J2)	
CSF-410NiMo(P)	AWS E410NiMoT0(1)-1	1.2, 1.6	DC(+)	F, H-F	0.036	0.40	0.60	12.00	4.5	0.5	—	850	20.0	—	600°C × 1hr	For welding of 13%Cr-4%Ni-Mo Stainless steel (13Cr steel, JIS SCS3, ASTM CA15M, JIS SCS6, ASTM CA6NM)	
CSF-430	AWS E430T0-C	1.2, 1.6	DC(+)	F, H-F	0.04	0.40	0.60	16	—	—	—	480	30.0	—	—	For welding of 17%Cr Stainless steel such as SUS 430	
CSF-436	—	1.2, 1.6	DC(+)	F, H-F	0.02	0.45	0.60	16	—	—	—	510	25.0	—	850°C × 2hr	For welding of 17%Cr Stainless steel such as SUS 436	
CSF-2209	AWS E2209T0-1	1.2, 1.6	DC(+)	F, H-F	0.030	0.51	0.85	22.4	8.6	2.9	692	802	26.5	50 at 0°C	—	For welding of 22%Cr-5%Ni-2%Mo-0.15%N Stainless steel	ABS
CSF-2209P	AWS E2209T1-1	1.2, 1.6	DC(+)	F, V, OH, H	0.028	0.65	0.58	22.6	9.0	3.0	680	786	27.6	65 at 0°C	—		ABS

★ If you need products for extra low temperature(low ferrite), contact us.

5 Wires for Inert Gas Welding: MIG, TIG

1) TIG Wires for Aluminium and Aluminium Alloy.

Product Name	Classification	Wire Dia (φ mm × 1000mm)	Typical Chemical Composition of Weld (%)				Shield Gas	Applications
			Al	Si	Mg	Ti		
TGC-1100	ER1100	1.2 1.6 2.0 2.4 3.2	99.5	—	—	—	Ar	For welding of 1100, 1200, 3003, 3004 and 3203
TGC-4043	ER4043		Bal	5.5	—	≤0.20		For welding of 1100, 1200, 3003, 3203, 4043, 5052 and 6061
TGC-5356	ER5356		Bal	—	5	0.06 -0.20		For welding of 5052, 5154, 5083, 6061 and 6063

2) TIG Wires for Hardsurfacing.

Product Name	Classification	Wire Dia (φ mm)	Typical Chemical Composition of Weld (%)						Shield Gas	Applications
			C	Si	Mn	Cr	W	Co		
CST-1R	R CoCrC	3.2 4.0 5.0 6.0	2.45	1.21	0.56	31.40	12.70	Bal	Ar	For welding of valve heads, seal rings of high pressure pump and crushers.
CST-6R	RCoCrA		1.13	1.09	0.49	30.38	4.54	Bal		For welding of valve seats, forging dies, crushers and screw.
CST-12R	RCoCrB		1.51	1.03	0.61	30.11	8.67	Bal		For welding of sleeves of high pressure pump, cutting knives and liners.

3) Wires for Stainless Steel, Mild Steel and High Tensile Steel.

Product Name		Classification	Wire Dia (φ mm)	Typical Chemical Composition of Weld (%)						Shield Gas	Applications
(For MIG)	(For TIG)			C	Si	Mn	Cr	Ni	Mo		
MGC-308	TGC-308	JIS Y308 AWS ER308	MIG : 0.9 1.0 1.2 1.6	0.04	1.84	0.32	19.82	10.22	—	MIG : Ar + 2%O ₂	For welding of 18%Cr-8%Ni stainless steel. [AISI (SUS)304]
MGC-308L	TGC-308L	JIS Y308L AWS ER308L		0.02	1.80	0.33	19.74	9.84	—		For welding of low carbon 18%Cr-8%Ni stainless steel. [AISI (SUS)304L, 304]
MGC-308LSi	TGC-308LSi	JIS Y308LSi AWS ER308LSi		0.02	1.75	0.84	19.91	10.6	—		For welding of AISI (SUS)304 and 304L. Particularly it is suitable to MIG welding.

3) Wires for Stainless Steel, Mild Steel and High Tensile Steel.

Product Name		Classification	Wire Dia (φ mm)	Typical Chemical Composition of Weld (%)						Shield Gas	Applications
(For MIG)	(For TIG)			C	Si	Mn	Cr	Ni	Mo		
MGC-309	TGC-309	JIS Y309 AWS ER309	MIG : 0.9 1.0 1.2 1.6	0.05	1.75	0.34	23.95	13.05	—	MIG : Ar + 2%O ₂	For welding of AISI(SUS) 309S and dissimilar metals such as stainless steel to carbon steel.
MGC-309L	TGC-309L	JIS Y309L AWS ER309L		0.02	1.77	0.36	23.86	12.83	—		For welding of AISI(SUS) 309S, 22%Cr-12%Ni clad steel and dissimilar metals such as stainless steel to carbon steel.
MGC-309LSi	TGC-309LSi	JIS Y309LSi AWS ER309LSi		0.02	1.80	0.85	23.70	12.95	—		For welding of AISI(SUS) 309S, 18%Cr-8%Ni clad steel and dissimilar metals. Particularly it is suitable to MIG welding.
MGC-316	TGC-316	JIS Y316 AWS ER316	TIG : 1.2 1.6 2.0 2.4 3.2 4.0	0.05	1.85	0.38	18.90	12.31	2.30	TIG : Ar	For welding of 18%Cr-12%Ni-2%Mo stainless steel.[AISI(SUS)316]
MGC-316L	TGC-316L	JIS Y316L AWS ER316L		0.02	1.73	0.39	19.10	12.43	2.35		For welding of low carbon 18%Cr-12% Ni-2%Mo stainless stel. [AISI(SUS) 316L]
MGC-316LSi	TGC-316LSi	JIS Y316LSi AWS ER316LSi		0.02	1.83	0.80	18.70	12.30	2.41		For welding of AISI(SUS) 316L. Particularly it is suitable to MIG welding.
MGC-347	TGC-347	JIS Y347 AWS ER347	TIG : 1.2 1.6 2.0 2.4 3.2 4.0	0.04	1.70	0.40	19.90	9.95	Nb 0.81	TIG : Ar	For welding of 18% Cr-8%Ni-Nb steel [AISI(SUS)347], 18% Cr-8%Ni-Ta [AISI(SUS)347]
—	TGC-50T	JIS YGT 50 AWS ER70S-4		0.10	1.38	0.79	—	—	—		For welding of mile steel, 50kgf/mm ² class high tensile steel and aluminium- killed steel for low temperature use. It is suitable to root pass welding.
—	TGC-50S	JIS YGT 50 AWS ER70S-6		0.08	1.55	0.85	—	—	—		For welding of mild steel, 50kgf/mm ² class high tensile steel and aluminium-killed steel for low temperature use.
—	TGC-50	JIS YGT50 AWS ER70S-G	TIG : 1.2 1.6 2.0 2.4 3.2 4.0	0.06	1.31	0.72	—	—	—	TIG : Ar	For welding of mil steel, 50kgf/mm ² class high tensile steel and aluminium-killed steel for low temperature use.

6 Approval List of Welding Consumables

1) Covered Arc Welding Electrodes

Product Name	Classification		Bureau of Shipping							
	JIS	AWS	ABS	BV	DNV	GL	KR	LR	NK	CWB
CS-200	D4301	E6019	3	3	3	3	RMW 3	3m	KMW 3	-
CL-100	D4311	E6010	2	2	2	2	-	2m	KMW 2	-
CL-101	D4311	E6011	2	2	2	-	-	2m	-	-
CR-13	D4313	E6013	2	2	2	2	RMW 2	2m	KMW 2	-
CR-24	D4324	E7024	2Y	2Y	2	2Y	RMW 52	2m,2Ym	KMW 52	-
CF-120	D4327	E6027	3	3	3	3	RMW 3	3m	KMW 2	-
LH-28W	D4316	E7016	3H, 3Y	-	-	-	-	-	-	-
LH-100	D4316	E7016	3H, 3Y	3.3YHH	3YH10	3YH10	RMW 53HH	3m,3Ym,H15	KMW-53H15	-
LH-100V	D4316	E7048	3H, 3Y	3YHH	3YH10	3YH10	RMW 53HH	3m,3Ym,H15	KMW-53H15	-
LC-300	D5016	E7016	3H, 3Y	3.3YHH	3YH10	3YH10	RMW 53H	3m,3Ym,H15	KMW-53H15	-
LC-300NS	D5016	E7016-G	-	-	5YH10	-	-	5Y40m,H15	-	-
LC-318	D5016	E7018	3H, 3Y	3YHH	3YH10	3YH10	RMW 53H	3m,3Ym,H15	KMW-53H15	E4918
LC-328	D5026	E7028	3H, 3Y	3YHH	3YH10	3YH10	RMW 53H	3m,3Ym,H15	KMW-53H15	-
LC-600	D5816	E9016-G	-	3YHH	3YH10	3Y50H10	RMW3Y46H10	-	KMW-3Y46H10	-
NC-308	D308-16	E308-16	AWS A5.4 E308-16	-	308	-	RD 308	-	-	-
NC-308L	D308L-16	E308L-16	AWS A5.4 E308L-16	-	308L	4307	-	304Lm	-	E308L-16
NC-309	D309-16	E309-16	AWS A5.4 E309-16	-	309	-	RD 309	-	-	-
NC-309L	D309L-16	E309L-16	AWS A5.4 E309L-16	-	309L	-	-	-	-	-
NC-309Mo	D309Mo-16	E309Mo-16	AWS A5.4 E309Mo-16	-	309Mo	-	-	-	-	-
NC-309MoL	D309MoL-16	E309MoL-16	-	-	309MoL	-	-	SS/CMnm	-	-
NC-316	D316-16	E316-16	AWS A5.4 E316-16	-	316	-	-	-	-	-
NC-316L	D316L-16	E316L-16	AWS A5.4 E316L-16	-	316L	4435	RD 316L	316Lm	-	E316L-16
NC-317L	D317L-16	E317L-16	-	-	317L	-	-	-	-	-

2) GMAW and GTAW Consumables

Product Name	Classification		Bureau of Shipping							
	JIS	AWS	ABS	BV	DNV	GL	KR	LR	NK	CWB
MC-50/CO ₂	YGW11	ER70S-G	3SA, 3YSA	SA3YM	III YMS	3YS	RSW53G	3S,3YS,H15	KSW53G(C)	-
MC-50T/CO ₂	YGW12	ER70S-6	3SA, 3YSA	SA3YM	III YMS	3YS	RSW53G	3S,3YS,H15	KSW53G(C)	ER49S-6
TGC-50	YGT-50	ER70S-G	3SA, 3YSA	SA3YM	III YMS	3YS	RSW3G RSW53G	3YM,H15	-	-
TGC-50S	YGT-50	ER70S-6	3YSA	-	-	-	-	-	-	-
TGC-308L	Y308L	ER308L	-	-	308L	4307	-	304L	-	ER308L
TGC-316L	Y316L	ER316L	-	-	316L	4435	-	316L	-	Er316L
TGC-309	Y309	ER309	ER309	-	-	-	-	-	-	-
TGC-309L	Y309L	ER309L	ER309L	-	-	-	-	-	-	-
MGC-308L	Y308L	ER308L	ER308L	-	-	-	-	-	-	ER308L
MGC-309L	Y309L	ER309L	ER309L	309L	309L	4332S	RY309L	SS/CMn	KY309L	-
MGC-316L	Y316L	ER316L	-	-	-	-	-	-	-	ER316L

3) Flux cored Wire

Product Name	Classification	Bureau of Shipping									
		AWS	ABS	BV	DNV	GL	KR	LR	NK	CCS	TUV
CSF-71T	E71T-1	2SA 2YSA H15	SA2M SA2YM,H	I YMS H15	2YS H15	RSW52G(C)H	2SSYS H15	KSW52G(C)H15	2SH15 2YSH15	EN758 T46 0 P C	E491T-9-H16
CSF-71T	E71T-1M	2YSA H15	SA2M SA2YM,H	I YMS H15	2YS H15	-	2SSYS H15	-	-	EN758 T46 0 P M1	E491T-9M-H16
CSM-70T	E71T-1	2SA 2YSA,H15	SA2M SA2YM,H	I YMS H15	2YSH15	RSW2G(C) RSW52G(C)H	2S2YS H15	KSW2G(C)H15 KSW52G(C)H15	-	-	E492T-9(M)-H16
CSF-71U	E71T-1(9)	3YSA H10	SA3YM HH	II YMS H10	3YSH10	RSW53G(C)HH	3YS H15	KSW53G(C)H10	3YSH10	-	-
CSF-81K2	E81T1-K2	4YSA H15	SA4YM H	IV YMS H15	4YSH15	RSW54G(C)H	4YS H15	KSW54G(C)H15	4YSH15	-	-
CSF-91T	E91T1-G	-	-	II Y40MS H15	-	-	-	-	-	-	-
CSF-81B2L	E81T1-B2L	E81T1-B2L	-	-	-	-	-	-	-	-	-
CSF-81A1	E81T1-A1	E81T1-A1	-	-	-	-	-	-	-	-	-
CSF-308L	E308LT0-1	E308LT0-1	308L	308L	4306S	RW308LG(C)	304L	KW308LG(C)	-	EN 12073T 19 9L R C/M2	-
CSF-308LP	E308LT1-1	-	-	-	-	-	-	-	-	-	E308LT1-1
★CSF-308LP	E308LT1-1	E308LT1-1	308L(BT)	308L	-	-	304L	-	-	-	-
CSF-309L	E309LT0-1	E309LT0-1	309L	309L	4332S	RW309LG(C)	SS/CMn	KW309LG(C)	-	EN 12073T 23 12L R C/M2	-
CSF-309LP	E309LT1-1	E309LT1-1	309L	309L	-	-	SS/CMn	-	-	-	E309LT1-1
CSF-316L	E316LT0-1	E316LT0-1	316L	316L	4435S	RW316LG(C)	316L	KW309LG(C)	-	EN 12073T 19 12 3L R C/M2	-
CSF-316LP	E316LT1-1	-	-	-	-	-	-	-	-	-	E316LT1-1
★CSF-316LP	E316LT1-1	E316LT1-1	316L(BT)	316L	-	-	316L	-	-	-	-
CSF-309MoL	E309LMoT0-1	E309LMoT0-1	-	-	-	-	-	-	-	-	-
CSF-317LP	E317LT1-1	E317LT1-1	-	-	-	-	-	-	-	-	-
CSF-347P	E347LT1-1	E347T1-1	-	-	-	-	-	-	-	-	-
CSF-2209P	E2209T1-1	E2209T1-1	-	-	-	-	-	-	-	-	-
CSF-2209	E2209T0-1	E2209T0-1	-	-	-	-	-	-	-	-	-

★ For extra low temperature(Low ferrite)

4) Submerged Arc Welding Consumables

Product Name	Classification	Bureau of Shipping						
		AWS	ABS	BV	DNV	GL	KR	LR
UC-36 ×CA-502	EH14-F7A(P)0	2YTM	A2YTM	I YTM	2YTM	RAW52TM	2YTM	KAW52TM
UC-36 ×CA-502H	EH14-F7A(P)2	3YTM	A3YTM	III YTM	3YTM	RAW53TM	3YTM	KAW53TM
UC-36 ×CA-508	EH14-F7AP8	3TM 4YTM	A3TM A3YTM	III YTM	4Y40T 6Y40M	RAW3TM RAW53TM	3TM 3YTM	KAW3TM KAW53TM
UC-43 ×CA-514	EL8-F7A(P)4	3TM 3YTM	A3TM A3YTM	III YTM	3YTM	RAW3TM RAW53TM	3TM 3YTM	KAW3TM KAW53TM
UC-12K ×CA-526	EM12K-F7A(P)6	3TM 3YTM	A3TM A3YTM	III YTM	-	-	3TM 3YTM	-
UC-36 ×CA-506S	EH14-F7A(P)6	3Y400T 4Y400M	3Y40T 4Y40M	3Y40T 4Y40M	3Y40T 4Y40M	-	3Y40T 4Y40M	-
UC-308L ×PFS-1	ER308L	ER308L	-	-	-	-	-	-
UC-316L ×PFS-1	ER316L	ER316L	-	-	-	-	-	-