

SF-71

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A0-CS1
 JIS Z3313 T49J 0 T1-1 C A-U H10
 EN ISO 17632-A-T 42 0 P C 1
 KR 2SMG, 2YSMG(C)H10
 ABS 2SA, 2YSAH10, 2Y400SA
 LR 2S, 2YSH10
 BV SA2M, SA2YM HH, A2M, A2YM HH
 DNV IYMS H15

GL 2YH10S
 NK KSW52Y40G(C)H10
 TÜV EN ISO 17632-A - T 42 0 P C 1
 CWB CSA W48 E491T-1-H8
 CE
 RS 2, 2YS H10
 CCS 2YSM H10
 CRS 2HS, 2Y H5

Applications

- Shipbuilding
- General fabrication
- Structural fabrication
- Pressure vessels

Features

- Designed for welding with 100% CO₂ shielding gas
- Good performance and low spatter
- Smooth and stable arc with a fast freezing slag

Welding Position



1G 2F 3G 4G
 (PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool				Pac		
	5kg (11lbs)	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.0 (0.040)	✓		✓	✓	✓	✓	✓
1.2 (0.045)	✓		✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓		✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.04	0.49	1.29	0.010	0.009

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
548 (79,600)	582 (84,500)	28.0	0 (32) -20 (-4)	86 (64) 45 (33)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18-23	120-160	1.5 (3.3)	86-88
		6.4 (250)	19-25	135-175	2.2 (4.8)	
		7.6 (300)	20-26	150-180	2.5 (5.5)	
		8.9 (350)	23-28	175-205	3.0 (6.6)	
		10.2 (400)	25-30	185-220	3.5 (7.6)	
		11.5 (450)	26-31	220-260	3.8 (8.4)	
		12.8 (500)	27-32	250-290	4.4 (9.6)	
15.3 (600)	28-33	280-320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20-25	130-170	1.9 (4.1)	85-88
		5.1 (200)	21-26	160-200	2.5 (5.5)	
		6.4 (250)	22-28	180-230	3.0 (6.6)	
		7.6 (300)	23-29	220-260	4.2 (9.2)	
		10.2 (400)	27-32	270-320	5.5 (12.1)	
		12.8 (500)	28-34	300-350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22-25	170-210	2.0 (4.4)	84-87
		3.8 (150)	23-26	180-220	2.5 (5.5)	
		5.1 (200)	25-29	220-260	3.2 (7.0)	
		6.4 (250)	26-32	270-320	4.0 (8.8)	
		7.6 (300)	28-34	300-350	5.0 (11.0)	
		10.2 (400)	34-38	350-400	6.4 (14.0)	

SF-71LF

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A0-CS1

JIS Z3313 T49J 0 T1-1 C A-U H10

ABS 2YSAH10

LR 2S, 2YSH10

DNV I1YMSH10

NK KSW52G(C)H10

KAW52MG(C)

Applications

- Shipbuilding
- General fabrication
- Structural fabrication
- Pressure vessels

Features

- Designed for welding with 100% CO₂ shielding gas
- Low fume
- Smooth and stable arc with a fast freezing slag

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓		✓	✓
1.4 (0.052)	✓	✓	✓		✓	✓
1.6 (1/16)	✓	✓	✓		✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.03	0.50	1.35	0.009	0.011

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
550 (79,900)	590 (85,700)	27.0	0 (32) -20 (-4)	90 (66) 42 (31)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18-23	120-160	1.5 (3.3)	86-88
		6.4 (250)	19-25	135-175	2.2 (4.8)	
		7.6 (300)	20-26	150-180	2.5 (5.5)	
		8.9 (350)	23-28	175-205	3.0 (6.6)	
		10.2 (400)	25-30	185-220	3.5 (7.6)	
		11.5 (450)	26-31	220-260	3.9 (8.6)	
		12.8 (500)	27-32	250-290	4.3 (9.5)	
15.3 (600)	28-33	280-320	5.2 (11.4)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20-25	130-170	1.9 (4.1)	85-88
		5.1 (200)	21-26	160-200	2.5 (5.5)	
		6.4 (250)	22-28	180-230	3.0 (6.6)	
		7.6 (300)	23-29	220-260	4.2 (9.2)	
		10.2 (400)	24-30	270-320	5.4 (11.9)	
		12.8 (500)	25-31	300-350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22-25	170-210	2.0 (4.4)	84-87
		3.8 (150)	23-26	180-220	2.5 (5.5)	
		5.1 (200)	25-29	220-260	3.1 (6.8)	
		6.4 (250)	26-32	270-320	4.0 (8.8)	
		7.6 (300)	28-34	300-350	5.0 (11.0)	
		10.2 (400)	34-38	350-400	6.4 (14.0)	

Supercored 71

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A0-CS1

JIS Z3313 T49 2 T1-1 C A H10

EN ISO 17632-A-T 42 2 PC 1

KR 3SMG, 3YSMG(C)H10

ABS 3SAH10, 3YSA

LR 3S, 3YSH10

BV SA3M, SA3YM, A3M, A3YM HH

DNV IIIYMS H10

GL 3YH10S

NK KSW53Y40G(C)H10

TÜV EN ISO 17632-A - T 42 2 PC 1

DB DINENISO17632-A-T422PC1

CE

RINA 3YS H10

CRS 3YSH10

RS 3YSM H10

Applications

- Shipbuilding
- General fabrication
- Structural fabrication
- Steel industry

Features

- Designed for welding with 100% CO₂ shielding gas
- Good performance and low spatter
- Smooth and stable arc with a fast freezing slag

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	
1.4 (0.052)	✓	✓	✓	✓	✓	
1.6 (1/16)	✓	✓	✓	✓	✓	

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.03	0.51	1.26	0.010	0.011

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
545 (79,100)	572 (83,100)	28.0	0 (32) -20 (-4)	110 (81) 70 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.5 (3.3)	86~88
		6.4 (250)	19~25	135~175	2.2 (4.8)	
		7.6 (300)	20~26	150~180	2.5 (5.5)	
		8.9 (350)	23~28	175~205	3.0 (6.6)	
		10.2 (400)	25~30	185~220	3.5 (7.6)	
		11.5 (450)	26~31	220~260	3.9 (8.6)	
		12.8 (500)	27~32	250~290	4.3 (9.5)	
15.3 (600)	28~33	280~320	5.2 (11.4)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20~25	130~170	1.9 (4.1)	85~88
		5.1 (200)	21~26	160~200	2.5 (5.5)	
		6.4 (250)	22~28	180~230	3.0 (6.6)	
		7.6 (300)	23~29	220~260	4.2 (9.2)	
		10.2 (400)	27~32	270~320	5.4 (11.9)	
		12.8 (500)	28~34	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22~25	170~210	2.0 (4.4)	84~87
		3.8 (150)	23~26	180~220	2.4 (5.3)	
		5.1 (200)	25~29	220~260	3.1 (6.8)	
		6.4 (250)	26~32	270~320	4.0 (8.8)	
		7.6 (300)	28~34	300~350	5.0 (11.0)	
		10.2 (400)	34~38	350~400	6.3 (13.9)	

SC-71LH

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A2-CS1

JIS Z3313 T49 3 T1-1 C A-U H5

EN ISO 17632-A-T 42 2 P C 1 H5

KR 3YSG(C)H5

ABS 3YSA H5

LR 3YS H5

BV SA3Y HHH

DNV IIIYMS H5

GL 3YH5S

NK KSW53Y40G(C) H5

TÜV EN ISO 17632-A-T 42 2 P C 1 H5

CE

RS 3Y40MS H5

Applications

- Shipbuilding
- General fabrication
- Structural fabrication
- Steel industry

Features

- Designed for welding with 100% CO₂ shielding gas
- Good low Hydrogen level(H5) and crack resistance
- Smooth and stable arc with a fast freezing slag

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool				Pac		
	5kg (11lbs)	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓		✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓		✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.06	0.47	1.35	0.014	0.012

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
550 (79,900)	590 (85,600)	27.0	-30 (-22)	70 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.5 (3.3)	86~88
		6.4 (250)	19~25	135~175	2.2 (4.8)	
		7.6 (300)	20~26	150~180	2.5 (5.5)	
		8.9 (350)	23~28	175~205	3.0 (6.6)	
		10.2 (400)	25~30	185~220	3.5 (7.6)	
		11.5 (450)	26~31	220~260	3.9 (8.6)	
		12.8 (500)	27~32	250~290	4.3 (9.5)	
15.3 (600)	28~33	280~320	5.2 (11.4)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20~25	130~170	1.9 (4.1)	86~88
		5.1 (200)	21~26	160~200	2.5 (5.5)	
		6.4 (250)	22~28	180~230	3.0 (6.6)	
		7.6 (300)	23~29	220~260	4.2 (9.2)	
		10.2 (400)	27~32	270~320	5.4 (11.9)	
		12.8 (500)	28~34	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22~25	170~210	2.0 (4.4)	86~88
		3.8 (150)	23~26	180~220	2.4 (5.3)	
		5.1 (200)	25~29	220~260	3.1 (6.8)	
		6.4 (250)	26~32	270~320	4.0 (8.8)	
		7.6 (300)	28~34	300~350	5.0 (11.0)	
		10.2 (400)	34~38	350~400	6.3 (13.9)	

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 71H

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A4-CS1

JIS Z3313 T49 4 T1-1 C A H5

EN ISO 17632-A T42 4 P C 1 H5

KR 4YSMG(C) H10, 3SMG(C) H10 / 3YSMG(C) H10

ABS 4YSA H10, 3YSA H10

LR 4YS H10

BV SA4YM HH, SA3YM HH

DNV IVYSM H5, IIIYMS H5

GL 4YS H10, 3YS H10

NK KSW54G(C) H10

KSW53G(C) H10

TÜV EN ISO 17632-A - T 42 4 P C 1

CWB CSA W48 E491T-9J-H8

CE

DB DIN EN ISO 17632-A-T 42 4 P C 1

CCS 3YSM H10, 4YSM H10

RINA 3YS H10

RS 4Y40SM H5, 3Y40SM H5

NAKS

Applications

- Shipbuilding
- Offshore Structure
- Structural fabrication
- Pressure vessels

Features

- Low temperature service steel
- Designed for welding with 100% CO₂ shielding gas
- Smooth and stable arc with a fast freezing slag

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.03	0.46	1.36	0.008	0.011	0.40

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
550 (79,900)	570 (82,800)	27.0	-30 (-22) -40 (-40)	90 (66) 60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
100% CO ₂	25 (1)	All Position					85-88
		4.3 (175)	20-25	100-130	1.6 (3.5)		
		5.6 (220)	21-26	120-150	2.0 (4.5)		
		7.0 (275)	22-27	130-160	2.5 (5.5)		
		8.3 (325)	23-28	160-190	2.9 (6.5)		
		8.9 (350)	24-29	170-200	3.2 (7.0)		
		10.2 (400)	25-30	200-230	3.6 (8.0)		
		Flat & Horizontal					
		11.4 (450)	26-31	210-240	4.1 (9.1)		
		12.1 (475)	27-32	230-260	4.3 (9.5)		
		13.3 (525)	28-33	250-280	4.7 (10.4)		
		1.4mm (0.052 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	130-160	1.8 (3.9)		
		5.1 (200)	23-28	140-170	2.4 (5.2)		
		6.4 (250)	24-29	160-190	2.9 (6.5)		
		7.6 (300)	26-31	180-210	3.5 (7.8)		
		8.9 (350)	27-32	200-230	4.1 (9.1)		
		9.5 (375)	28-33	220-250	4.4 (9.8)		
		Flat & Horizontal					
		10.8 (425)	30-35	240-270	5.0 (11.1)		
		12.1 (475)	31-36	260-290	5.6 (12.4)		
		12.7 (500)	32-37	310-340	5.9 (13.0)		
		1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	21-27	180-210	2.5 (5.5)		
		4.4 (175)	23-28	220-250	2.9 (6.4)		
		5.1 (200)	24-29	260-290	3.3 (7.3)		
		5.7 (225)	25-31	280-300	3.7 (8.2)		
		6.4 (250)	27-34	300-330	4.2 (9.2)		
		7.6 (300)	29-36	330-360	5.0 (11.0)		
		Flat & Horizontal					
		8.3 (325)	31-38	360-390	5.4 (11.9)		
		8.9 (350)	32-39	390-420	5.8 (12.8)		
		11.4 (450)	34-39	420-450	7.5 (16.5)		

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-71HJ

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A4-CS1

JIS Z3313 T49 4 T1-1 C A

EN ISO 17632-A T42 4 P C 1 H10

KR 4Y40SG(C)H10

ABS 4Y400SA H10

LR 4Y40S H10

BV SA4Y40 HH

DNV IVY40MS H10

GL 4Y40H10S

NK KSW54Y40G(C)H10

Applications

- Shipbuilding
- Offshore Structure
- Structural fabrication
- Pressure vessels

Features

- Designed for welding with 100% CO₂ shielding gas
- Good bead appearance
- Smooth and stable arc with a fast freezing slag
- Good performance in all position

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	
1.4 (0.052)	✓	✓	✓	✓	✓	
1.6 (1/16)	✓	✓	✓	✓	✓	

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.04	0.45	1.30	0.008	0.011	0.40

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
560 (81,300)	580 (84,200)	27.5	-40 (-40)	70 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
100% CO ₂	25 (1)	All Position					85-88
		4.4 (175)	20-25	100-130	1.6 (3.5)		
		5.7 (225)	21-26	120-150	2.0 (4.5)		
		7.0 (275)	22-27	130-160	2.5 (5.5)		
		8.3 (325)	23-28	160-190	2.9 (6.5)		
		8.9 (350)	24-29	170-200	3.2 (7.0)		
		10.2 (400)	25-30	200-230	3.6 (8.0)		
		Flat & Horizontal					
		11.4 (450)	26-31	210-240	4.1 (9.1)		
		12.1 (475)	27-32	230-260	4.3 (9.5)		
		13.3 (525)	28-33	250-280	4.7 (10.4)		
		1.4mm (0.052 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	130-160	1.8 (3.9)		
		5.1 (200)	23-28	140-170	2.4 (5.2)		
		6.4 (250)	24-29	160-190	2.9 (6.5)		
		7.6 (300)	26-31	180-210	3.5 (7.8)		
		8.9 (350)	27-32	200-230	4.1 (9.1)		
		9.5 (375)	28-33	220-250	4.4 (9.8)		
		Flat & Horizontal					
		10.8 (425)	30-35	240-270	5.0 (11.1)		
		12.1 (475)	31-36	260-290	5.6 (12.4)		
		12.7 (500)	32-37	310-340	5.9 (13.0)		
		1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	21-27	180-210	2.5 (5.5)		
		4.4 (175)	23-28	220-250	2.9 (6.4)		
		5.1 (200)	24-29	260-290	3.3 (7.3)		
		5.7 (225)	25-31	280-300	3.7 (8.2)		
		6.4 (250)	27-34	300-330	4.2 (9.2)		
		7.6 (300)	29-36	330-360	5.0 (11.0)		
		Flat & Horizontal					
		8.3 (325)	31-38	360-390	5.4 (11.9)		
		8.9 (350)	32-39	390-420	5.8 (12.8)		
		11.4 (450)	34-39	420-450	7.5 (16.5)		

SWAW
SAW
GMAW
GTAW
FCAW
Non-FERROUS
APPENDIX

Supercored 71MAG

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-M21A2-CS1
JIS Z3313 T49 3 T1-1 M A-U H10
EN ISO 17632-A-T 42 3 P M 1
ABS 3SAH10, 3YSA
LR 3S, 3YSH10
BV SA3M, SA3YM HH, A3M, A3YM
DNV IIIYMS H10

GL 3YH10S
TÜV EN ISO 17632-A - T 46 3 P M 1
CE
DB DIN EN ISO 17632-A-T 46 3 P M 1
RINA 3YS H10
CWB CSA W48 E491T-9M-H8

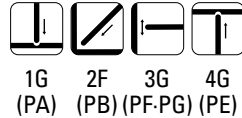
Applications

- Shipbuilding
- Civil construction
- General fabrication

Features

- Designed for welding with 75~80% Argon/ balance CO₂ shielding gas
- Good arc performance and bead appearance
- Low spatter

Welding Position



Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.0 (0.040)	✓	✓	✓		✓	✓
1.2 (0.045)	✓	✓	✓		✓	✓
1.4 (0.052)	✓	✓	✓		✓	✓
1.6 (1/16)	✓	✓	✓		✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.04	0.54	1.25	0.011	0.012

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
580 (84,200)	600 (87,100)	28.0	-30 (-22)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
80% Ar + 20% CO ₂	25 (1)	4.5 (175)	17~22	120~160	1.5 (3.3)	86~88
		6.4 (250)	18~24	135~175	2.2 (4.8)	
		7.6 (300)	19~25	150~180	2.5 (5.5)	
		8.9 (350)	22~27	175~205	3.0 (6.6)	
		10.2 (400)	24~29	185~220	3.5 (7.6)	
		11.5 (450)	25~30	220~260	3.8 (8.4)	
		12.8 (500)	26~31	250~290	4.4 (9.6)	
15.3 (600)	27~32	280~320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
80% Ar + 20% CO ₂	25 (1)	3.8 (150)	19~24	130~170	1.9 (4.1)	86~89
		5.1 (200)	20~25	160~200	2.5 (5.5)	
		6.4 (250)	21~27	180~230	3.0 (6.6)	
		7.6 (300)	22~28	220~260	4.2 (9.2)	
		10.2 (400)	26~31	270~320	5.5 (12.1)	
		12.8 (500)	27~33	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
80% Ar + 20% CO ₂	25 (1)	3.2 (125)	21~24	170~210	2.0 (4.4)	86~89
		3.8 (150)	22~25	180~220	2.5 (5.5)	
		5.1 (200)	24~28	220~260	3.2 (7.0)	
		6.4 (250)	25~31	270~320	4.0 (8.8)	
		7.6 (300)	27~33	300~350	5.0 (11.0)	
		10.2 (400)	33~37	350~400	6.4 (14.0)	

SC-71LHM Cored

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-M21A2-CS1
JIS Z3313 T49 3 T1-1 M A-U H5
EN ISO 17632-A-T 46 3 P M 1 H5
ABS 3YSA H5
CWB CSA W48 E49 1T-9M-H4
LR 3YS H5

BV SA3Y HHH
DNV IIIYMSH5
GL 3YH5S
TÜV EN ISO 17632-A-T 46 3 P M 1 H5
DB EN ISO 17632-A-T 46 3 P M 1 H5
CE

Applications

- Shipbuilding
- Steel industry
- General fabrication

Features

- Designed for welding with 75~80% Argon/ balance CO₂ shielding gas
- Good arc performance and fast freezing slag
- Low hydrogen level(H5) and good crack resistance

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.05	0.50	1.20	0.012	0.015

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
580 (84,200)	600 (87,100)	28.0	-30 (-22)	80 (59)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
80% Ar + 20% CO ₂	25 (1)	4.5 (175)	17~22	120~160	1.5 (3.3)	86~88
		6.4 (250)	18~24	135~175	2.2 (4.8)	
		7.6 (300)	19~25	150~180	2.5 (5.5)	
		8.9 (350)	22~27	175~205	3.0 (6.6)	
		10.2 (400)	24~29	185~220	3.5 (7.6)	
		11.5 (450)	25~30	220~260	3.8 (8.4)	
		12.8 (500)	26~31	250~290	4.4 (9.6)	
15.3 (600)	27~32	280~320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
80% Ar + 20% CO ₂	25 (1)	3.8 (150)	19~24	130~170	1.9 (4.1)	86~88
		5.1 (200)	20~25	160~200	2.5 (5.5)	
		6.4 (250)	21~27	180~230	3.0 (6.6)	
		7.6 (300)	22~28	220~260	4.2 (9.2)	
		10.2 (400)	26~31	270~320	5.5 (12.1)	
		12.8 (500)	27~33	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
80% Ar + 20% CO ₂	25 (1)	3.2 (125)	21~24	170~210	2.0 (4.4)	86~88
		3.8 (150)	22~25	180~220	2.5 (5.5)	
		5.1 (200)	24~28	220~260	3.2 (7.0)	
		6.4 (250)	25~31	270~320	4.0 (8.8)	
		7.6 (300)	27~33	300~350	5.0 (11.0)	
		10.2 (400)	33~37	350~400	6.4 (14.0)	

SWAW
SAW
GMAW
GTAW
FCAW
Non-FERROUS
APPENDIX

SF-71MC

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A2-CS2
E71T1-M21A2-CS2

EN ISO 17632-A-T 46 3 P M 1

EN ISO 17632-A-T 46 2 P C 1

ABS 3YSA H10

LR 3YS H10

BV SA3YM HH

DNV IIIYMS H10

TÜV EN ISO 17632-A-T 46 3 P M(C) 1 H10

DB EN ISO 17632-A-T 46 3 P M(C) 1 H10

CWB CSA W48 E49 1T-1(M)
/-9(M)/-12(M)-H8

CE

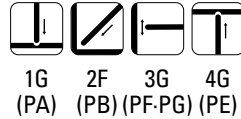
Applications

- Shipbuilding
- Structural fabrication
- General fabrication
- Pipe line
- Offshore structure

Features

- Low spatter and excellent performance
- Good arc performance and fast freezing slag
- Use 100% CO₂ gas or Ar-CO₂ mixture(Dual gas)
- Better performance in V-up position

Welding Position



Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	P
100% CO ₂	0.04	0.40	1.20	0.010	0.012

Typical Mechanical Properties of All-Weld Metal

	YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
100% CO ₂	510 (74,000)	550 (79,900)	28.0	-20 (-4)	95 (70)
75% Ar + 25% CO ₂	540 (78,400)	605 (87,700)	28.0	-20 (-4)	110 (81)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	17~22	120~160	1.5 (3.3)	86~88
		6.4 (250)	18~24	135~175	2.2 (4.8)	
		7.6 (300)	19~25	150~180	2.5 (5.5)	
		8.9 (350)	22~27	175~205	3.0 (6.6)	
		10.2 (400)	24~29	185~220	3.5 (7.6)	
		11.5 (450)	25~30	220~260	3.8 (8.4)	
		15.3 (600)	27~32	280~320	5.3 (11.6)	
75% Ar + 25% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.5 (3.3)	86~88
		6.4 (250)	19~25	135~175	2.2 (4.8)	
		7.6 (300)	20~26	150~180	2.5 (5.5)	
		8.9 (350)	23~28	175~205	3.0 (6.6)	
		10.2 (400)	25~30	185~220	3.5 (7.6)	
		11.5 (450)	26~31	220~260	3.9 (8.6)	
		12.8 (500)	27~32	250~290	4.3 (9.5)	
15.3 (600)	28~33	280~320	5.2 (11.4)			

SC-71MJ

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E71T1-M21A4-CS1
JIS Z3313 T49 4 T1-1 M A-U H5
EN ISO 17632-A T46 4 P M 1 H5
ABS 4YSA, 4Y400SA H5

LR 4Y40 H5
BV SA4Y, SA4Y40 HHH
DNV IVY40MS (H5), IVYMS

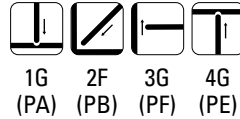
Applications

- Shipbuilding
- Pipe line
- Offshore structure

Features

- Good impact value at low temperature
- Smooth and stable arc with a fast freezing slag
- Low hydrogen level(H5)
- Designed for welding with Ar-CO₂ mixture

Welding Position



Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓				
1.4 (0.052)	✓	✓				
1.6 (1/16)	✓	✓				

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.06	0.30	1.10	0.012	0.011	0.42

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
545 (79,100)	583 (84,500)	25.0	-30 (-22) -40 (-40)	126 (93) 80 (59)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	20-25	110-140	1.6 (3.5)		
		5.7 (225)	21-26	120-150	2.0 (4.5)		
		7.0 (275)	22-27	130-160	2.5 (5.5)		
		8.3 (325)	22-27	160-190	2.9 (6.5)		
		8.9 (350)	23-28	170-200	3.2 (7.0)		
		10.2 (400)	24-29	200-230	3.6 (8.0)		
		Flat & Horizontal					
		11.4 (450)	25-31	210-240	4.1 (9.1)		
		12.1 (475)	26-32	230-260	4.3 (9.5)		
13.3 (525)	27-33	250-280	4.7 (10.4)				
1.4mm (0.052 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	120-150	1.8 (3.9)		
		4.4 (175)	21-26	130-160	2.1 (4.6)		
		5.1 (200)	22-27	160-190	2.4 (5.2)		
		5.7 (225)	23-28	180-210	2.7 (5.9)		
		6.4 (250)	24-29	200-230	2.9 (6.5)		
		7.6 (300)	25-30	220-250	3.5 (7.8)		
		Flat & Horizontal					
		8.9 (350)	28-32	260-290	4.1 (9.1)		
		11.4 (450)	29-34	310-330	5.3 (11.7)		
1.6mm (1/16 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	21-26	170-200	2.5 (5.5)		
		4.4 (175)	22-27	180-210	2.9 (6.4)		
		5.1 (200)	22-28	200-230	3.3 (7.3)		
		5.7 (225)	24-29	230-260	3.7 (8.2)		
		6.4 (250)	25-30	250-280	4.2 (9.2)		
		7.6 (300)	26-31	280-310	5.0 (11.0)		
		Flat & Horizontal					
		8.3 (325)	27-32	300-330	5.4 (11.9)		
		8.9 (350)	28-33	330-360	5.8 (12.8)		
10.2 (450)	29-34	380-410	6.6 (14.6)				

SMW
SAW
GMAW
GTAW
FCAW
Non-FERROUS
APPENDIX

SF-70MX

Type : Semi-Metal

Conformances

AWS A5.36/ ASME SFA5.36 E70T1-C1A0-CS1

JIS Z3313 T49J 0 T15-0 C A-U H10

EN ISO 17632-A-T 42 0 R C 3

KR 2SG, 2YSG (C1) H10, 2MG, 2YMG(C1) H10

ABS 2SA, 2YSAH10, 2Y400SA

LR 2S, 2YSH10

BV SA2YM HH

DNV IIYMSH10

GL 2YH10S

NK KSW2G, KSW52Y40G(C)H10
KAW2MG, KAW52MG(C)H10

CCS 2YSM H10

CRS 2HSM, 2YHSM

RINA 2YS H10

CWB CSA W48 E492T-1-H8

Applications

- Shipbuilding
- Structural fabrication
- General fabrication
- Transportation equipment

Features

- Designed for welding with 100% CO₂ shielding gas
- Good high deposition rate
- Good penetration and good arc stability
- Low spatter and soft arc
- Good anti-porosity

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	25kg (55lbs)	100kg (220lbs)	250kg (551lbs)	300kg (661lbs)
1.2 (0.045)	✓	✓		✓	✓	✓
1.4 (0.052)	✓	✓		✓	✓	✓
1.6 (1/16)	✓	✓		✓	✓	✓
2.4 (3/32)			✓	✓	✓	

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.05	0.5	1.5	0.011	0.013

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
560 (81,300)	590 (85,700)	28	-20 (-4)	45 (33)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	11.5 (450)	24~28	200~240	4.1 (9.0)	85~87
		12.6 (500)	27~29	220~260	4.5 (10.0)	87~89
		14.3 (560)	29~33	240~280	5.0 (10.9)	87~89
		15.4 (610)	29~33	260~300	5.4 (11.9)	89~90
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	9.6 (380)	24~28	230~270	4.4 (9.8)	87~89
		10.7 (420)	25~29	250~290	5.0 (11.1)	87~89
		12.2 (480)	29~33	270~310	5.6 (12.4)	88~90
		12.8 (500)	30~34	300~340	5.9 (13.0)	88~90
		13.1 (515)	30~34	330~370	6.1 (13.4)	88~90
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	6.4 (250)	26~30	250~290	3.8 (8.5)	86~88
		7.6 (300)	28~32	270~310	4.5 (10.0)	87~89
		8.9 (350)	30~34	300~340	5.5 (12.1)	87~89
		10.2 (400)	33~37	340~380	6.3 (13.9)	89~91
2.4mm (3/32 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	23~28	335	4.9 (10.8)	86~88
		5.1 (200)	27~32	445	7.6 (16.7)	88~89
		6.4 (250)	29~34	500	9.6 (21.3)	89~92
		7.6 (300)	31~36	590	11.8 (26.0)	89~92

SC-70H Cored

Type : Semi-Metal

Conformances

AWS A5.36/ ASME SFA5.36 E70T1-C1A2-CS1

JIS Z3313 T49 3 T 15-0 C A H10

EN ISO 17632-A-T 42 2 R C 3

ABS 3YSA H10

LR 3YS H10

GL 3YH10S

CCS 3YSM H10

CWB CSA W48 E492T-9-H8

Applications

- Shipbuilding
- Structural fabrication
- Machinery
- Heavy equipment
- Transportation equipment

Features

- High deposition in the flat and horizontal positions
- Designed for welding with 100% CO₂ shielding gas
- Low spatter and soft arc
- Good anti-porosity

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	25kg (44lbs)	100kg (220lbs)	250kg (551lbs)	300kg (661lbs)
1.2 (0.045)		√		√	√	√
1.4 (0.052)		√		√	√	√
1.6 (1/16)		√		√	√	√
2.0 (5/64)			√	√		
2.4 (3/32)			√	√		
3.2 (1/8)			√	√		

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.05	0.56	1.48	0.014	0.010

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
495 (71,900)	580 (84,100)	28	-30 (-22)	51 (38)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	10.2 (400)	24-28	220-240	4.7 (10.4)	89-91
		12.8 (500)	28-32	230-270	5.6 (12.3)	89-91
		15.3 (600)	30-34	280-320	6.3 (13.9)	90-92
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	12.2 (480)	30-34	280-320	5.7 (12.6)	89-91
		12.7 (500)	30-34	310-330	5.9 (13.0)	89-91
		13.0 (512)	34-38	330-370	6.3 (13.9)	90-92
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	7.7 (300)	30-34	280-320	5.1 (11.2)	89-91
		8.8 (350)	32-38	330-370	5.9 (13.0)	89-91
		10.3 (400)	34-40	380-420	6.6 (14.6)	90-92
2.0mm (5/64 in) DC+						
100% CO ₂	25 (1)	6.4 (250)	31-35	330-370	6.0 (13.2)	89-91
		7.7 (300)	32-36	380-420	7.1 (15.6)	92-93
		10.0 (390)	34-38	430-470	9.8 (21.6)	92-93
2.4mm (3/32 in) DC+						
100% CO ₂	25 (1)	4.5 (180)	31-35	380-420	6.4 (14.1)	89-91
		5.2 (200)	32-36	430-470	7.6 (16.8)	92-93
		6.4 (250)	34-38	480-520	9.6 (21.2)	92-93
3.2mm (1/8 in) DC+						
100% CO ₂	25 (1)	2.5 (98)	30-34	360-400	6.6 (14.6)	89-91
		2.8 (110)	30-34	380-420	7.2 (15.9)	92-93
		3.3 (130)	32-36	460-500	10.3 (22.7)	92-93

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 70MXH

Type : Semi-Metal

Conformances

AWS A5.36/ ASME SFA5.36 E70T1-C1A2-CS1

JIS Z3313 T49J 2 T15-0 C A-U H5

EN ISO 17632-A-T 42 2 R C 3 H5

KR 3YSG(C)HHH, 3YMG(C)HHH

ABS 3SAH5, 3YSA

LR 3YSH5

BV SA3YM, A3YM HHH

DNV IIIYMS H5

GL 3YH5S

NK KSW53G(C)H5
KAW53MG(C)H5

CCS 3YSM H5

RINA 3YS H5

Applications

- Shipbuilding
- Structural fabrication
- General fabrication
- Heavy equipment
- Offshore structure

Features

- Designed for welding with 100% CO₂ shielding gas
- High speed single or twin tandem welding
- Low hydrogen level (H5)
- Good anti-porosity to zinc primer

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	500kg (771lbs)
1.4 (0.052)		✓	✓	✓	✓	✓
1.6 (1/16)		✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.05	0.55	1.65	0.013	0.010

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
540 (78,400)	620 (90,000)	28	-30 (-22)	50 (37)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	12.2 (480)	29-33	280-320	5.6 (12.4)	90-92
		13.1 (515)	34-38	330-370	6.1 (13.4)	91-93
		15.0 (590)	36-40	380-420	6.4 (14.1)	91-93
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	7.6 (300)	31-35	280-320	4.9 (10.8)	87-89
		8.9 (350)	34-38	330-370	5.5 (12.1)	90-91
		10.2 (400)	36-40	380-420	6.3 (13.9)	90-91
		11.8 (500)	40-44	430-470	7.7 (17.0)	91-92

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-70T Cored

Type : Metal-Cored



Conformances

AWS A5.36/ ASME SFA5.36 E70T15-C1A0-CS1
E70T15-M21A2-CS1

JIS Z3313 T49 2 T15-1 CA
Z3313 T49 3 T15-1 MA

EN ISO 17632-A-T 42 2 M C 1

EN ISO 17632-A-T 46 2 M M 1 H5

ABS 3YSA H10, 3YSA (C)

LR 3YS H10 (C1), 3YS H5 (M21)

BV SA3YMH (C1), SA3YHH (M21)

DNV IIYMS H10 (C1), IIYMS H5 (M21)

GL 3YH10S (C1), 3Y H5S (M21)

TÜV EN ISO 17632-A T46 2 M M / T42 2 M C

DB EN ISO 17632-A T46 2 M M 1 / T42 2 M C 1

CWB CSA W48 E49 1C-3-6M-H8

CE

Applications

- Shipbuilding
- Machinery
- Structural fabrication

Features

- Good weldability in thin plate and root pass welding
- High productivity and automatic applications
- Minimum amount of slag & spatter
- Use 100% CO₂ gas or Ar-CO₂ mixture (Dual gas)
- All position welding
- Good anti-porosity

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33 lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.0 (0.040)	✓	✓	✓	✓	✓	✓
1.2 (0.045)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S
100% CO ₂	0.06	0.60	1.20	0.011	0.014
80% Ar + 20% CO ₂	0.07	0.65	1.45	0.010	0.011

Typical Mechanical Properties of All-Weld Metal

	YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
100% CO ₂	520 (75,500)	590 (85,700)	27	-20 (-4)	45 (33)
80% Ar + 20% CO ₂	550 (79,900)	620 (90,000)	27	-30 (-22)	50 (37)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	19-25 (3/4-1)	All Position				
		3.4 (130)	13 - 18	80~120	1.8 (3.5)	90~92
		3.9 (148)	18 - 23	120~150	2.0 (4.2)	91~93
		Flat & Horizontal				
		4.3 (171)	18~21	160~190	2.3 (4.8)	91~93
		7.8 (320)	25~28	230~250	3.9 (8.3)	92~94
10.9 (390)	30~32	270~300	5.0 (11.1)	94~96		

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-70Z Cored

Type : Metal-Cored

Conformances

AWS A5.36M/ ASME SFA5.36M E490T15-C1A0-G
E490T15-M21A0-G

EN ISO 17632-A-T 46 Z M M/C 3

CWB CSA W48 E491T-G

Applications

- Automotive
- Galvanized steel structure
- Shipbuilding

Features

- Designed for low carbon and low alloy galvanized steel sheet
- Applicable to the zinc plate steel
- Low spatter
- Good anti-porosity

Welding Position



1G 2F 3G
(PA) (PB) (PF-PG)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33 lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.0 (0.040)	✓	✓	✓	✓	✓	✓
1.2 (0.045)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.10	0.61	1.57	0.025	0.014

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
580 (84,200)	640 (92,900)	25	0 (32)	105 (77)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
All Position						
80% Ar + 20% CO ₂	19-25 (3/4-1)	4.9 (187)	23~25	140~160	2.3 (4.9)	93~94
		6.3 (243)	24~26	190~210	2.9 (6.3)	94~96
		Flat & Horizontal				
		9.5 (368)	29~31	280~300	2.5 (9.2)	94~96

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 70NS

Type : Metal-Cored



Conformances

AWS A5.36/ ASME SFA5.36 E70T15-M21A2-CS1
 JIS Z3313 T49 3 T15-0 M A H5
 EN ISO 17632-A-T T 42 3 M M 3 H5
 ABS 3SAH5, 3YSA
 LR 3S, 3YSH5
 BV SA3M, SA3YM HHH
 DNV IIIYMS H5

GL 3YH5S
 TÜV EN ISO 17632-A-T 423MM3
 CWB CSA W48 E492C-6M-H4
 CE
 DB DIN EN ISO 17632-A-T 422MM3
 RINA 3YS H5

Applications

- Machinery
- Structural fabrication
- Automotive or robotic welding.
- Shipbuilding

Features

- Designed for welding with Ar + CO₂ shielding gas
- High deposition rates, stable arc, travel speed
- Low spatter
- Good anti-porosity

Welding Position



1G 2F 3G
 (PA) (PB) (PF-PG)

Current

DC +

Shielding Gas

Ar + CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S
80% Ar + 20% CO ₂	0.038	0.66	1.63	0.012	0.005
90% Ar + 10% CO ₂	0.036	0.69	1.67	0.012	0.005

Typical Mechanical Properties of All-Weld Metal

	YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
80% Ar + 20% CO ₂	481 (69,700)	566 (82,000)	24.4	-30 (-22)	50 (37)
90% Ar + 10% CO ₂	492 (71,340)	564 (81,700)	24.4	-30 (-22)	49 (36)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	19-25 (3/4-1)	7.3 (288)	22 - 26	190-210	3.4 (7.6)	90-96
		9.7 (382)	23 - 27	240-260	4.5 (9.7)	
		12.2 (489)	24 - 30	280-310	5.9 (12.8)	
1.4mm (0.052 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	19-25 (3/4-1)	6.7 (261)	22 - 26	250-270	3.8 (8.3)	92-96
		7.8 (307)	25 - 31	290-310	4.9 (10.4)	
		9.4 (370)	28 - 32	330-350	5.5 (12.0)	
1.6mm (1/16 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	25-32 (1-1 1/4)	5.6 (220)	26 - 32	290-310	4.5 (9.3)	93-96
		6.8 (270)	29 - 33	340-350	5.6 (12.1)	
		7.8 (310)	31 - 34	350-370	6.7 (14.3)	

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 70B

Type : Basic



Conformances

AWS A5.36/ ASME SFA5.36 E71T5-M21A4-CS1 H4
JIS Z3313 T49 4 T5-1 M A-U H5
EN ISO 17632-A-T42 4 B M 3 H5
ABS 3YSAH5
LR 3S, 3YSH5
BV SA3YM HHH

DNV IIIYMS H5
GL 3YH5S
TÜV EN ISO 17632-A-T42 4 B M 3 H5
DB EN ISO 17632-A-T42 4 B M 3 H5
CE

Applications

- Shipbuilding
- Structural fabrication

Features

- Good crack resistance
- Good impact value at low temperature
- Good anti-porosity

Welding Position



1G 2F 3G
(PA) (PB) (PF-PG)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.06	0.43	1.33	0.011	0.013

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
450 (65,300)	520 (75,400)	32.0	-40 (-40)	78 (58)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
80% Ar + 20% CO ₂	25 (1)	4.5 (175)	17~22	120~160	1.5 (3.3)	86~88
		6.4 (250)	18~24	135~175	2.2 (4.8)	
		7.6 (300)	19~25	150~180	2.5 (5.5)	
		8.9 (350)	22~27	175~205	3.0 (6.6)	
		10.2 (400)	24~29	185~220	3.5 (7.6)	
		11.5 (450)	25~30	220~260	3.8 (8.4)	
		12.8 (500)	26~31	250~290	4.4 (9.6)	
15.3 (600)	27~32	280~320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
80% Ar + 20% CO ₂	25 (1)	3.8 (150)	19~24	130~170	1.9 (4.1)	86~89
		5.1 (200)	20~25	160~200	2.5 (5.5)	
		6.4 (250)	21~27	180~230	3.0 (6.6)	
		7.6 (300)	22~28	220~260	4.2 (9.2)	
		10.2 (400)	26~31	270~320	5.5 (12.1)	
		12.8 (500)	27~33	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
80% Ar + 20% CO ₂	25 (1)	3.2 (125)	21~24	170~210	2.0 (4.4)	86~89
		3.8 (150)	22~25	180~220	2.5 (5.5)	
		5.1 (200)	24~28	220~260	3.2 (7.0)	
		6.4 (250)	25~31	270~320	4.0 (8.8)	
		7.6 (300)	27~33	300~350	5.0 (11.0)	
		10.2 (400)	33~37	350~400	6.4 (14.0)	

Supercored 70SB

Type : Basic

Conformances

AWS A5.36/ ASME SFA5.36 E71T5-C1A2-CS1 H4

JIS Z3313 T49 4 T5-1 M A-U H5

EN ISO 17632-A-T 42 3 B C 2 H5

KR 3YSG(C1)H5

ABS 3SA, 3YSAH5

LR 3YSH5

BV SA3YM HHH

DNV IIIYMS H5

GL 3YH5S

NK KSW53G(C)H5

Applications

- Shipbuilding
- Structural fabrication
- Heavy equipment

Features

- Good crack resistance
- Good impact value at low temperature

Welding Position



1G (PA) 2F (PB) 3G (PF-PG) 1G (PA)
DC + DC (-)

Current

DC ±

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac			
	mm (in)	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.8 (0.033)							
0.9 (0.035)							
1.0 (0.040)							
1.2 (0.045)	✓	✓	✓				
1.4 (0.052)	✓	✓	✓				
1.6 (1/16)	✓	✓	✓				

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.07	0.5	0.4	0.008	0.010

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Polarity
570 (82,800)	620 (90,000)	26	-30 (-22)	70 (52)	DC (-)
500 (72,600)	550 (79,900)	31	-30 (-22)	80 (59)	DC (+)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.5 (3.3)	86~88
		6.4 (250)	19~25	135~175	2.2 (4.8)	
		7.6 (300)	20~26	150~180	2.5 (5.5)	
		8.9 (350)	23~28	175~205	3.0 (6.6)	
		10.2 (400)	25~30	185~220	3.5 (7.6)	
		11.5 (450)	26~31	220~260	3.8 (8.4)	
		12.8 (500)	27~32	250~290	4.4 (9.6)	
15.3 (600)	28~33	280~320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20~25	130~170	1.9 (4.1)	85~89
		5.1 (200)	21~26	160~200	2.5 (5.5)	
		6.4 (250)	22~28	180~230	3.0 (6.6)	
		7.6 (300)	23~29	220~260	4.2 (9.2)	
		10.2 (400)	27~32	270~320	5.5 (12.1)	
		12.8 (500)	28~34	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22~25	170~210	2.0 (4.4)	84~87
		3.8 (150)	23~26	180~220	2.5 (5.5)	
		5.1 (200)	25~29	220~260	3.2 (7.0)	
		6.4 (250)	26~32	270~320	4.0 (8.8)	
		7.6 (300)	28~34	300~350	5.0 (11.0)	
		10.2 (400)	34~38	350~400	6.4 (14.0)	

SC-EG2 Cored

Type : Metal-Cored

Conformances

AWS A5.26/ ASME SFA5.26 EG70T-2C
 JIS Z3319 YFEG-22C
 KR 3V, 3YV
 ABS 3, 3YH10
 LR 3, 3Y
 BV AV3, AV3Y
 DNV ILY (-20°C)
 GL 3YV
 NK KEW53
 CCS 3, 3Y
 RINA 3Y

Applications

- Shipbuilding
- Storage tank

Features

- Electro gas arc welding process
- Hig deposition (Vertical up butt welding)

Welding Position



3G
(PF)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool	
	15kg (33lbs)	20kg (44lbs)
1.6 (1/16)	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Mo
0.08	0.3	1.52	0.012	0.010	0.12

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.lbs)
510 (74,000)	560 (81,300)	27	-20 (0)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	8.3 (327)	32	330	5.8 (12.8)	92-94
		8.8 (346)	34	350	6.6 (14.6)	92-94
		9.8 (386)	38	380	7.1 (15.7)	93-95

SC-EG3

Type : Metal-Cored

Conformances

AWS	A5.26/ ASME SFA5.26 EG82T-NM2
KR	4Y40VH5
ABS	5Y400 H5
LR	4Y40 H5
BV	AV5Y40 HHH
DNV	VY40(H5)
GL	6Y40H5V
NK	KEW54Y40G(C)H5 (-60°C ≥39J)

Applications

- Shipbuilding
- LPG and LNG storage tank

Features

- Electro gas arc welding process
- High deposition(vertical up butt welding)
- Low temperature service

Welding Position



3G
(PF)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool
mm (in)	20kg (44lbs)
1.6 (1/16)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.07	0.22	1.52	0.012	0.010	1.8

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
575 (83,400)	672 (94,500)	23.5	-60 (76)	50 (37)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	8.2 (323)	32	330	5.5 (12.1)	91-93
		8.6 (346)	34	350	6.2 (14.6)	91-93
		9.6 (378)	38	380	6.8 (15.0)	92-94

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

SC-55 Cored

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A0-G

JIS Z3313 T55 2 T1-1 C A-U H10

Applications

- Structural fabrication
- Storage tank
- Bridge construction
- Steel industry

Features

- Designed for welding with 100% CO₂ shielding gas
- Good crack resistance
- Smooth and stable arc with a fast freezing slag
- All position welding

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.06	0.45	1.40	0.012	0.006

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
560 (81,200)	610 (88,500)	28.5	-20 (-4)	80 (59)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.5 (3.3)	86~88
		6.4 (250)	19~25	135~175	2.2 (4.8)	
		7.6 (300)	20~26	150~180	2.5 (5.5)	
		8.9 (350)	23~28	175~205	3.0 (6.6)	
		10.2 (400)	25~30	185~220	3.5 (7.6)	
		11.5 (450)	26~31	220~260	3.9 (8.6)	
		12.8 (500)	27~32	250~290	4.3 (9.5)	
15.3 (600)	28~33	280~320	5.2 (11.4)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20~25	130~170	1.9 (4.1)	85~88
		5.1 (200)	21~26	160~200	2.5 (5.5)	
		6.4 (250)	22~28	180~230	3.0 (6.6)	
		7.6 (300)	23~29	220~260	4.2 (9.2)	
		10.2 (400)	24~30	270~320	5.4 (11.9)	
		12.8 (500)	25~31	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22~25	170~210	2.0 (4.4)	84~87
		3.8 (150)	23~26	180~220	2.5 (5.5)	
		5.1 (200)	25~29	220~260	3.1 (6.8)	
		6.4 (250)	26~32	270~320	4.0 (8.8)	
		7.6 (300)	28~34	300~350	5.0 (11.0)	
		10.2 (400)	34~38	350~400	6.4 (14.0)	

SMAW
 SAW
 GMAW
 GTAW
 FCAW
 Non-FERROUS
 APPENDIX

SC-55F Cored

Type : Semi-Metal

Conformances

AWS A5.36/ ASME SFA5.36 E80T1-C1A0-G

JIS Z3313 T55 2 T15-0 C A-N1-U H10

Applications

- Structural fabrication
- Storage tank
- Bridge construction
- Steel industry

Features

- Minimum spatter level
- Easy to remove slag
- Good anti-porosity

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	250kg (551lbs)	300kg (661lbs)
1.2 (0.045)	✓	✓		✓	✓	✓
1.4 (0.052)	✓	✓		✓	✓	✓
1.6 (1/16)	✓	✓		✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S
0.05	0.48	1.56	0.012	0.010

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
580 (84,200)	625 (90,600)	24.5	-20 (-4)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	20~25 (51/64~1)	11.5 (450)	26	225	4.1 (9.0)	85~86
		12.5 (480)	29	245	4.4 (9.7)	87~88
		14.2 (560)	30	265	4.9 (10.8)	87~89
		15.2 (610)	31	285	5.4 (11.9)	89~90
1.4mm (0.052 in) DC+						
100% CO ₂	20~25 (51/64~1)	9.6 (380)	26	255	4.4 (9.8)	87~88
		10.6 (420)	27	275	5.0 (11.0)	87~88
		12.1 (480)	31	295	5.5 (12.1)	88~89
		12.7 (500)	32	325	5.8 (12.8)	88~90
		13.1 (515)	32	350	6.1 (13.4)	88~90
1.6mm (1/16 in) DC+						
100% CO ₂	20~25 (51/64~1)	6.4 (250)	28	270	3.8 (8.5)	86~88
		7.3 (290)	32	295	4.6 (10.1)	87~89
		8.6 (340)	32	335	5.6 (12.3)	87~89
		10.0 (390)	35	360	6.4 (14.1)	89~91

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 81

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A2-Ni1

JIS Z3313 T55 3 T1-1 C A-N2-U H10

EN ISO 17632-A-T 46 2 1Ni P C 1

Applications

- Machinery
- Structural fabrication
- Storage tank
- Bridge construction

Features

- Good arc performance and low spatter
- Easy to remove slag
- Good impact value

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.0 (0.040)						
1.2 (0.045)		✓	✓		✓	✓
1.4 (0.052)		✓	✓		✓	✓
1.6 (1/16)		✓	✓		✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.03	0.35	1.25	0.011	0.012	0.95

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
570 (82,700)	640 (92,900)	25	-30 (-22)	90 (66)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.5 (3.3)	86~88
		6.4 (250)	19~25	135~175	2.2 (4.8)	
		7.6 (300)	20~26	150~180	2.5 (5.5)	
		8.9 (350)	23~28	175~205	3.0 (6.6)	
		10.2 (400)	25~30	185~220	3.5 (7.6)	
		11.5 (450)	26~31	220~260	3.8 (8.4)	
		12.8 (500)	27~32	250~290	4.4 (9.6)	
15.3 (600)	28~33	280~320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20~25	130~170	1.9 (4.1)	85~88
		5.1 (200)	21~26	160~200	2.5 (5.5)	
		6.4 (250)	22~28	180~230	3.0 (6.6)	
		7.6 (300)	23~29	220~260	4.2 (9.2)	
		10.2 (400)	27~32	270~320	5.5 (12.1)	
		12.8 (500)	28~34	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22~25	170~210	2.0 (4.4)	84~87
		3.8 (150)	23~26	180~220	2.5 (5.5)	
		5.1 (200)	25~29	220~260	3.2 (7.0)	
		6.4 (250)	26~32	270~320	4.0 (8.8)	
		7.6 (300)	28~34	300~350	5.0 (11.0)	
		10.2 (400)	34~38	350~400	6.4 (14.0)	

SF-80MX

Type : Semi-Metal

Conformances

AWS A5.36/ ASME SFA5.36 E80T1-C1A2-G

JIS Z3313 T55 2 T15-0 C A-N2 H10

EN ISO 17632-A-T 46 2 1Ni R C 3

Applications

- Structural fabrication
- High tensile steel(590MPa steel class)
- Steel industry

Features

- Good deposition rate
- Good penetration and good arc stability

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	250kg (551lbs)	300kg (661lbs)
1.2 (0.045)	✓	✓		✓	✓	✓
1.4 (0.052)	✓	✓		✓	✓	✓
1.6 (1/16)	✓	✓		✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.06	0.55	1.42	0.015	0.010	1.00

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
590 (85,600)	630 (91,400)	24	-20 (-4)	53 (39)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	20~25 (51/64~1)	11.5 (450)	26	225	4.1 (9.0)	85~86
		12.5 (480)	29	245	4.4 (9.7)	87~88
		14.2 (560)	30	265	4.9 (10.8)	87~89
		15.2 (610)	31	285	5.4 (11.9)	89~90
1.4mm (0.052 in) DC+						
100% CO ₂	20~25 (51/64~1)	9.6 (380)	26	255	4.4 (9.8)	87~88
		10.6 (420)	27	275	5.0 (11.0)	87~88
		12.1 (480)	31	295	5.5 (12.1)	88~89
		12.7 (500)	32	325	5.8 (12.8)	88~90
		13.1 (515)	32	350	6.1 (13.4)	88~90
1.6mm (1/16 in) DC+						
100% CO ₂	20~25 (51/64~1)	6.4 (250)	28	270	3.8 (8.5)	86~88
		7.3 (290)	32	295	4.6 (10.1)	87~89
		8.6 (340)	32	335	5.6 (12.3)	87~89
		10.0 (390)	35	360	6.4 (14.1)	89~91

SC-80M

Type : Metal-Cored

Conformances

AWS A5.36/ ASME SFA5.36 E80T15-M21A4-G

EN ISO 17632-A T 46 4 M M 3 H5

Applications

- Bridge construction
- Structural fabrication
- Robotic welding
- Transportation equipment

Features

- High strength weathering grade steels(Corten steel)
- Good anti-porosity

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Cu
0.07	0.63	1.65	0.014	0.010	0.25	0.72	0.34

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
610 (88,400)	658 (96,300)	24.5	-40 (-46)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	19-25 (3/4-1)	7.8 (307)	22~26	240~260	3.5 (7.5)	90~96
		9.4 (374)	22~27	270~290	4.0 (9.2)	
		10.3 (405)	23~27	300~320	4.5 (10.8)	
1.4mm (0.052 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	19-25 (3/4-1)	7.2 (283)	24~28	280~300	4.1 (8.9)	94~98
		7.7 (303)	26~29	310~330	4.9 (10.8)	
		10.9 (410)	27~30	350~370	6.6 (14.2)	
1.6mm (1/16 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	19-25 (3/4-1)	7.3 (287)	24~28	340~360	5.5 (11.9)	93~96
		8.4 (330)	26~29	390~410	6.8 (14.8)	
		12.5 (492)	27~30	450~470	9.2 (20.5)	

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-90M

Type : Metal-Cored

Conformances

AWS A5.36/ ASME SFA5.36 E90T15-M21A6-G

EN ISO 18276-A T 55 Z Z M M 1 H5

Applications

- Structural fabrication
- Robotic welding

Features

- Low temperature
- Low spatter
- Good anti-porosity

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

Ar + CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni	Mo
0.07	0.54	1.35	0.012	0.010	1.17	0.18

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
610 (88,450)	672 (97,400)	25.5	-50 (-58)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	19-25 (3/4-1)	9.8 (385)	25~27	240~260	3.9 (8.6)	90~96
		13.1 (515)	27~29	270~290	5.4 (11.6)	
		14.6 (574)	29~31	320~340	6.2 (14.2)	
1.4mm (0.052 in) DC+						
Flat & Horizontal						
90% Ar + 10% CO ₂	19-25 (3/4-1)	9.7 (381)	26~28	280~300	5.2 (11.6)	92~97
		12.8 (503)	28~30	310~330	7.4 (15.9)	
		15.6 (614)	30~32	350~370	8.8 (19.2)	

SMAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-91

Type : Rutile

Conformances

AWS A5.36M/ ASME SFA5.36M E621T1-C1A0-G

JIS Z3313 T57 2 T1-1 C A-N1 H10

EN ISO 17632-A T50 2 1Ni P C 1

Applications

- Structural fabrication
- Steel industry

Features

- Smooth and stable arc with a fast freezing slag
- Pre-heat recommended to avoid cold crack
- High-tensile steel (HSB 600)

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.06	0.55	1.20	0.013	0.013	0.85

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
645 (93,600)	660 (95,800)	24.0	0 (32) -20 (-4)	100 (74) 70 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
100% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	23-28	110-140	1.6 (3.5)		
		5.1 (200)	24-29	120-150	1.8 (4.0)		
		6.4 (250)	25-30	130-160	2.3 (5.0)		
		7.6 (300)	25-30	160-190	2.7 (6.0)		
		8.9 (350)	26-31	170-200	3.2 (7.0)		
		9.5 (375)	26-31	190-220	3.4 (7.5)		
		10.8 (425)	27-32	210-240	3.8 (8.5)		
		Flat & Horizontal					
		12.1 (475)	28-33	230-260	4.9 (10.8)		
		12.7 (500)	29-34	240-270	5.2 (11.4)		
		1.4mm (0.052 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	23-28	120-150	1.8 (3.9)		
		4.7 (180)	24-29	130-160	2.2 (4.8)		
		5.7 (225)	24-29	160-190	2.7 (5.9)		
		6.4 (250)	25-30	180-210	2.9 (6.5)		
		6.9 (275)	25-30	200-230	3.2 (7.2)		
		7.6 (300)	26-31	220-250	3.5 (7.8)		
		Flat & Horizontal					
		8.5 (335)	26-31	240-270	4.0 (8.7)		
		9.5 (375)	27-32	260-290	4.4 (9.8)		
		10.2 (400)	27-34	280-310	4.7 (10.4)		
		1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	24-29	170-200	2.5 (5.5)		
		4.4 (175)	24-30	180-210	2.9 (6.4)		
		5.1 (200)	25-30	200-230	3.3 (7.3)		
		5.7 (225)	25-31	230-260	3.7 (8.2)		
		6.4 (250)	26-31	250-280	4.2 (9.2)		
		6.9 (275)	26-32	270-300	4.6 (10.1)		
		Flat & Horizontal					
		8.3 (325)	27-32	300-330	5.4 (11.9)		
		8.9 (350)	28-34	330-360	5.8 (12.8)		

SMAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-90

Type : Semi-Metal

Conformances

AWS A5.36M/ ASME SFA5.36M E620T1-C1A0-G

JIS Z3313 T62 2 T15-0 C A- H10

EN ISO 17632-A-T50 2 R C 3 H10

Applications

- Structural fabrication and automotive
- General fabrication
- High tensile steel (HSB 600)

Features

- High speed single welding in flat and horizontal positions

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	250kg (551lbs)	300kg (661lbs)
1.2 (0.045)	✓	✓		✓	✓	✓
1.4 (0.052)	✓	✓		✓	✓	✓
1.6 (1/16)	✓	✓		✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni	Mo
0.08	0.55	1.75	0.014	0.014	0.32	0.12

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
600 (87,100)	660 (95,800)	22.5	-20 (-4)	66 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	20-25 (51/64~1)	10.4 (410)	26	200	3.5 (7.7)	85-87
		12.7 (500)	30	250	4.7 (10.4)	87-89
		15.3 (600)	33	300	6.3 (13.9)	91-93
1.4mm (0.052 in) DC+						
100% CO ₂	20-25 (51/64~1)	12.0 (470)	31	300	5.6 (12.3)	90-92
		12.5 (490)	32	320	6.1 (13.4)	91-93
		13.3 (520)	36	350	6.7 (14.8)	91-93
1.6mm (1/16 in) DC+						
100% CO ₂	20-25 (51/64~1)	7.6 (300)	33	300	4.9 (10.8)	87-89
		8.9 (350)	36	350	5.5 (12.1)	90-91
		10.2 (400)	38	400	6.3 (13.9)	90-91

SMAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-91LP

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E91T1-M21A4-G

EN ISO 17632-A-T50 4 1Ni P M 1 H5

Applications

- Pipe Line
- Structural fabrication

Features

- Designed for welding with Ar + 20~25% CO₂ shielding gas
- Good bead appearance
- Good performance in all positions (Orbital welding)
- Good impact value at low temperature

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)
1.2 (0.045)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.05	0.40	1.40	0.013	0.006	0.90

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
650 (94,300)	690 (100,000)	24.5	-20 (-4)	80 (59)
			-40 (-40)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-off Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 20~25% CO ₂	25 (1)	4.4~10.2 (175~400)	23~30	130~275	1.8~4.1 (4.0~9.0)

SC-91P

Type : Rutile

Conformances

AWS A5.36M/ ASME SFA5.36M E621T1-M21A0-G
EN ISO 18276-A-T55 0 Z P M 1

Applications

- Pipe Line
- Structural fabrication

Features

- Designed for welding with Ar + 20~25% CO₂ shielding gas
- Good bead appearance
- Good performance in all positions (Orbital welding)

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)
mm (in)			
1.2 (0.045)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni	Mo
0.05	0.45	1.30	0.013	0.010	0.85	0.22

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
640 (92,900)	680 (98,700)	26.0	0 (32)	80 (59)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Melt-off Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 20~25% CO ₂	25 (1)	4.4~10.2 (175~400)	23~30	130~275	1.8~4.1 (4.0~9.0)

SC-91K2 Cored

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A4-K2

JIS Z3313 T57 4 T1-1 C A-N3 H10

EN ISO 17632-A T50 4 1.5Ni P C 1

ABS AWS A5.29 E91T1-K2C
(-40°C ≥50 J)

DNV IVY50MS H5

CWB CSA W48 E621 T1-K2C-H8

Applications

- General fabrication
- Offshore structure
- High tensile welded structure

Features

- Good impact value at low temperature

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni	Mo
0.04	0.35	1.25	0.013	0.012	1.55	0.09

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
620 (90,000)	650 (94,500)	27.0	-20 (-4) -40 (-40)	110 (81) 60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
100% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	23-28	110-140	1.6 (3.5)		
		5.1 (200)	24-29	120-150	1.8 (4.0)		
		6.4 (250)	25-30	130-160	2.3 (5.0)		
		7.6 (300)	25-30	160-190	2.7 (6.0)		
		8.9 (350)	26-31	170-200	3.2 (7.0)		
		9.5 (375)	26-31	190-220	3.4 (7.5)		
		10.8 (425)	27-32	210-240	3.8 (8.5)		
		Flat & Horizontal					
		12.1 (475)	28-33	230-260	4.9 (10.8)		
		12.7 (500)	29-34	240-270	5.2 (11.4)		
		1.4mm (0.052 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	23-28	120-150	1.8 (3.9)		
		4.7 (180)	24-29	130-160	2.2 (4.8)		
		5.7 (225)	24-29	160-190	2.7 (5.9)		
		6.4 (250)	25-30	180-210	2.9 (6.5)		
		6.9 (275)	25-30	200-230	3.2 (7.2)		
		7.6 (300)	26-31	220-250	3.5 (7.8)		
		Flat & Horizontal					
		8.5 (335)	26-31	240-270	4.0 (8.7)		
		9.5 (375)	27-32	260-290	4.4 (9.8)		
		10.2 (400)	27-34	280-310	4.7 (10.4)		
		1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	24-29	170-200	2.5 (5.5)		
		4.4 (175)	24-30	180-210	2.9 (6.4)		
		5.1 (200)	25-30	200-230	3.3 (7.3)		
		5.7 (225)	25-31	230-260	3.7 (8.2)		
		6.4 (250)	26-31	250-280	4.2 (9.2)		
		6.9 (275)	26-32	270-300	4.6 (10.1)		
		Flat & Horizontal					
		8.3 (325)	27-32	300-330	5.4 (11.9)		
		8.9 (350)	28-34	330-360	5.8 (12.8)		

SMAW
 SAW
 GMAW
 GTAW
 FCAW
 Non-FERROUS
 APPENDIX

Supercored 110

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E111T1-C1A4-G H4

ABS AWS A5.29 E111T1-GC-H4 (IV-40°C ≥41J)

KR 3Y69S(C) H5

Applications

- Offshore structure
- High tensile welded structure

Features

- Good impact value at low temperature
- Pre-heat recommended

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
mm (in)						
1.2 (0.045)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni	Mo
0.06	0.35	1.55	0.016	0.007	2.20	0.50

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
780 (113,000)	830 (121,000)	19.9	-40 (-40)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
100% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	23-28	140	1.6 (3.5)		
		5.1 (200)	24-29	150	1.8 (4.0)		
		6.4 (250)	25-30	165	2.3 (5.0)		
		7.6 (300)	25-30	190	2.7 (6.0)		
		8.9 (350)	26-31	205	3.2 (7.0)		
		9.5 (375)	26-31	225	3.4 (7.5)		
		10.8 (425)	27-32	245	3.8 (8.5)		
		Flat & Horizontal					
		12.1 (475)	28-33	265	4.9 (10.8)		
12.7 (500)	29-34	275	5.2 (11.4)				

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-110M Cored

Type : Metal-Cored

Conformances

AWS A5.36/ ASME SFA5.36 E110T15-M21A6-G

EN ISO 18276-A-T 69 4 Mn2NiMo M M 3

Applications

- High tensile welded structure
- Shipbuilding
- Heavy equipment

Features

- Good performance and low spatter
- Smooth and stable arc with a fast freezing slag
- Pre-heat recommended
- Good anti-porosity

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
mm (in)						
1.2 (0.045)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Mo
0.04	0.70	1.80	0.015	0.015	0.10	2.00	0.60

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
760 (110,200)	820 (119,000)	20	-51 (-60)	45 (34)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
80% Ar + 20% CO ₂	19-25 (3/4-1)	Flat & Horizontal				
		9.5 (374)	26-29	230-250	3.9 (8.6)	90-96
		12.2 (480)	28-31	280-300	5.3 (11.6)	
14.8 (582)	30-33	320-340	6.5 (14.2)			

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SF-70W

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A0-G(W)

JIS Z3320 YFA-50W

Applications

- Bridge construction
- Civil construction

Features

- Good weather proof

Welding Position



1G (PA) 2F (PB) 3G (PF) 4G (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.0 (0.040)						
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Cu
0.04	0.45	1.05	0.017	0.011	0.5	0.35	0.4

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
510 (74,000)	580 (84,200)	28	0 (32)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.6 (3.5)	86~88
		6.4 (250)	19~25	135~175	2.3 (5.1)	
		7.6 (300)	20~26	150~180	2.6 (5.7)	
		8.9 (350)	23~28	175~205	3.1 (6.8)	
		10.2 (400)	25~30	185~220	3.6 (7.9)	
		11.5 (450)	26~31	220~260	3.9 (8.6)	
		12.8 (500)	27~32	250~290	4.5 (9.8)	
15.3 (600)	28~33	280~320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20~25	130~170	2.0 (4.3)	86~88
		5.1 (200)	21~26	160~200	2.5 (5.5)	
		6.4 (250)	22~28	180~230	3.0 (6.6)	
		7.6 (300)	23~29	220~260	4.2 (9.2)	
		10.2 (400)	27~32	270~320	5.6 (12.3)	
		12.8 (500)	28~34	300~350	6.1 (13.4)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22~25	170~210	2.1 (4.6)	85~87
		3.8 (150)	23~26	180~220	2.6 (5.7)	
		5.1 (200)	25~29	220~260	3.2 (7.0)	
		6.4 (250)	26~32	270~320	4.0 (8.8)	
		7.6 (300)	28~34	300~350	5.1 (11.2)	
		10.2 (400)	34~38	350~400	6.5 (14.2)	

SF-80W

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A2-W2

JIS Z3320 YFA-58W

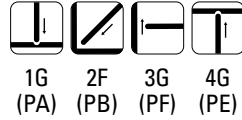
Applications

- Bridge construction
- Civil construction

Features

- Good weather proof

Welding Position



Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.0 (0.040)						
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Cu
0.04	0.4	0.92	0.016	0.012	0.5	0.5	0.4

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
530 (77,000)	610 (88,600)	26	-30 (-22)	40 (30)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	4.5 (175)	18~23	120~160	1.5 (3.3)	86~88
		6.4 (250)	19~25	135~175	2.2 (4.8)	
		7.6 (300)	20~26	150~180	2.5 (5.5)	
		8.9 (350)	23~28	175~205	3.0 (6.6)	
		10.2 (400)	25~30	185~220	3.5 (7.6)	
		11.5 (450)	26~31	220~260	3.8 (8.4)	
		12.8 (500)	27~32	250~290	4.4 (9.6)	
15.3 (600)	28~33	280~320	5.3 (11.6)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	3.8 (150)	20~25	130~170	1.9 (4.1)	85~88
		5.1 (200)	21~26	160~200	2.5 (5.5)	
		6.4 (250)	22~28	180~230	3.0 (6.6)	
		7.6 (300)	23~29	220~260	4.2 (9.2)	
		10.2 (400)	27~32	270~320	5.5 (12.1)	
		12.8 (500)	28~34	300~350	6.0 (13.2)	
1.6mm (1/16 in) DC+						
100% CO ₂	25 (1)	3.2 (125)	22~25	170~210	2.0 (4.4)	84~87
		3.8 (150)	23~26	180~220	2.5 (5.5)	
		5.1 (200)	25~29	220~260	3.2 (7.0)	
		6.4 (250)	26~32	270~320	4.0 (8.8)	
		7.6 (300)	28~34	300~350	5.0 (11.0)	
		10.2 (400)	34~38	350~400	6.4 (14.0)	

SC-81WM

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-M21A2-W2

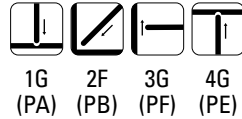
Applications

- Bridge construction
- Civil construction
- Structural fabrication

Features

- Good weldability, low spatter
- Good bead appearance
- Easy to remove slag
- Corrosion resistance of weathering steels
- Good mechanical properties

Welding Position



Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.0 (0.040)						
1.2 (0.045)		√				
1.4 (0.052)						
1.6 (1/16)		√				

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Cu
0.04	0.38	1.04	0.005	0.004	0.54	0.55	0.43

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
590 (85,600)	650 (94,300)	24.9	-30 (-22)	45 (33)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Ar + 20-25% CO ₂	25 (1)	All Position				86-88
		4.4 (175)	22-27	110-140	1.6 (3.5)	
		5.1 (200)	23-28	120-150	1.8 (4.0)	
		6.4 (250)	24-29	130-160	2.3 (5.0)	
		7.6 (300)	24-29	160-190	2.7 (6.0)	
		8.9 (350)	25-30	170-200	3.2 (7.0)	
		9.5 (375)	25-30	190-220	3.4 (7.5)	
		Flat & Horizontal				86-88
		10.8 (425)	26-31	210-240	3.8 (8.5)	
		12.1 (475)	27-32	230-260	4.3 (9.5)	
		12.7 (500)	28-33	240-270	4.5 (10.0)	
		1.6mm (1/16 in) DC+				
Ar + 20-25% CO ₂	25 (1)	All Position				86-88
		3.8 (150)	22-27	170-200	2.5 (5.5)	
		4.4 (175)	23-28	180-210	2.9 (6.4)	
		5.1 (200)	24-29	200-230	3.3 (7.3)	
		5.7 (225)	24-29	230-260	3.7 (8.2)	
		6.4 (250)	25-30	250-280	4.2 (9.2)	
		6.9 (275)	25-31	270-300	4.6 (10.1)	
		Flat & Horizontal				86-88
		8.3 (325)	26-32	300-330	5.4 (11.9)	
		8.9 (350)	27-33	330-360	5.8 (12.8)	

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-71SR

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E71T1-C1A6-CS2 H4
E71T1-C1P6-CS2 H4

JIS Z3313 T49 4 T1-1 C AP H5

EN ISO 17632-A T42 4 P C 1 H5

ABS 4Y400SA H5

LR 4Y40S H5

BV SA4Y40 HHH

DNV IVY40MSH5

GL 4Y40H5S

CWB CSA W48 E491T-12J-H4
(-45 Degree)

CCS 4Y40S H5

Applications

- Pipe line
- Offshore structure
- Pressure vessel

Features

- Good impact value at low temperature (As Welded and PHWT)

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
mm (in)						
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.05	0.40	1.20	0.011	0.010	0.38

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	
560 (81,300)	580 (84,200)	28.0	-30 (-22) -40 (-40)	115 (85) 80 (59)	As Welded
540 (78,400)	560 (81,300)	30.0	-30 (-22) -40 (-40)	84 (62) 60 (44)	PWHT (620 @2hr)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
100% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	20-25	100-130	1.6 (3.5)		
		5.7 (225)	21-26	120-150	2.0 (4.5)		
		7.0 (275)	22-27	130-160	2.5 (5.5)		
		8.3 (325)	23-28	160-190	2.9 (6.5)		
		8.9 (350)	24-29	170-200	3.2 (7.0)		
		10.2 (400)	25-30	200-230	3.6 (8.0)		
		Flat & Horizontal					
		11.4 (450)	26-31	210-240	4.1 (9.1)		
		12.1 (475)	27-32	230-260	4.3 (9.5)		
		13.3 (525)	28-33	250-280	4.7 (10.4)		
		1.4mm (0.052 in) DC+					
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	130-160	1.8 (3.9)		
		5.1 (200)	23-28	140-170	2.4 (5.2)		
		6.4 (250)	24-29	160-190	2.9 (6.5)		
		7.6 (300)	26-31	180-210	3.5 (7.8)		
		8.9 (350)	27-32	200-230	4.1 (9.1)		
		9.5 (375)	28-33	220-250	4.4 (9.8)		
		Flat & Horizontal					
		10.8 (425)	30-35	240-270	5.0 (11.1)		
		12.1 (475)	31-36	260-290	5.6 (12.4)		
		12.7 (500)	32-37	310-340	5.9 (13.0)		

SC-71MSR

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E71T1-M21A5-CS2
E71T1-M21P5-CS2

EN ISO 17632-A T46 4 P M 1 H5

ABS 4Y400SA H5

LR 4Y40S H5

BV SA4Y40M HHH

DNV IVY40MSH5

GL 4Y40H5S

TÜV EN ISO 17632-A - T46 4 P M 1 H5

DB DIN EN ISO 17632-A-T 46 4 P M 2 H5

CE

CWB CSA W48 E491T-12MJ-H8

Applications

- Pipe line
- Offshore structure
- Pressure vessel

Features

- Good impact value at low temperature (As Welded and PHWT)

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
mm (in)						
1.2 (0.045)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.06	0.35	1.24	0.012	0.012	0.45

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	
542 (78,600)	577 (83,600)	30.0	-40 (-40) -51 (-60)	115 (85) 85 (63)	As Welded
523 (75,700)	552 (80,000)	33.0	-40 (-40) -51 (-60)	90 (66) 70 (52)	PWHT (620 @2hr)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	20-25	110-140	1.6 (3.5)		
		5.7 (225)	21-26	120-150	2.0 (4.5)		
		7.0 (275)	22-27	130-160	2.5 (5.5)		
		8.3 (325)	22-27	160-190	2.9 (6.5)		
		8.9 (350)	23-28	170-200	3.2 (7.0)		
		10.2 (400)	24-29	200-230	3.6 (8.0)		
		Flat & Horizontal					
		11.4 (450)	25-31	210-240	4.1 (9.1)		
		12.1 (475)	26-32	230-260	4.3 (9.5)		
13.3 (525)	27-33	250-280	4.7 (10.4)				

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-70ML

Type : Metal-Cored



Conformances

AWS A5.36/ ASME SFA5.36 E70T15-M21A4-CS1
JIS Z3313 T49 4 T15-1 M A-U H5
EN ISO 17632-A-T46 4 M M 2 H5
ABS 4Y400SA H5
LR 4Y40S H5
BV SA4Y40M HHH

DNV IVY40MS H5
GL 4Y40H5S
TÜV EN ISO 17362-A - T46 4 M M 2 H5
DB DIN EN ISO 17632-A-T46 4 M M 2 H5
CE
CWB CSA W48 E491C-6MJ-H4

Applications

- General fabrication
- Heavy equipment
- Offshore structure

Features

- Good impact value at low temperature
- Semi-automatic and automatic applications
- Good anti-porosity

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.05	0.57	1.56	0.013	0.010	0.42

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
510 (73,950)	560 (81,200)	27	-40 (-40)	70 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Flat & Horizontal						
80% Ar + 20% CO ₂	19-25 (3/4-1)	7.3 (288)	22 - 26	190~210	3.4 (7.6)	90~96
		9.7 (382)	23 - 27	240~260	4.5 (9.7)	
		12.2 (489)	24 - 30	280~310	5.9 (12.8)	
1.4mm (0.052 in) DC+						
Flat & Horizontal						
80% Ar + 20% CO ₂	19-25 (3/4-1)	6.7 (261)	22 - 26	250~270	3.8 (8.3)	91~96
		7.8 (307)	25 - 31	290~310	4.9 (10.4)	
		9.4 (370)	28 - 32	330~350	5.5 (12.0)	
1.6mm (1/16 in) DC+						
Flat & Horizontal						
80% Ar + 20% CO ₂	25-32 (1-1 1/4)	5.6 (220)	26 - 32	290~310	4.5 (9.3)	92~96
		6.8 (270)	29 - 33	340~350	5.6 (12.1)	
		7.8 (310)	31 - 34	350~370	6.7 (14.3)	

SMAW
 SAW
 GMAW
 GTAW
 FCAW
 Non-FERROUS
 APPENDIX

SC-80MR

Type : Metal-Cored

Conformances

AWS A5.36/ ASME SFA5.36 E80T15-M21A8-G

EN ISO 17632-A T 46 6 1.5Ni M M H5

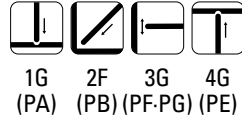
Applications

- Offshore structure
- Heavy equipment
- General fabrication

Features

- Suitable for root-pass and multipass welding
- Good impact value at low temperature
- Low spatter
- Good anti-porosity

Welding Position



Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.07	0.35	1.55	0.014	0.010	1.55

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
612 (88,700)	658 (95,400)	25.5	-60 (-76)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Flat & Horizontal						
80% Ar + 20% CO ₂	19-25 (3/4-1)	7.8 (307)	22-26	240-260	3.5 (7.5)	90-96
		9.4 (374)	22-27	270-290	4.0 (9.2)	
		10.3 (405)	23-27	300-320	4.5 (10.8)	
1.4mm (0.052 in) DC+						
Flat & Horizontal						
80% Ar + 20% CO ₂	19-25 (3/4-1)	7.2 (283)	24-28	280-300	4.1 (8.9)	94-98
		7.7 (303)	26-29	310-330	4.9 (10.8)	
		10.9 (410)	27-30	350-370	6.6 (14.2)	

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-81M

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-M21A4-Ni1 H4

Applications

- Construction machinery
- Bridge structures
- Mining

Features

- Smooth and stable arc with a fast freezing slag
- Good impact value at low temperature(@-40°C)
- Designed for welding with Ar+CO₂ mixture

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

Ar+20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)	✓	✓				
1.4 (0.052)	✓	✓				
1.6 (1/16)	✓	✓				

Typical Chemical Composition of All-Weld Metal(%)

C	Si	Mn	P	S	Ni
0.04	0.34	1.15	0.008	0.008	0.91

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.lbs)
550	590	26.0	-40 (-40)	96 (71)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
80%Ar+20% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	22-27	140	1.6 (3.5)		
		5.1 (200)	23-28	150	1.8 (4.0)		
		6.4 (250)	24-29	165	2.3 (5.0)		
		7.6 (300)	24-29	190	2.7 (6.0)		
		8.9 (350)	25-30	205	3.2 (7.0)		
		9.5 (375)	25-30	225	3.4 (7.5)		
		Flat & Horizontal					
		10.8 (425)	26-31	245	3.8 (8.5)		
		12.1 (475)	27-32	265	4.3 (9.5)		
12.7 (500)	28-33	275	4.5 (10.0)				
1.4mm (0.052in), DC +							
80%Ar+20% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	150	1.8 (3.9)		
		4.7 (180)	23-28	165	2.2 (4.8)		
		5.7 (225)	23-28	190	2.7 (5.9)		
		6.4 (250)	24-29	215	2.9 (6.5)		
		6.9 (275)	24-29	235	3.2 (7.2)		
		7.6 (300)	25-30	255	3.5 (7.8)		
		Flat & Horizontal					
		8.5 (335)	25-31	275	4.0 (8.7)		
		9.5 (375)	26-32	295	4.4 (9.8)		
10.2 (400)	26-33	310	4.7 (10.4)				
1.6mm (1/16 in) DC+							
80%Ar+20% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	200	2.5 (5.5)		
		4.4 (175)	23-28	210	2.9 (6.4)		
		5.1 (200)	24-29	235	3.3 (7.3)		
		5.7 (225)	24-29	265	3.7 (8.2)		
		6.4 (250)	25-30	285	4.2 (9.2)		
		6.9 (275)	25-31	305	4.6 (10.1)		
		Flat & Horizontal					
		8.3 (325)	26-32	335	5.4 (11.9)		
		8.9 (350)	27-33	365	5.8 (12.8)		

SWAW
SAW
GMAW
GTAW
FCAW
Non-FERROUS
APPENDIX

Supercored 81MAG

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E81T1-M21A8-Ni1 H4
E81T1-M21P5-Ni1 H4

EN ISO 17632-A T46 6 1Ni P M 2 H5

ABS 5Y400SA H5

LR 5Y40S H5

BV SA5Y40M HHH

CWB AWS A5.29 E81T1-Ni1M-H4 (-46 Degree)

DNV VY40MS H5

RINA 5Y40S H5

RS 5Y42SM H5

TÜV EN ISO 17632-A - T 46 6 1Ni P M 2 H5

DB DIN EN ISO 17632-A-T 46 6 1Ni P M 2 H5

CE

Applications

- Offshore structure
- Shipbuilding
- Mining
- Petrochemical industry

Features

- Good impact value at low temperature (as welded and PHWT)
- Low hydrogen level (H4)

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.05	0.28	1.20	0.008	0.012	0.93

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	
550 (79,900)	590 (85,700)	26.0	-60 (-76)	60 (44)	As welded
510 (74,100)	570 (82,800)	28.0	-40 (-40)	98 (72)	PWHT (620 @2hr)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	22-27	140	1.6 (3.5)		
		5.1 (200)	23-28	150	1.8 (4.0)		
		6.4 (250)	24-29	165	2.3 (5.0)		
		7.6 (300)	24-29	190	2.7 (6.0)		
		8.9 (350)	25-30	205	3.2 (7.0)		
		9.5 (375)	25-30	225	3.4 (7.5)		
		Flat & Horizontal					
		10.8 (425)	26-31	245	3.8 (8.5)		
		12.1 (475)	27-32	265	4.3 (9.5)		
12.7 (500)	28-33	275	4.5 (10.0)				
1.4mm (0.052 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	150	1.8 (3.9)		
		4.7 (180)	23-28	165	2.2 (4.8)		
		5.7 (225)	23-28	190	2.7 (5.9)		
		6.4 (250)	24-29	215	2.9 (6.5)		
		6.9 (275)	24-29	235	3.2 (7.2)		
		7.6 (300)	25-30	255	3.5 (7.8)		
		Flat & Horizontal					
		8.5 (335)	25-31	275	4.0 (8.7)		
		9.5 (375)	26-32	295	4.4 (9.8)		
10.2 (400)	26-33	310	4.7 (10.4)				
1.6mm (1/16 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	22-27	200	2.5 (5.5)		
		4.4 (175)	23-28	210	2.9 (6.4)		
		5.1 (200)	24-29	235	3.3 (7.3)		
		5.7 (225)	24-29	265	3.7 (8.2)		
		6.4 (250)	25-30	285	4.2 (9.2)		
		6.9 (275)	25-31	305	4.6 (10.1)		
		Flat & Horizontal					
		8.3 (325)	26-32	335	5.4 (11.9)		
		8.9 (350)	27-33	365	5.8 (12.8)		

SMAG

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 81-K2

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A8-K2 H4

JIS Z3313 T55 6 T1-1 C A-N3 H5

EN ISO 17632-A T46 6 1.5Ni P C 1 H5

KR 4Y40SG(C1) H5 (-60°C ≥47 J)

ABS 5Y400SA H5

LR 5Y40S H5

BV SA5Y40M HHH

DNV VY40MS H5, NV2-4L, 4-4L

CWB AWS A5.29 E81T1-K2C-H4 (-46 Degree)

NK KSW54Y40G(C)H5

(-60°C ≥47J, ≥34J (Butt))

CCS 5Y40S H5

RINA 5YS H10

RS 5Y40SM H5

GL 6Y40 H5S

CE

Applications

- Offshore
- Shipbuilding
- General fabrication

Features

- Good impact value at low temperature
- Smooth and stable arc with a fast freezing slag
- Low hydrogen level (H5)

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF-PG) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓	✓	✓	✓
1.4 (0.052)	✓	✓	✓	✓	✓	✓
1.6 (1/16)	✓	✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.04	0.35	1.35	0.012	0.011	1.50

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
540 (78,400)	620 (90,000)	28.0	-30 (-22) -60 (-76)	110 (81) 60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
100% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	23-28	140	1.6 (3.5)		
		5.1 (200)	24-29	150	1.8 (4.0)		
		6.4 (250)	25-30	165	2.3 (5.0)		
		7.6 (300)	25-30	190	2.7 (6.0)		
		8.9 (350)	26-31	205	3.2 (7.0)		
		9.5 (375)	26-31	225	3.4 (7.5)		
		10.8 (425)	27-32	245	3.8 (8.5)		
		Flat & Horizontal					
		12.1 (475)	28-33	265	4.9 (10.8)		
12.7 (500)	29-34	275	5.2 (11.4)				
1.4mm (0.052 in) DC+							
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	23-28	150	1.8 (3.9)		
		4.7 (180)	24-29	165	2.2 (4.8)		
		5.7 (225)	24-29	190	2.7 (5.9)		
		6.4 (250)	25-30	215	2.9 (6.5)		
		6.9 (275)	25-30	235	3.2 (7.2)		
		7.6 (300)	26-31	255	3.5 (7.8)		
		Flat & Horizontal					
		8.5 (335)	26-31	275	4.0 (8.7)		
		9.5 (375)	27-32	295	4.4 (9.8)		
10.2 (400)	27-34	310	4.7 (10.4)				
1.6mm (1/16 in) DC+							
100% CO ₂	25 (1)	All Position					86-88
		3.8 (150)	24-29	200	2.5 (5.5)		
		4.4 (175)	24-30	210	2.9 (6.4)		
		5.1 (200)	25-30	235	3.3 (7.3)		
		5.7 (225)	25-31	265	3.7 (8.2)		
		6.4 (250)	26-31	285	4.2 (9.2)		
		6.9 (275)	26-32	305	4.6 (10.1)		
		Flat & Horizontal					
		8.3 (325)	27-32	335	5.4 (11.9)		
		8.9 (350)	28-34	365	5.8 (12.8)		

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-460

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A6-K2
JIS Z3313 T55 6 T1-1 C A-N3 H5
EN ISO 17632-A T46 6 1.5Ni P C 1 H5
KR 5Y46SG(C1) H5
ABS 5YQ460SA H5
LR 5Y46 H5

BV SA5Y46 HHH
DNV VY46MS(H5)
GL 6Y46 H5
NK KSW5Y46G(C)H5
KSW63Y47G(C)H5
(-20°C≥53J)

Applications

- Shipbuilding
- Structural fabrication
- Offshore structure

Features

- Good impact value at low temperature service steel
- Low hydrogen level (H5)
- High tensile steel (EH47 Grade)

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.06	0.35	1.20	0.008	0.011	1.50

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
580 (84,200)	630 (91,400)	26.0	-60 (-76)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	All Position				86-88
		4.4 (175)	23-28	120-140	1.6 (3.5)	
		5.1 (200)	24-29	130-150	1.8 (4.0)	
		6.4 (250)	25-30	140-160	2.3 (5.0)	
		7.6 (300)	25-30	160-190	2.7 (6.0)	
		8.9 (350)	26-31	190-210	3.2 (7.0)	
		9.5 (375)	26-31	210-230	3.4 (7.5)	
		10.8 (425)	27-32	220-240	3.8 (8.5)	
		Flat & Horizontal				
		12.1 (475)	28-33	240-270	4.9 (10.8)	
12.7 (500)	29-34	250-280	5.2 (11.4)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	All Position				86-88
		3.8 (150)	23-28	120-150	1.8 (3.9)	
		4.7 (180)	24-29	150-170	2.2 (4.8)	
		5.7 (225)	24-29	170-190	2.7 (5.9)	
		6.4 (250)	25-30	190-210	2.9 (6.5)	
		6.9 (275)	25-30	210-240	3.2 (7.2)	
		7.6 (300)	26-31	220-250	3.5 (7.8)	
		Flat & Horizontal				
		8.5 (335)	26-31	250-280	4.0 (8.7)	
		9.5 (375)	27-32	280-300	4.4 (9.8)	
10.2 (400)	27-34	290-310	4.7 (10.4)			

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-81LT

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A6-K2

JIS Z3313 T55 6 T1-1 C A-N3 H5

EN ISO 17632-A T46 6 1.5Ni P C 1 H5

ABS 5Y, 5Y400SA H5

LR 5Y40S H5

DNV VY40MSH5, NV4-4L

Applications

- Shipbuilding
- Offshore structure
- Structural fabrication

Features

- Good impact value at low temperature
- Smooth and stable arc with a fast freezing slag
- Good CTOD value

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓					
1.4 (0.052)	✓					

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.04	0.26	1.20	0.010	0.010	1.50

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
520 (75,500)	610 (88,600)	28.0	-40 (-40) -60 (-76)	120 (89) 85 (63)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	All Position				86-88
		4.4 (175)	23-28	120-140	1.6 (3.5)	
		5.1 (200)	24-29	130-150	1.8 (4.0)	
		6.4 (250)	25-30	140-160	2.3 (5.0)	
		7.6 (300)	25-30	160-190	2.7 (6.0)	
		8.9 (350)	26-31	190-210	3.2 (7.0)	
		9.5 (375)	26-31	210-230	3.4 (7.5)	
		10.8 (425)	27-32	220-240	3.8 (8.5)	
		Flat & Horizontal				
		12.1 (475)	28-33	240-270	4.9 (10.8)	
12.7 (500)	29-34	250-280	5.2 (11.4)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	All Position				86-88
		3.8 (150)	23-28	120-150	1.8 (3.9)	
		4.7 (180)	24-29	150-170	2.2 (4.8)	
		5.7 (225)	24-29	170-190	2.7 (5.9)	
		6.4 (250)	25-30	190-210	2.9 (6.5)	
		6.9 (275)	25-30	210-240	3.2 (7.2)	
		7.6 (300)	26-31	220-250	3.5 (7.8)	
		Flat & Horizontal				
		8.5 (335)	26-31	250-280	4.0 (8.7)	
		9.5 (375)	27-32	280-300	4.4 (9.8)	
10.2 (400)	27-34	290-310	4.7 (10.4)			

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-81Ni2

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1A8-Ni2
JIS Z3313 T55 6 T1-1 C A-N5 H5
EN ISO 17632-A T46 6 2Ni P C 1 H5
KR 5Y46SG(C1) H5
ABS 5YQ460SA H5

BV SA5Y46 HHH
DNV VY46MS(H5)
GL 6Y46S H5
NK KSW63Y47G(C)H5

Applications

- Shipbuilding
- Offshore structure
- Structural fabrication

Features

- Good impact value at low temperature
- Good CTOD value

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓				✓	
1.4 (0.052)	✓				✓	

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.05	0.27	1.21	0.010	0.010	2.20

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
590 (85,600)	630 (91,400)	25.0	-40 (-40) -60 (-76)	100 (74) 80 (59)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	25 (1)	All Position				86-88
		4.4 (175)	23-28	110-140	1.6 (3.5)	
		5.1 (200)	24-29	120-150	1.8 (4.0)	
		6.4 (250)	25-30	130-160	2.3 (5.0)	
		7.6 (300)	25-30	160-190	2.7 (6.0)	
		8.9 (350)	26-31	170-210	3.2 (7.0)	
		9.5 (375)	26-31	190-230	3.4 (7.5)	
		10.8 (425)	27-32	220-250	3.8 (8.5)	
		Flat & Horizontal				
		12.1 (475)	28-33	240-270	4.9 (10.8)	
12.7 (500)	29-34	250-280	5.2 (11.4)			
1.4mm (0.052 in) DC+						
100% CO ₂	25 (1)	All Position				86-88
		3.8 (150)	23-28	120-150	1.8 (3.9)	
		4.7 (180)	24-29	130-160	2.2 (4.8)	
		5.7 (225)	24-29	160-190	2.7 (5.9)	
		6.4 (250)	25-30	190-220	2.9 (6.5)	
		6.9 (275)	25-30	200-230	3.2 (7.2)	
		7.6 (300)	26-31	220-250	3.5 (7.8)	
		Flat & Horizontal				
		8.5 (335)	26-31	240-270	4.0 (8.7)	
		9.5 (375)	27-32	260-290	4.4 (9.8)	
10.2 (400)	27-34	280-310	4.7 (10.4)			

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-81Ni2M

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-M21A8-Ni2

JIS Z3313 T55 6 T1-1 M A-N5 H5

EN ISO 17632-A T46 6 2Ni P M 2 H5

DNV VY46MS(H5)

BV SA5Y46 HHH

Applications

- Offshore structure
- Shipbuilding

Features

- Good impact value at low temperature
- Good CTOD value

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
1.2 (0.045)	✓					
1.4 (0.052)	✓					

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.05	0.24	1.15	0.010	0.010	2.25

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
580 (84,200)	620 (90,000)	24.8	-50 (-58) -60 (-76)	110 (81) 90 (66)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	23-28	110-140	1.6 (3.5)		
		5.1 (200)	24-29	120-150	1.8 (4.0)		
		6.4 (250)	25-30	130-160	2.3 (5.0)		
		7.6 (300)	25-30	160-190	2.7 (6.0)		
		8.9 (350)	26-31	170-200	3.2 (7.0)		
		9.5 (375)	26-31	190-220	3.4 (7.5)		
		10.8 (425)	27-32	210-240	3.8 (8.5)		
		Flat & Horizontal					
		12.1 (475)	28-33	230-260	4.9 (10.8)		
12.7 (500)	29-34	240-270	5.2 (11.4)				

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 81-K2MAG

Type : Rutile



Conformances

AWS A5.36/ ASME SFA5.36 E81T1-M21A8-K2
JIS Z3313 T55 6 T1-1 M A-N3 H5
EN ISO 17632-A T46 6 1.5Ni P M 2 H5
ABS 5Y400SA H5
LR 5Y40S H5
BV SA5Y40M HHH

DNV VY40MS H5
GL 6Y40S H5
RS 5Y42SM H5
TÜV EN ISO 17632-A - T46 6 1.5 Ni P M 2
CE
DB DIN EN ISO 17632-A-T46 6 1.5Ni P M 2

Applications

- Offshore structure
- Shipbuilding

Features

- Good impact value at low temperature
- Smooth arc and low spatter level

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	100kg (221lbs)	200kg (441lbs)	250kg (551lbs)
mm (in)						
1.2 (0.045)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.03	0.35	1.25	0.012	0.010	1.55

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
590 (85,600)	610 (88,500)	27.0	-30 (-22) -60 (-76)	110 (81) 70 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)	
1.2mm (0.045 in) DC+							
80% Ar + 20% CO ₂	25 (1)	All Position					86-88
		4.4 (175)	20-25	110-140	1.6 (3.5)		
		5.7 (225)	21-26	120-150	2.0 (4.5)		
		7.0 (275)	22-27	130-160	2.5 (5.5)		
		8.3 (325)	22-27	160-190	2.9 (6.5)		
		8.9 (350)	23-28	170-200	3.2 (7.0)		
		10.2 (400)	24-29	200-230	3.6 (8.0)		
		Flat & Horizontal					
		11.4 (450)	25-31	210-240	4.1 (9.1)		
		12.1 (475)	26-32	230-260	4.3 (9.5)		
13.3 (525)	27-33	250-280	4.7 (10.4)				

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-80K2

Type : Semi-Metal

Conformances

AWS A5.36/ ASME SFA5.36 E80T1-C1A8-K2 H4

JIS Z3313 T55 6 T15-0 C A-N3 H5

EN ISO 17632-A-T 46 6 1.5Ni R C 3 H5

KR RSW54Y40MG(C)HHH

ABS 5Y400SA H5

LR 4Y40S H5

BV SA5Y40 HHH

DNV VY40MS H5, NV4-4L

GL 6Y40 H5S

NK KAW54Y40MG(C),
KSW54Y40MG(C)H5
(-60°C≥34J)

RS 5Y40S H5

Applications

- LPG and LNG storage tank
- Shipbuilding
- Offshore structure

Features

- High speed single or twin tandem welding
- H5 diffusible hydrogen levels
- Low temperature service

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	500kg (771lbs)
1.2 (0.045)		✓		✓	✓	✓
1.4 (0.052)		✓		✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Ni
0.06	0.43	1.45	0.011	0.008	1.57

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
550 (79,900)	590 (85,700)	25	-60 (-76)	53 (39)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
100% CO ₂	20-25 (51/64~1)	10.4 (410)	26	200	3.5 (7.7)	85-87
		12.7 (500)	30	250	4.7 (10.4)	87-89
		15.3 (600)	33	300	6.3 (13.9)	91-93
1.4mm (0.052 in) DC+						
100% CO ₂	20-25 (51/64~1)	12.0 (470)	31	300	5.6 (12.3)	90-92
		13.3 (520)	36	350	6.7 (14.8)	91-93

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-81B2

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E81T1-C1PZ-B2

EN ISO 17632-A-T CrMo1 P C 2

Applications

- Petrochemical industry
- Pressure vessel

Features

- Stable arc and low spatter level

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.2 (0.045)	✓
1.4 (0.052)	✓
1.6 (1/16)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Mo
0.066	0.41	0.83	0.016	0.017	1.19	0.51

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	PWHT
575 (83,500)	656 (95,200)	22.4	690±15°C X 1Hr

Typical Operating Procedures

Diameter in (mm)	Amp-Volt Range	Typical	Stickout in (mm)
1.2 (0.045) DC+	150 ~ 260A 24-30V	200A 26V	15 ~ 25 (5/8 ~ 1)
1.4 (0.052) DC+	180 ~ 280A 25-32V	220A 26V	15 ~ 25 (5/8 ~ 1)
1.6 (1/16) DC+	200 ~ 300A 25-32V	240A 27V	15 ~ 25 (5/8 ~ 1)

SC-91B3

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36E91T1-C1PZ-B3

EN ISO 17632-A-T CrMo2 P C 2

Applications

- Petrochemical industry
- Pressure vessel

Features

- Stable arc and low spatter level

Welding Position



1G (PA) 2F (PB) 3G (PF) 4G (PE)

Current

DC +

Shielding Gas

100% CO₂

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.2 (0.045)	√
1.4 (0.052)	√
1.6 (1/16)	√

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Mo
0.063	0.47	0.83	0.022	0.017	2.32	0.99

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	PWHT
643 (93,300)	730 (106,000)	20.0	690±15°C X 1Hr

Typical Operating Procedures

Diameter in (mm)	Amp-Volt Range	Typical	Stickout in (mm)
1.2 (0.045) DC+	150 ~ 260A	200A	15 ~ 25
	24~30V	26V	(5/8 ~ 1)
1.4 (0.052) DC+	180 ~ 280A	220A	15 ~ 25
	25~32V	26V	(5/8 ~ 1)
1.6 (1/16) DC+	200 ~ 300A	240A	15 ~ 25
	25~32V	27V	(5/8 ~ 1)

SC-91B9

Type : Rutile

Conformances

AWS A5.36/ ASME SFA5.36 E91T1-C1PZ-B91 H4
E91T1-M21PZ-B91 H4

Applications

- Petrochemical industry
- Pressure vessel

Features

- Good performance in all positions
- Good heat-resistance(P91 grade steel)

Welding Position



1G (PA) 2F (PB) 3G (PF) 4G (PE)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂
100% CO₂

Diameter / Packaging

Diameter	Spool		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)
1.2 (0.045)	✓	✓	✓
1.6 (1/16)		✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	Cr	Ni	Mo	V	Nb	N	HDM (ml/100g)
0.09	0.1	0.5	9.0	0.5	1.0	0.2	0.05	0.03	2.01

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Condition
560 (81,300)	740 (107,400)	21	20 (68)	30 (22)	SR1:2h/760°C

Typical Operating Procedures

Diameter in (mm)	Amp-Volt Range	Typical	Stickout in (mm)
1.2 (0.045) DC+	150 ~ 260A 24~30V	200A 26V	15 ~ 25 (5/8 ~ 1)
1.4 (0.052) DC+	180 ~ 280A 25~32V	220A 26V	15 ~ 25 (5/8 ~ 1)
1.6 (1/16) DC+	200 ~ 300A 25~32V	240A 27V	15 ~ 25 (5/8 ~ 1)

SC-80D2

Type : Metal-Cored

Conformances

AWS A5.36/ ASME SFA5.36 E80T15-M21A0-G

JIS Z3318 YFM-G

EN ISO 17632-A-T 46 0 MnMo M M 3

Applications

- Heavy equipment
- Petrochemical industry
- Pressure vessel

Features

- Smooth and stable arc
- Low spatter
- Good crack resistance
- Good impact value
- Good porosity resistance

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
mm (in)	✓	✓	✓	✓	✓	✓
1.2 (0.045)	✓	✓	✓	✓	✓	✓

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Mo
0.05	0.60	1.65	0.012	0.010	0.51

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
590 (85,600)	660 (95,700)	28	-20 (-4)	70 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Flat & Horizontal						
80% Ar + 20% CO ₂	19-25 (3/4-1)	7.8 (307)	22~26	240~260	3.5 (7.5)	90~96
		9.4 (374)	22~27	270~290	4.0 (9.2)	
		10.3 (405)	23~27	300~320	4.5 (10.8)	

Supercored 1CM

Type : Metal-Cored

Conformances

AWS A5.36/ ASME SFA5.36 E80T15-M21PZ-G(B2)

JIS Z3318 YF1CM-G

EN ISO 17634-A-T CrMo1 M M 3

Applications

- Petrochemical industry
- Pressure vessel

Features

- Smooth and stable arc
- Low spatter
- Good porosity resistance

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
mm (in)	✓	✓	✓	✓	✓	✓
1.2 (0.045)	✓	✓	✓	✓	✓	✓

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Mo
0.07	0.39	0.81	0.013	0.010	1.25	0.51

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	PWHT
560 (81,300)	630 (91,400)	20	0 (32)	90 (66)	620/1Hr
510 (74,100)	600 (87,100)	25	0 (32)	110 (81)	620/8Hr

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.2mm (0.045 in) DC+						
Flat & Horizontal						
80% Ar + 20% CO ₂	19-25 (3/4-1)	9.5 (374)	26-29	230-250	3.9 (8.6)	90-96
		12.2 (480)	28-31	280-300	5.3 (11.6)	
		14.8 (582)	30-33	320-340	6.5 (14.2)	

Supershield 11

Type : Self-Shielded

Conformances

AWS A5.36/ ASME SFA5.36 E71T11-AZ-CS3

JIS Z3313 T49 T14-1 N A

EN ISO 17632-A-T 42 Z Z Z N 1

Applications

- General fabrication
- Galvanized steel
- Civil construction

Features

- All position self-shielded flux cored wire
- Single & multi-pass welding of thin plate

Welding Position



1G (PA) 2F (PB) 3G (PF) 4G (PE)

Current

DC -

Shielding Gas

No shielding gas

Diameter / Packaging

Diameter mm (in)	Spool	
	15kg (33lbs)	20kg (44lbs)
1.0 (0.040)	✓	✓
1.2 (0.045)	✓	✓
1.4 (0.052)	✓	✓
1.6 (1/16)	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Al
0.19	0.35	0.6	0.011	0.006	1.2

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)
520 (75,400)	590 (85,500)	21

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.6mm (1/16 in) DC+						
No shielding gas	25 (1)	2.5 (98)	14~18	130~180	0.9 (2.0)	77~81
		3.4 (134)	16~20	180~240	1.2 (2.6)	
		4.0 (157)	18~23	220~280	2.2 (4.8)	

SMW

SAW

GMW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supershield 71GS

Type : Self-Shielded

Conformances

AWS A5.36/ ASME SFA5.36 E70TGS

JIS Z3313 T49 T14-1 N S

EN ISO 17632-A-T 42 Z Z V N 1

Applications

- General fabrications
- Galvanized steel
- Civil construction

Features

- All position self-shielded flux cored wire
- Single pass welding of thin plate

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC -

Shielding Gas

No shielding gas

Diameter / Packaging

Diameter mm (in)	Spool	
	15kg (33lbs)	20kg (44lbs)
1.0 (0.040)	√	√
1.2 (0.045)	√	√
1.4 (0.052)	√	√
1.6 (1/16)	√	√

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Al
0.26	0.5	0.91	0.016	0.014	2.05

Typical Mechanical Properties of All-Weld Metal

	AS welded
Transverse Tensile Strength MPa(psi) (Specimen broken in the base metal)	586 (85,000)
Longitudinal Guided Bend Test	Satisfactory

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
1.6mm (1/16 in) DC+						
No shielding gas	25 (1)	2.4 (94)	14~18	130~180	0.9 (2.0)	76~80
		3.3 (130)	16~20	180~240	1.1 (2.4)	
		4.0 (157)	18~23	220~280	2.1 (4.6)	

Supershield 4

Type : Self-Shielded

Conformances

AWS A5.36/ ASME SFA5.36 E70T4-AZ-CS3

EN ISO 17632-A-T 42 Z Z W N 3

Applications

- Heavy equipment
- Machinery

Features

- High deposition rate
- Good crack resistance
- Good porosity resistance

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

No shielding gas

Diameter / Packaging

Diameter	Spool	Coil
mm (in)	12.5kg (28lbs)	25kg (55lbs)
2.0 (0.078 in)	✓	✓
2.4 (0.094 in)	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Al
0.19	0.38	0.4	0.012	0.010	1.25

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)
465 (67,400)	610 (88,400)	24

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)
2.0mm (0.078 in) DC+						
No shielding gas	50 (2)	5.1 (200)	29-31	260-300	1.6 (3.5)	81-84
		6.1 (240)	30-32	290-330	2.3 (5.1)	
		6.6 (260)	30-32	310-350	2.6 (5.7)	
		7.6 (300)	31-33	330-370	3.1 (6.8)	
2.4mm (0.094 in) DC+						
No shielding gas	76 (3)	2.8 (110)	28-30	230-270	2.0 (4.3)	80-85
		3.8 (150)	29-31	280-320	2.5 (5.5)	
		4.7 (185)	30-32	330-370	3.0 (6.6)	
		5.8 (230)	31-33	380-420	4.2 (9.2)	
		7.0 (275)	32-34	430-470	5.6 (12.3)	

Supershield EG-72T

Type : Self-Shielded

Conformances

AWS A5.26/ ASME SFA5.26 EG72T-1

Applications

- Storage tank
- Pressure vessels

Features

- Electro gas arc welding(EGW)
- Vertical-up, V-groove & Square Butt joint single pass EGW process

Welding Position



3G
(PF)

Current

DC +

Shielding Gas

No shielding gas

Diameter / Packaging

Diameter	Coil
mm (in)	25kg (55lbs)
2.4 (3/32)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Mo
0.05	0.35	1.45	0.008	0.009	0.25

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
520 (75,400)	590 (85,600)	27	-30 (-20)	45 (33)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.4mm (3/32 in) DC+					
No shielding gas	38 (1.49)	6.4 (250)	34	380~450	10 (22.0)
		7.6 (300)	36	450~480	12 (26.5)
		8.9 (350)	38	480~550	15 (33.1)
		10.2 (400)	45	550~600	18 (39.7)

Supershield EG-82T

Type : Self-Shielded

Conformances

AWS A5.26/ ASME SFA5.26 EG82T-G

Applications

- Storage tank
- Pressure vessels

Features

- Electro gas arc welding (EGW)
- Vertical- up, V-groove & Square Butt joint single pass EGW process
- Good impact value at low-temperature

Welding Position



3G
(PF)

Current

DC +

Shielding Gas

No shielding gas

Diameter / Packaging

Diameter	Coil
mm (in)	25kg (55lbs)
2.4 (3/32)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Mo	Ni
0.05	0.26	1.50	0.009	0.010	0.35	0.98

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
550 (80,000)	640 (92,900)	25	-40 (-40)	55 (41)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.4mm (3/32 in) DC+					
No shielding gas	38 (1.49)	6.4 (250)	34	380-450	10 (22.0)
		7.6 (300)	36	450-480	12 (26.5)
		8.9 (350)	38	480-550	15 (33.1)
		10.2 (400)	45	550-600	18 (39.7)

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

SW-410 Cored

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E410T1-1/-4

JIS Z3323 TS410-FB1

Applications

- 410, 410S, 405 stainless steels
- Welding of ASTM CA6NM castings

Features

- Weld metal of martensite stainless steel
- Good hardness and anti-abrasion properties

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.8 (0.033)						
0.9 (0.035)						
1.0 (0.040)						
1.2 (0.045)		√	√			
1.4 (0.052)						
1.6 (1/16)		√	√			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo	Cu
100% CO ₂	0.07	0.5	0.4	0.008	0.01	12.5	0.4	0.01	0.03
80% Ar + 20% CO ₂	0.06	0.5	0.4	0.008	0.008	12.5	0.4	0.01	0.03

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Heat Treatment
100% CO ₂	610 (88,500)	23	0 (32)	14 (10)	750°C X 1hr
80% Ar + 20% CO ₂	600 (87,000)	23	0 (32)	13 (9)	

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (0.78)	12.7 (500)	29-31	260	1.3 (2.86)
		16 (628)	30-32	280	1.5 (3.30)
		16.5 (648)	31-33	300	1.8 (3.96)
1.6mm (1/16 in) DC+					
80% Ar + 20% CO ₂	20 (0.78)	7.6 (300)	31-33	300	1.7 (3.74)
		8.0 (314)	32-34	320	2.0 (4.40)
		8.9 (350)	32-34	340	2.3 (5.07)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-307NS Cored

Type : Rutile

Conformances

EN ISO 17633-A-T 18 8 Mn M M

Applications

- Joining and overlay applications on 13Mn steels
- Cladding Carbon steels
- Welding of dissimilar steels (high Mn to carbon steel)

Features

- Flat and horizontal fillet position welding
- High deposition rate and efficiency

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 2% O₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)		✓	✓	✓	✓	✓
1.6 (1/16)		✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Mo
0.07	0.6	7.3	0.021	0.008	18.3	8.6	0.1

Typical Mechanical Properties of All-Weld Metal

TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
610 (88,500)	23	-20 (-4) -60 (-76)	106 (78) 71 (52)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 2% O ₂	20 (0.78)	5.5 (216)	23-25	190	4.2 (9.1)
		6.6 (260)	25-27	220	5 (10.9)
		8.1 (320)	26-28	250	6 (13.0)

SW-308L Cored

Type : Rutile



Conformances

AWS A5.22/ ASME SFA5.22 E308LT1-1/-4
 JIS Z3323 TS308L-FB1
 EN ISO 17633-A-T 199 L P M/C 2
 ABS AWS A5.22 E308LT1-1 (-120°C 29J)
 LR 304L (-120°C)
 BV UP (KV -120°C)
 DNV 308L (-120°C)

NK KW308LG(C)
 TÜV EN ISO 17633-A - T 199 L P M21/C12
 CWB AWS A5.22 E308LT1-1/4
 CE
 DB DIN EN ISO 17633-A-T 199 L P M/C 2
 RS A-5(304L) (C1)

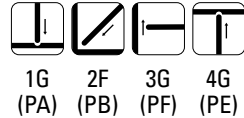
Applications

- 18%Cr-8%Ni stainless steel

Features

- Good porosity resistance
- Good performance in all positions

Welding Position



Current

DC +

Shielding Gas

100% CO₂
 Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)		✓	✓			

SMW

SAW

GMW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.70	1.40	0.02	0.01	19.0	9.6	0.05
80% Ar + 20% CO ₂	0.03	0.80	1.50	0.02	0.01	19.5	9.7	0.05

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)	Ferrite Number
100% CO ₂	550 (79,750)	44	-20 (4)	60 (44)	8-11
80% Ar + 20% CO ₂	560 (81,200)	43	-20 (4)	50 (37)	8-11

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.8 (8.4)
		12.0 (472)	28-31	210	4.6 (10.1)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.7 (5.9)
		9.0 (354)	27-30	180	3.7 (8.3)
		12.0 (472)	27-30	210	4.8 (10.6)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.7 (146)	24-27	180	3.0 (6.6)
		6.4 (250)	25-28	250	4.5 (9.9)
		8.9 (350)	26-29	290	5.5 (12.1)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.1 (6.8)
		6.4 (250)	25-28	250	4.6 (10.1)
		8.9 (350)	26-29	290	5.7 (12.6)

SW-308LT

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E308LT1-1/-4

JIS Z3323 TS308L-FB1

EN ISO 17633-A-T 199 L P M/C 2

ABS AWS A5.22 E308LT1-1
(-196°C ≥27 J)

Applications

- Cryogenic service such as LNG storage tank
- 18% Cr-8%Ni stainless steels

Features

- Good impact value at cryogenic temperatures
- Good performance in all positions

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
mm (in)						
1.2 (0.045)	√	√	√			

SMW

SAW

GMW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.50	1.50	0.02	0.01	18.5	9.9	0.05
80% Ar + 20% CO ₂	0.03	0.59	1.60	0.02	0.01	19.0	10.0	0.05

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)	Ferrite Number
100% CO ₂	540 (78,300)	48	-196 (-321)	35 (26)	4-6
80% Ar + 20% CO ₂	550 (79,750)	49	-196 (-321)	35 (26)	4-6

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.6 (5.7)
		9.2 (362)	27-30	180	3.5 (7.7)
		12.2 (480)	28-31	210	4.8 (10.6)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.6 (7.9)
		12.0 (472)	27-30	210	4.9 (10.8)

SW-309L Cored

Type : Rutile



Conformances

AWS A5.22/ ASME SFA5.22 E309LT1-1/-4
 JIS Z3323 TS309L-FB1
 EN ISO 17633-A-T 23 12 L P M/C 2
 KR RW309LG (C) (-20°C ≥34J)
 ABS AWS A5.22 E309LT1-1
 LR SS/CMn
 BV 309L with KV at -20°C (-20°C ≥34J)
 DNV 309L

GL 4332S
 NK KW309LG(C)
 TÜV EN ISO 17633-A - T23 12 L P M21/C12
 CWB AWS A5.22 E309LT1-1/4
 CE
 DB DIN EN ISO 17633-A-T23 12 L P M/C2
 RS A-9sp(309) (C1)

Applications

- 23.5%Cr-13%Ni stainless steels
- Dissimilar welds between carbon, low alloy steels to stainless steels
- Buffer layer welding for cladding, overlays

Features

- Good performance in all positions

Welding Position



1G 2F 3G 4G
 (PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂
 Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)		✓	✓			

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.75	1.20	0.02	0.01	22.8	12.3	0.05
80% Ar + 20% CO ₂	0.03	0.80	1.30	0.02	0.01	23.0	12.5	0.05

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)	Ferrite Number
100% CO ₂	560 (81,200)	40	-20 (4)	50 (37)	16-19
80% Ar + 20% CO ₂	580 (84,100)	39	-20 (4)	45 (33)	16-19

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.3 (248)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.7 (8.2)
		12.2 (480)	28-31	210	4.7 (10.4)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.8 (6.2)
		9.0 (354)	27-30	180	3.8 (8.4)
		12.0 (472)	27-30	210	4.9 (10.8)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.7 (146)	24-27	180	3.0 (6.6)
		6.4 (252)	25-28	250	4.6 (10.1)
		8.8 (346)	26-29	290	5.7 (12.6)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.2 (7.1)
		6.3 (248)	25-28	250	4.7 (10.4)
		8.8 (346)	26-29	290	5.9 (13.0)

SW-309LNS Cored

Type : Metal-Cored

Conformances

AWS A5.9/ ASME SFA5.9 EC309L
 JIS Z3323 TS309L-MA0
 EN ISO 17633-A-T 23 12 L M M

Applications

- Automotive mufflers
- Welding of dissimilar metals such as stainless and carbon a low alloy steels

Features

- Non-slag type
- Low spatter

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 2% O₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)		✓	✓	✓	✓	✓
1.6 (1/16)		✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Mo	Cu
0.025	0.5	1.8	0.02	0.01	24.0	13.0	0.13	0.12

Typical Mechanical Properties of All-Weld Metal

TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
590 (85,600)	45	-20 (-4)	60 (44)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 2% O ₂	20 (0.78)	5.5 (216)	23-25	190	4.2 (9.1)
		6.6 (260)	25-27	220	5 (10.9)
		8.1 (320)	26-28	250	6 (13.0)

SW-309MoL Cored

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E309LMoT1-1/-4
JIS Z3323 TS309LMo-FB1
EN ISO 17633-A-T 23 12 2 L P M/C 2
CWB AWS A5.22 E309LMoT1-1

DNV 309MoL (-20°C)
GL 4459S
NK KW309MoLG(C)

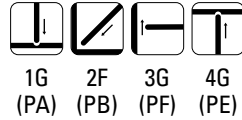
Applications

- 22%Cr-12%Ni-2.5%Mo stainless steels
- Dissimilar welds between carbon, low alloy steels to stainless steels
- Buffer layer welding for cladding, overlays

Features

- Good performance in all positions

Welding Position



Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.60	1.40	0.02	0.01	22.3	12.3	2.3
80% Ar + 20% CO ₂	0.03	0.70	1.50	0.02	0.01	23.5	12.5	2.4

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	680 (98,600)	31	-20 (4)	45 (33)	17-20
80% Ar + 20% CO ₂	690 (100,050)	32	-20 (4)	50 (37)	17-20

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23-26	140	2.5 (5.5)
		9.0 (354)	27-30	180	3.6 (7.9)
		12.0 (472)	28-31	210	4.6 (10.1)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.6 (5.7)
		9.1 (358)	27-30	180	3.6 (7.9)
		12.0 (472)	27-30	210	4.7 (10.4)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.8 (150)	24-27	180	2.9 (6.4)
		6.2 (244)	25-28	250	4.4 (10.1)
		8.8 (346)	26-29	290	5.6 (12.3)
80% Ar + 20% CO ₂	25 (1)	3.6 (142)	24-27	180	3.1 (6.8)
		6.3 (248)	25-28	250	4.5 (9.9)
		8.7 (343)	26-29	290	5.5 (12.1)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-316L Cored

Type : Rutile



Conformances

AWS A5.22/ ASME SFA5.22 E316LT1-1/-4

JIS Z3323 TS316L-FB1

EN ISO 17633-A-T 19 12 3 L P M/C 2

KR RW316LG (C) (-60°C ≥34J)

ABS AWS A5.22 E316LT1-1/-4

TÜV EN ISO 17633-A - T 19 12 3 L P M21/C1 2

DB DIN EN ISO 17633-A-T 19 12 3 L P M/C 2

LR 316L

BV 316L (-60°C)

DNV 316L

GL 4435S

NK KW316LG(C)

CWB AWS A5.22 E316LT1-1/-4

CE

RS A-6(316L) (C1)

Applications

- 18%Cr-12%Ni-2%Mo stainless steels

Features

- Good performance in all positions

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.4 (0.052)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.75	1.20	0.02	0.01	17.5	11.8	2.7
80% Ar + 20% CO ₂	0.03	0.80	1.30	0.02	0.01	18.0	12.0	2.8

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	560 (81,200)	42	-20 (4)	45 (33)	8-9
80% Ar + 20% CO ₂	570 (82,650)	41	-20 (4)	40 (30)	8-9

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23-26	140	2.5 (5.5)
		9.2 (362)	27-30	180	3.4 (7.5)
		12.0 (472)	28-31	210	4.5 (9.9)
80% Ar + 20% CO ₂	20 (4/5)	6.1 (240)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.6 (7.9)
		11.5 (453)	27-30	210	4.6 (10.1)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.8 (150)	24-27	180	3.0 (6.6)
		6.5 (256)	25-28	250	4.6 (10.1)
		8.9 (350)	26-29	290	5.9 (13.0)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.1 (6.8)
		6.4 (250)	25-28	250	4.8 (10.6)
		8.8 (346)	26-29	290	6.1 (13.4)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-316LT

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E316LT1-1/-4

JIS Z3323 TS316L-FB1

EN ISO 17633-A-T 19 12 3 L P M/C 2

Applications

- Cryogenic service such as LNG storage tank
- 18% Cr-12%Ni-2%Mo stainless steels

Features

- Good impact value at cryogenic temperature
- Good performance in all position

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
mm (in)						
1.2 (0.045)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.60	1.60	0.02	0.01	17.5	12.0	2.2
80% Ar + 20% CO ₂	0.03	0.70	1.80	0.02	0.01	17.8	12.2	2.3

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	540 (78,300)	40	-196 (-321)	35 (26)	4-5
80% Ar + 20% CO ₂	545 (79,025)	42	-196 (-321)	35 (26)	4-5

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23-26	140	2.6 (5.7)
		9.1 (358)	27-30	180	3.5 (7.7)
		12.2 (480)	28-31	210	4.6 (10.1)
80% Ar + 20% CO ₂	20 (4/5)	6.0 (236)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.6 (7.9)
		12.0 (472)	27-30	210	4.6 (10.1)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-317L Cored

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E317LT1-1/-4

JIS Z3323 TS317L-FB1

Applications

- 316, 317 type stainless steels

Features

- Good performance in all positions

Welding Position



1G (PA) 2F (PB) 3G (PF) 4G (PE)

Current

DC +

Shielding Gas

100% CO₂

Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.65	1.40	0.02	0.01	18.8	12.3	3.3
80% Ar + 20% CO ₂	0.03	0.70	1.50	0.02	0.01	19.0	12.3	3.4

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	550 (79,750)	40	-20 (4)	45 (33)	9-10
80% Ar + 20% CO ₂	570 (82,707)	41	-20 (4)	45 (33)	9-10

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23-26	140	2.5 (5.5)
		8.9 (350)	27-30	180	3.4 (7.5)
		12.0 (472)	28-31	210	4.5 (9.9)
80% Ar + 20% CO ₂	20 (4/5)	6.0 (236)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.5 (7.7)
		11.5 (453)	27-30	210	4.5 (9.9)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.8 (150)	24-27	180	3.1 (6.8)
		6.5 (256)	25-28	250	4.6 (10.1)
		8.9 (350)	26-29	290	6.0 (13.2)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.2 (7.1)
		6.4 (250)	25-28	250	4.8 (10.6)
		9.0 (354)	26-29	290	6.2 (13.7)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-347 Cored

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E347T1-1/-4

JIS Z3323 TS347-FB1

EN ISO 17633-A-T 19 9 Nb P M/C 2

Applications

- Stainless steel boilers and gas turbine
- 347 and 321 type stainless steels

Features

- Good performance in all positions

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Nb
100% CO ₂	0.04	0.60	1.40	0.02	0.01	19.3	9.9	0.40
80% Ar + 20% CO ₂	0.04	0.60	1.50	0.02	0.01	19.5	10.0	0.40

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	610 (88,450)	38	-20 (4)	50 (37)	8-10
80% Ar + 20% CO ₂	620 (89,900)	37	-20 (4)	55 (41)	8-10

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.5 (256)	23-26	140	2.6 (5.7)
		9.2 (362)	27-30	180	3.7 (8.2)
		12.5 (492)	28-31	210	4.8 (10.6)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.7 (6.0)
		9.0 (354)	27-30	180	3.7 (8.2)
		12.0 (472)	27-30	210	4.9 (10.8)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.8 (150)	24-27	180	3.2 (7.1)
		6.5 (256)	25-28	250	4.5 (9.9)
		9.0 (354)	26-29	290	5.6 (12.3)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.3 (7.3)
		6.4 (252)	25-28	250	4.8 (10.6)
		8.9 (350)	26-29	290	5.9 (13.0)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-308HBF

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E308HT1-1-/4

Applications

- Welding of 18%Cr-8%Ni stainless steels for high temperature service

Features

- Designed for welding with 100% CO₂ or Ar+15~25%CO₂ shielding gas
- Excellent all position weldability
- Smooth and stable arc with a fast freezing slag

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂ / Ar+20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Length mm(in)	
	12.5kg (28lbs)	15kg (33lbs)
1.2 (0.045)	√	√
1.4 (0.052)		
1.6 (1/16)		

Typical Chemical Composition of All-Weld Metal(%)

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Fe
0.048	0.72	1.25	0.018	0.008	18.6	10.1	0.01	0.01	0.5

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
-	580	41	-60 (-76)	50 (37)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23~26	140	2.5 (5.5)
		9.2 (362)	27~30	180	3.4 (7.5)
		12.0 (472)	28~31	210	4.5 (9.9)
80% Ar + 20% CO ₂	20 (4/5)	6.1 (240)	23~26	140	2.6 (5.7)
		9.0 (354)	27~30	180	3.6 (7.9)
		11.5 (453)	27~30	210	4.6 (10.1)

SW-309HBF

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E309HT1-1-1/4

Applications

- Welding of dissimilar metals such as stainless steel and carbon steel or stainless steel and low alloy

Features

- Designed for welding with 100% CO₂ or Ar+15~25%CO₂ shielding gas
- Excellent all position weldability
- Smooth and stable arc with a fast freezing slag

Welding Position



1G (PA) 2F (PB) 3G (PF) 4G (PE)

Current

DC +

Shielding Gas

100% CO₂ / Ar+20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Length mm(in)	
	12.5kg (28lbs)	15kg (33lbs)
1.2 (0.045)	✓	✓
1.4 (0.052)		
1.6 (1/16)		

Typical Chemical Composition of All-Weld Metal(%)

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Fe
0.05	0.72	1.3	0.018	0.008	22.6	12.8	0.01	0.01	0.5

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)
-	595	39	-60 (-76)	50 (37)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23~26	140	2.5 (5.5)
		9.2 (362)	27~30	180	3.4 (7.5)
		12.0 (472)	28~31	210	4.5 (9.9)
80% Ar + 20% CO ₂	20 (4/5)	6.1 (240)	23~26	140	2.6 (5.7)
		9.0 (354)	27~30	180	3.6 (7.9)
		11.5 (453)	27~30	210	4.6 (10.1)

SW-316HBF

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E316HT1-1-/4

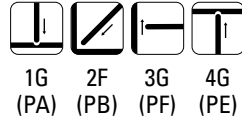
Applications

- Welding of 18%Cr-12%Ni-2% Mo stainless steels for high temperature service.

Features

- Designed for welding with 100% CO₂ or Ar+15~25%CO₂ shielding gas
- Excellent all position weldability
- Smooth and stable arc with a fast freezing slag

Welding Position



Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	12.5kg (28lbs)	15kg (33lbs)	20kg (44lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)	✓	✓				
1.4 (0.052)						
1.6 (1/16)						

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Fe
0.054	0.80	1.25	0.018	0.008	17.8	12.5	2.51	0.01	0.5

Typical Mechanical Properties of All-Weld Metal

YS MPa(lbs/in ²)	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)
-	565	40	-60 (-76)	56 (42)

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23~26	140	2.5 (5.5)
		9.2 (362)	27~30	180	3.4 (7.5)
		12.0 (472)	28~31	210	4.5 (9.9)
80% Ar + 20% CO ₂	20 (4/5)	6.1 (240)	23~26	140	2.6 (5.7)
		9.0 (354)	27~30	180	3.6 (7.9)
		11.5 (453)	27~30	210	4.6 (10.1)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-410NiMo Cored

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E410NiMoT1-1/-4

JIS Z3323 TS410NiMo-FB1

EN ISO 17633-A-T 13 4 P M/C 2

Applications

- Martensite stainless steels (ASTM, CA6NM)
- Hardfacing of continuous casting rolls, valve seat, etc
- Power plant

Features

- Good performance in all positions

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Ar + 20~25% CO₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)		✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.04	0.65	0.45	0.02	0.01	11.5	4.3	0.45
80% Ar + 20% CO ₂	0.04	0.70	0.50	0.02	0.01	11.5	4.5	0.50

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)	Hardness (HRc)	PWHT
100% CO ₂	890 (129,050)	17	0 (32)	40 (30)	As weld : 37 PWHT : 26	600°C, 1hr, AC
80% Ar + 20% CO ₂	900 (130,500)	17	0 (32)	40 (30)	As weld : 37 PWHT : 27	600°C, 1hr, AC

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.5 (5.5)
		9.0 (354)	27-30	180	3.6 (7.9)
		12.5 (492)	28-31	210	4.7 (10.4)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.5 (7.7)
		12.0 (472)	27-30	210	4.8 (10.6)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.6 (142)	24-27	180	2.9 (6.4)
		6.5 (256)	25-28	250	4.6 (10.1)
		8.8 (346)	26-29	290	5.6 (12.3)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.0 (6.6)
		6.6 (260)	25-28	250	4.6 (10.1)
		8.9 (350)	26-29	290	5.8 (12.8)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SW-2209 Cored

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E2209T1-1/-4

JIS Z3323 TS2209-FB1

EN ISO 17633-A-T 22 9 3 N L M/C 2

BV UP (KV -20°C ≥41 J)

DNV Duplex Stainless Steel

RS AF-8dup (M21)

Applications

- Duplex stainless steel (NAS 329J3L, UNS S31803)

Features

- Good performance in all positions

Welding Position



1G 2F 3G 4G
(PA) (PB) (PF) (PE)

Current

DC +

Shielding Gas

100% CO₂

Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo	N	PREN
100% CO ₂	0.03	0.70	1.00	0.02	0.01	23.2	8.4	3.3	0.10	36
80% Ar + 20% CO ₂	0.03	0.80	1.10	0.02	0.01	23.5	8.5	3.3	0.10	36

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	820 (118,900)	26	-20 (4) -50 (-58)	50 (37) 30 (22)	50-55
80% Ar + 20% CO ₂	840 (121,800)	25	-20 (4) -50 (-58)	55 (41) 30 (22)	50-55

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.5 (256)	23-26	140	2.6 (5.7)
		9.8 (386)	27-30	180	3.8 (8.4)
		12.5 (492)	28-31	210	4.9 (10.8)
80% Ar + 20% CO ₂	20 (4/5)	6.5 (256)	23-26	140	2.8 (6.2)
		9.5 (374)	27-30	180	4.0 (8.8)
		12.0 (472)	27-30	210	5.0 (11.0)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.6 (142)	24-27	180	3.0 (6.6)
		6.5 (256)	25-28	250	4.5 (9.9)
		9.0 (354)	26-29	290	5.3 (11.7)
80% Ar + 20% CO ₂	25 (1)	3.5 (138)	24-27	180	3.2 (7.1)
		6.4 (252)	25-28	250	4.8 (10.6)
		8.9 (350)	26-29	290	5.5 (12.10)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 308L

Type : Rutile



Conformances

AWS A5.22/ ASME SFA5.22 E308LT0-1/-4
 JIS Z3323 TS308L-FB0
 EN ISO 17633-A-T 19 9 L R M/C 3
 TÜV EN ISO 17633-A - T 19 9 L R M21/C1 3
 DB DIN EN ISO 17633-A-T 19 9 L R M/C 3

CE

Applications

- 18%Cr-8%Ni stainless steel

Features

- Flat and horizontal fillet position welding
- High deposition rate and efficiency

Welding Position



1G 2F
 (PA) (PB)

Current

DC +

Shielding Gas

100% CO₂
 Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.50	1.50	0.02	0.01	19.0	9.5	0.05
80% Ar + 20% CO ₂	0.03	0.60	1.60	0.02	0.01	19.5	9.6	0.05

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	550 (79,750)	44	-20 (4)	50 (37)	7-10
80% Ar + 20% CO ₂	570 (82,650)	43	-20 (4)	55 (41)	7-10

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.7 (6.0)
		9.0 (354)	27-30	180	3.9 (8.6)
		12.0 (472)	28-31	210	5.0 (11.0)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.8 (6.2)
		9.0 (354)	27-30	180	4.0 (8.8)
		12.0 (472)	27-30	210	5.1 (11.2)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.7 (146)	24-27	180	3.0 (6.6)
		6.4 (250)	25-28	250	4.8 (10.6)
		8.9 (350)	26-29	290	6.3 (13.9)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.1 (6.8)
		6.4 (250)	25-28	250	5.0 (11.0)
		8.9 (350)	26-29	290	6.5 (14.3)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 309L

Type : Rutile



Conformances

AWS A5.22/ ASME SFA5.22 E309LT0-1/-4
 JIS Z3323 TS309L-FB0
 EN ISO 17633-A-T 23 12 L R M/C 3
 TÜV EN ISO 17633-A - T 23 12 L R M21/C1 3
 DB DIN EN ISO 17633-A-T 23 12 L R M/C 3

CE
 LR SS/CMn
 BV 309L
 DNV 309L (-20°C)
 GL 4332S

Applications

- 23.5%Cr-13%Ni stainless steels
- Dissimilar welds between carbon, low alloy steels to stainless steels
- Buffer layer welding for cladding, overlays

Features

- Flat and horizontal fillet position welding
- High deposition rate and efficiency

Welding Position



1G 2F
 (PA) (PB)

Current

DC +

Shielding Gas

100% CO₂
 Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo	Cu
100% CO ₂	0.033	0.50	1.61	0.020	0.006	22.5	12.37	0.12	0.12
80% Ar + 20% CO ₂	0.030	0.60	1.66	0.015	0.007	22.6	12.45	0.12	0.15

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	570 (82,650)	35	-20 (4)	45 (33)	18-20
80% Ar + 20% CO ₂	580 (84,100)	34	-20 (4)	40 (30)	18-20

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.6 (5.7)
		9.0 (354)	27-30	180	3.8 (8.4)
		12.0 (472)	28-31	210	5.0 (11.0)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.8 (6.2)
		9.5 (374)	27-30	180	4.1 (9.0)
		12.0 (472)	27-30	210	5.2 (11.5)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.7 (146)	24-27	180	3.3 (7.3)
		6.4 (250)	25-28	250	5.2 (11.5)
		8.9 (350)	26-29	290	6.6 (14.6)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.4 (7.5)
		6.4 (250)	25-28	250	5.4 (11.9)
		8.9 (350)	26-29	290	6.8 (15.0)

SWAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supercored 309MoL

Type : Rutile

Conformances

AWS A5.22/ ASME SFA5.22 E309LMoT0-1/-4
JIS Z3323 TS309LMo-FB0
EN ISO 17633-A-T 23 12 2 L R M/C 3
LR SS/CMn

BV 309LMo
DNV 309MoL (-20°C)
GL 4459S

Applications

- 22%Cr-12%Ni-2.5%Mo stainless steels
- Dissimilar welds between carbon, low alloy steels to stainless steels
- Buffer layer welding for cladding, overlays

Features

- Flat and horizontal fillet position welding
- High deposition rate and efficiency

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.50	1.10	0.02	0.01	22.0	12.2	2.2
80% Ar + 20% CO ₂	0.03	0.60	1.20	0.02	0.01	22.5	12.5	2.3

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	680 (98,600)	35	-20 (4)	50 (37)	17-20
80% Ar + 20% CO ₂	690 (100,050)	32	-20 (4)	55 (40)	17-20

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.6 (5.7)
		9.1 (358)	27-30	180	3.9 (8.6)
		12.0 (472)	28-31	210	5.0 (11.0)
80% Ar + 20% CO ₂	20 (4/5)	6.2 (244)	23-26	140	2.8 (6.2)
		9.2 (362)	27-30	180	4.0 (8.8)
		12.0 (472)	27-30	210	5.1 (11.2)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.7 (146)	24-27	180	3.3 (7.3)
		6.4 (250)	25-28	250	5.3 (11.7)
		9.0 (354)	26-29	290	6.6 (14.6)
80% Ar + 20% CO ₂	25 (1)	3.6 (142)	24-27	180	3.2 (7.1)
		6.4 (250)	25-28	250	5.5 (12.1)
		9.0 (354)	26-29	290	6.7 (14.8)

Supercored 316L

Type : Rutile



Conformances

AWS A5.22/ ASME SFA5.22 E316LT0-1/-4
JIS Z3323 TS316L-FB0
EN ISO 17633-A-T 19 12 3 L R M/C 3
TÜV EN ISO 17633-A - T 19 12 3 L R M21/C1 3
DB DIN EN ISO 17633-A-T 19 12 3 L R M/C 3

CE
LR 316L
BV 316L
DNV 316L (-20°C)
GL 4435S

Applications

- 18%Cr-12%Ni-2%Mo stainless steels

Features

- Flat and horizontal fillet position welding
- High deposition rate and efficiency

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂
Ar + 20~25% CO₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)	✓	✓	✓			
1.0 (0.040)	✓	✓	✓			
1.2 (0.045)	✓	✓	✓			
1.6 (1/16)		✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ni	Mo
100% CO ₂	0.03	0.50	1.50	0.02	0.01	17.8	11.8	2.7
80% Ar + 20% CO ₂	0.03	0.60	1.60	0.02	0.01	18.0	12.0	2.8

Typical Mechanical Properties of All-Weld Metal

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft-lbs)	Ferrite Number
100% CO ₂	550 (79,750)	40	-20 (4)	50 (37)	8-10
80% Ar + 20% CO ₂	560 (81,200)	39	-20 (4)	45 (33)	8-10

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	6.0 (236)	23-26	140	2.7 (5.9)
		9.2 (362)	27-30	180	3.6 (7.9)
		12.0 (472)	28-31	210	4.7 (10.4)
80% Ar + 20% CO ₂	20 (4/5)	6.1 (240)	23-26	140	2.7 (5.9)
		9.0 (354)	27-30	180	3.7 (8.2)
		11.5 (453)	27-30	210	4.8 (10.6)
1.6mm (1/16 in) DC+					
100% CO ₂	25 (1)	3.8 (150)	24-27	180	3.4 (7.5)
		6.5 (256)	25-28	250	4.9 (10.8)
		8.9 (350)	26-29	290	6.3 (13.9)
80% Ar + 20% CO ₂	25 (1)	3.7 (146)	24-27	180	3.5 (7.7)
		6.4 (250)	25-28	250	5.0 (11.0)
		8.8 (346)	26-29	290	6.4 (14.1)

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SF-409Ti

Type : Metal-Cored

Conformances

AWS A5.9/ ASME SFA5.9 EC409

JIS Z3323 TS409-MA0

Applications

- Stainless steels 409 Type
- Automotive mufflers

Features

- Good corrosion resistance
- Low spatter
- Non-slag type

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 2% O₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
0.9 (0.035)		√	√	√	√	√
1.0 (0.040)		√	√	√	√	√
1.2 (0.045)		√	√	√	√	√
1.4 (0.052)		√	√	√	√	√

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ti
0.03	0.50	0.55	0.012	0.010	12.5	1.0

Typical Mechanical Properties of All-Weld Metal

TS MPa(lbs/in ²)	EL (%)
500 (72,600)	20

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 2% O ₂	20 (0.78)	5.5 (216)	23~25	180	2.9 (6.3)
		6.6 (260)	25~27	210	3.5 (7.6)
		8.1 (320)	26~28	250	4.4 (9.5)

SF-430

Type : Metal-Cored

Conformances

AWS A5.9/ ASME SFA5.9 EC430

JIS Z3323 TS430-MA0

Applications

- Stainless steels 409 and 430 Type
- Automotive mufflers

Features

- Good corrosion resistance
- Low spatter
- Non-slag type

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 2% O₂

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)		√	√	√	√	√

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ti
0.03	0.30	0.50	0.005	0.010	16.5	0.45

Typical Mechanical Properties of All-Weld Metal

TS MPa(lbs/in ²)	EL (%)	Heat treatment
500 (72,600)	40	770°C x 4hr FC to 600°C AC to RT

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 2% O ₂	20 (0.78)	5.5 (216)	23-25	180	3.0 (6.6)
		6.6 (260)	25-27	210	3.4 (7.4)
		8.1 (320)	26-28	250	4.3 (9.4)

SF-430Nb

Type : Metal-Cored

Conformances

JIS Z3323 TS430Nb-MA0

EN 12072 G Z 17 L Nb

Applications

- Stainless steels 409 and 430 Type
- Automotive mufflers

Features

- Good corrosion resistance
- Low spatter
- Non-slag type

Diameter / Packaging

Diameter mm (in)	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)		✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Nb	Ti
0.03	0.40	0.17	0.010	0.010	16.5	0.50	0.40

Typical Mechanical Properties of All-Weld Metal

TS MPa(lbs/in ²)	EL (%)
520 (75,400)	24

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 2% O ₂	20 (0.78)	5.5 (216)	23~25	180	2.9 (6.3)
		6.6 (260)	25~27	210	3.4 (7.4)
		8.1 (320)	26~28	250	4.5 (9.9)

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 2% O₂

SF-436

Type : Metal-Cored

Conformances

Applications

- Stainless steels 409, 430 and 436 Type
- Automotive mufflers

Features

- Good corrosion resistance
- Low spatter
- Non-slag type

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 2% O₂

Diameter / Packaging

Diameter	Spool			Pac		
	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
mm (in)						
1.2 (0.045)		✓	✓	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Ti
0.03	0.4	0.5	0.008	0.006	16.8	0.04	0.78	0.02	0.5

Typical Mechanical Properties of All-Weld Metal

TS MPa(lbs/in ²)	EL (%)	Heat treatment
500 (72,600)	35	770°C x 4hr FC to 600°C AC to RT

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 2% O ₂	20 (0.78)	5.5 (216)	23-25	180	2.8 (6.2)
		6.6 (260)	25-27	210	3.3 (7.3)
		8.1 (320)	26-28	250	4.5 (9.9)

SMW

SAW

GMW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-439Ti Cored

Type : Metal-Cored

Conformances

Applications

- Stainless steels 409, 430, 436, 439 Type
- Automotive mufflers

Features

- Good corrosion resistance
- Low spatter
- Non-slag type

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 2% O₂

Diameter / Packaging

Diameter	Spool			Pac		
mm (in)	5kg (11lbs)	12.5kg (27.6lbs)	15kg (33lbs)	250kg (551lbs)	300kg (661lbs)	350kg (771lbs)
1.2 (0.045)		√	√	√	√	√

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Ni	Ti
0.03	0.3	0.6	0.005	0.010	18.5	0.04	0.75

Typical Mechanical Properties of All-Weld Metal

TS MPa(lbs/in ²)	EL (%)	Heat treatment
500 (72,600)	40	770°C x 4hr FC to 600°C AC to RT

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
Ar + 2% O ₂	20 (0.78)	5.5 (216)	23~25	180	2.8 (6.2)
		6.6 (260)	25~27	210	3.3 (7.3)
		8.1 (320)	26~28	250	4.3 (9.4)

Supershield CrC

Cr-Carbide Type

Conformances

Applications

- Cement roll mill, bucket teeth and lips, crusher and coke hammers, wear plate

Features

- Open arc type hardfacing wire
- Cr-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter	Spool		Coil	Pac		
	12.5kg (27.6lbs)	15kg (33lbs)		150kg (330lbs)	250kg (551lbs)	350kg (771lbs)
1.2 (0.045)		✓				
1.6 (1/16)		✓				
2.4 (3/32)			✓	✓	✓	
2.8 (7/64)			✓	✓	✓	
3.2 (1/8)						

SM/W

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr
As welded with 1.2/1.6mm wires	4.5	0.4	1.6	0.011	0.004	25.0
As welded with 2.4/2.8mm wires	5.2	0.6	1.4	0.013	0.005	28.5

Typical Mechanical Properties of All-Weld Metal

		Rockwell Hardness(HRc)		
		1 Layer	2 Layers	4 Layers
On Mild Steel	1.2/1.6mm	42-46	50-54	54-58
	2.4/2.8mm	50-52	54-57	60-65

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.6mm (1/16 in) DC+					
Open Arc	25 (1)	5.0 (196)	28	250	3.4 (7.4)
		7.5 (295)	29	300	5.3 (11.6)
		11.5 (452)	32	350	7.5 (16.6)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (117)	28	330	5.2 (11.4)
		3.7 (146)	29	380	6.4 (14.1)
		4.4 (174)	30	430	7.3 (16.0)

Supershield CrCW

Cr-Carbide Type

Conformances

Applications

- Wear plate, conveyor screws, bucket teeth

Features

- Open arc type hardfacing wire
- Cr-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter	Spool		Coil	Pac		
	12.5kg (27.6lbs)	15kg (33lbs)		150kg (330lbs)	250kg (551lbs)	350kg (771lbs)
1.2 (0.045)		✓				
1.6 (1/16)		✓				
2.4 (3/32)			✓	✓	✓	
2.8 (7/64)			✓	✓	✓	
3.2 (1/8)						

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr
As welded with 1.2/1.6mm wires	4.5	0.6	0.7	0.011	0.006	25.0
As welded with 2.4/2.8mm wires	5.0	1.7	1.8	0.012	0.008	25.0

Typical Mechanical Properties of All-Weld Metal

		Rockwell Hardness(HRc)		
		1 Layer	2 Layers	4 Layers
On Mild Steel	1.2/1.6mm	40~44	46~49	53~56
	2.4/2.8mm	48~52	52~58	58~63

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.6mm (1/16 in) DC+					
Open Arc	25 (1)	5.0 (196)	28	250	3.4 (7.4)
		7.5 (295)	29	300	5.2 (11.4)
		11.5 (452)	32	350	7.4 (16.3)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (117)	28	330	5.2 (11.4)
		3.7 (146)	29	380	6.3 (13.9)
		4.4 (174)	30	430	7.2 (15.8)

Supershield CrCH

Cr-Carbide Type

Conformances

Applications

- Wear plate, conveyor screws, bucket teeth

Features

- Open arc type hardfacing wire
- Cr-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter	Coil		
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
2.8 (7/64)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr
As welded with 2.8mm wires	5.0	1.5	0.2	0.010	0.007	28.0

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC)		
	1 Layer	2 Layers	4 Layers
On Mild Steel (2.8mm)	55-59	60-62	62-65

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (117)	28	330	5.2 (11.4)
		3.7 (146)	29	380	6.4 (14.1)
		4.4 (174)	30	430	7.2 (15.8)

SMAW

SAW

GMWAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Supershield CrCNb5

Cr-Carbide+Nb-Carbide Type

Conformances

Applications

- Cement roll mill, bucket teeth and lips, crusher and coke hammers, wear plate

Features

- Open arc type hardfacing wire
- Cr-Carbide + Nb-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter mm (in)	Coil		Pac
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
2.4 (3/32)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Nb
As welded with 2.4mm wires	5.0	1.0	0.5	0.010	0.006	22.0	4.8

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRc)		
	1 Layer	2 Layers	4 Layers
On Mild Steel (2.4mm)	-	-	62-64

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.4mm (3/32in), DC+					
Open Arc	25 (1)	2.2 (85)	28	300	3.8 (8.3)
		2.7 (105)	29	340	5.5 (12.1)
		3.1 (124)	30	380	7.1 (15.6)

Supershield CrCNb

Cr-Carbide+Nb-Carbide Type

Conformances

Applications

- Cement roll mill, bucket teeth and lips, crusher and coke hammers, wear plate

Features

- Open arc type hardfacing wire
- Cr-Carbide + Nb-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter	Spool		Coil	Pac		
	12.5kg (27.6lbs)	15kg (33lbs)	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)	350kg (771lbs)
1.2 (0.045)						
1.6 (1/16)		✓				
2.4 (3/32)						
2.8 (7/64)			✓	✓	✓	
3.2 (1/8)						

SMW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Nb
As welded with 1.6mm wires	4.5	0.8	0.2	0.015	0.003	21.0	6.0
As welded with 2.8mm wires	5.2	1.0	0.2	0.011	0.004	22.0	6.8

Typical Mechanical Properties of All-Weld Metal

		Rockwell Hardness(HRc)		
		1 Layer	2 Layers	4 Layers
On Mild Steel	1.6mm	-	-	60-65
	2.8mm	-	-	64-67

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.6mm (1/16 in) DC+					
Open Arc	25 (1)	5.0 (196)	28	250	3.5 (7.7)
		7.5 (295)	29	300	6.0 (13.2)
		11.5 (452)	32	350	7.8 (17.2)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (117)	28	330	5.2 (11.4)
		3.7 (146)	29	380	6.4 (14.1)
		4.4 (174)	30	430	7.3 (16.0)

Supershield CrCMo

Cr-Carbide Type

Conformances

Applications

- Cement roll mill, bucket teeth and lips, crusher and coke hammers, wear plate

Features

- Open arc type hardfacing wire
- Cr-Carbide + Mo-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter mm (in)	Coil		Pac	
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)	
2.4 (3/32)	✓	✓	✓	
2.8 (7/64)	✓	✓	✓	

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Mo
As welded with 2.4/2.8mm wires	5.2	1.7	0.4	0.011	0.003	27.5	1.2

Typical Mechanical Properties of All-Weld Metal

		Rockwell Hardness(HRc)		
		1 Layer	2 Layers	4 Layers
On Mild Steel	2.4mm	-	-	62-65
	2.8mm	-	-	63-67

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (117)	28	330	5.2 (11.4)
		3.7 (146)	29	380	6.4 (14.1)
		4.4 (174)	30	430	7.3 (16.0)

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

Supershield CrCV1

Cr-Carbide Type

Conformances

Applications

- Cement roll mill, bucket teeth and lips, crusher and coke hammers, wear plate

Features

- Open arc type hardfacing wire
- Cr-Carbide + V-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter mm (in)	Coil		Pac
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
3.2 (1/8)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	V	Ti
As welded with 3.2mm wires	5.2	1.2	2.2	0.012	0.003	28.5	0.6	0.1

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRc)		
	1 Layer	2 Layers	4 Layers
On Mild Steel (3.2mm)	-	-	63-65

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Open Arc	25 (1)	1.5 (60)	29	360	5.4 (11.9)
		1.8 (71)	30	400	6.7 (14.7)
		1.9 (75)	32	430	7.6 (16.7)

Supershield CrCB

Cr-Carbide Type

Conformances

Applications

- Cement roll mill, bucket teeth and lips, crusher and coke hammers, wear plate

Features

- Open arc type hardfacing wire
- Cr-Carbide + B-Carbide type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter mm (in)	Coil		Pac	
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)	
2.4 (3/32)	✓	✓	✓	
3.2 (1/8)	✓	✓	✓	

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	P	S	Cr	Ti	B
As welded with 2.4/3.2mm wires	4.5	0.6	1.4	0.011	0.002	26.0	0.1	0.3

Typical Mechanical Properties of All-Weld Metal

		Rockwell Hardness(HRc)		
		1 Layer	2 Layers	4 Layers
		On Mild Steel	2.4mm	-
	3.2mm	-	-	64-67

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Open Arc	25 (1)	1.5 (60)	29	360	5.4 (11.9)
		1.8 (71)	30	400	6.6 (14.5)
		1.9 (75)	32	430	7.5 (16.5)

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

Supershield AP-0

High Mn/Cr Type

Conformances

Applications

- Crusher rolls and hammers, cone mills

Features

- Open arc type hardfacing wire(buffer layer)
- High-Mn/Cr type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter	Spool		Coil	Pac			
	mm (in)	12.5kg (27.6lbs)		15kg (33lbs)	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
1.2 (0.045)							
1.6 (1/16)			✓				
2.4 (3/32)			✓	✓	✓	✓	
2.8 (7/64)			✓	✓	✓	✓	
3.2 (1/8)							

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr
As welded with 1.6/2.4/2.8mm wire	0.4	0.4	16.0	13.0

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥ 3 layers)	
	As welded	Work hardened
On Mild Steel (1.6/2.4/2.8mm)	15~20	40~50

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.6mm (1/16 in) DC+					
Open Arc	25 (1)	4.9 (192)	26	240	3.4 (7.5)
		7.3 (287)	29	280	4.5 (9.9)
		11.2 (440)	30	330	5.4 (11.9)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (114)	27	330	5.0 (11.0)
		3.3 (130)	29	360	5.7 (12.5)
		3.8 (149)	30	400	6.5 (14.3)

Supershield 16Mn-0

High Mn Type

Conformances

Applications

- Crusher rolls and hammers, cone mills

Features

- Open arc type hardfacing wire(buffer layer)
- High-Mn type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter	Spool		Coil	Pac			
	mm (in)	12.5kg (27.6lbs)		15kg (33lbs)	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
1.2 (0.045)							
1.6 (1/16)							
2.4 (3/32)			✓	✓	✓		
2.8 (7/64)			✓	✓	✓		
3.2 (1/8)							

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr
As welded with 1.6/2.4/2.8mm wire	0.5	0.5	17.0	3.5

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥ 3 layers)	
	As welded	Work hardened
On Mild Steel (1.6/2.4/2.8mm)	15~20	40~50

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.4mm (3/32 in) DC+					
Open Arc	25 (1)	3.6 (144)	26	310	4.3 (9.4)
		4.7 (185)	28	360	6.1 (13.4)
		6.1 (242)	30	410	8.4 (18.5)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (114)	27	330	5.2 (11.4)
		3.3 (130)	29	360	5.8 (12.7)
		3.8 (149)	30	400	6.8 (14.9)

Supershield 309L-0

Conformances

Applications

- Crusher rolls and hammers, cone mills

Features

- Open arc type hardfacing wire(buffer layer)
- High-Cr/Ni stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter mm (in)	Coil		Pac	
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)	
2.8 (7/64)	✓	✓	✓	

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Ni	Mo
As welded with 2.8mm wire	0.02	0.35	1.4	22.5	12.5	0.05

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness (HRC)	TS MPa(lbs/in ²)	EL (%)
All-Weld Metal	-	630 (91,400)	38

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (114)	27	330	5.1 (11.2)
		3.3 (130)	29	360	5.8 (12.7)
		3.8 (149)	30	400	6.7 (14.7)

SC-BU Cored

Low Alloy Type

Conformances

Applications

- Crain wheels, pulleys

Features

- Open arc type hardfacing wire(build-up)
- Low alloy type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter	Spool		Coil	Pac		
	12.5kg (27.6lbs)	15kg (33lbs)	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)	350kg (771lbs)
1.2 (0.045)						
1.6 (1/16)						
2.4 (3/32)			✓	✓	✓	
2.8 (7/64)			✓	✓	✓	
3.2 (1/8)						

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr
As welded with 2.4/2.8mm wire	0.12	0.8	2.7	1.0

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRc) (≥3layers)
On Mild Steel (2.4/2.8mm)	25-35

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.4mm (3/32 in) DC+					
Open Arc	25 (1)	3.2 (127)	26	310	3.9 (8.6)
		4.0 (158)	28	360	4.6 (10.1)
		4.6 (181)	30	410	5.1 (11.2)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (114)	27	330	4.9 (10.8)
		3.3 (130)	29	360	5.5 (12.1)
		3.8 (149)	30	400	6.3 (13.8)

Supershield 430-0

Ferritic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Open arc type hardfacing wire(build-up)
- Ferritic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter mm (in)	Coil	Pac	
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
2.4 (3/32)	✓	✓	✓
2.8 (7/64)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr
As welded with 2.4/2.8mm wire	0.05	0.7	0.9	17.0

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRc) (≥3layers)
On Mild Steel (2.4/2.8mm)	5-10

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (114)	27	330	4.9 (10.8)
		3.3 (130)	29	360	5.6 (12.3)
		3.8 (149)	30	400	6.5 (14.2)

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

Supershield 410NiMo-0

Martentic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Open arc type hardfacing wire
- Martensitic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

Open Arc

Diameter / Packaging

Diameter mm (in)	Coil		Pac
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
2.4 (3/32)	✓	✓	✓
2.8 (7/64)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Ni	Mo	Nb
As welded with 2.4/2.8mm wire	0.05	0.7	0.9	13.0	4.0	0.5	0.2

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (2.4/2.8mm)	36-40

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.8mm (7/64in), DC+					
Open Arc	25 (1)	2.9 (114)	27	330	4.9 (10.8)
		3.3 (130)	29	360	5.5 (12.1)
		3.8 (149)	30	400	6.6 (14.5)

SC-410NiMoS

Martentic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Submerged arc type hardfacing wire
- Martensitic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter	Coil			Pac		
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)			
3.2(1/8)	✓	✓	✓			

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Ni	Mo
As welded with 3.2mm wire	0.05	0.7	1.7	13.0	4.5	0.5

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRc) (≥3layers)
On Mild Steel (2.4/2.8mm)	36-40

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (55)	28	350	3.7 (8.2)
		1.7 (66)	30	390	4.5 (9.9)
		1.8 (72)	31	430	5.3 (11.6)

SM/W

SAW

GM/W

GT/W

FC/W

Non-FERROUS

APPENDIX

SC-414S

Martentic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Submerged arc type hardfacing wire
- Martensitic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter mm (in)	Coil		Pac	
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)	
2.4 (3/32)	✓	✓	✓	
3.2 (1/8)	✓	✓	✓	

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Ni	Mo	Nb	V
As welded with 2.4/3.2mm wire	0.11	0.6	1.5	13.8	2.8	1.1	0.2	0.3

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (2.4/3.2mm)	42~46

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (55)	28	350	3.8 (8.4)
		1.7 (66)	30	390	4.6 (10.1)
		1.8 (72)	31	430	5.2 (11.4)

SC-420S

Martentic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Submerged arc type hardfacing wire
- Martensitic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter mm (in)	Coil	Pac	
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
2.8 (7/64)	✓	✓	✓
3.2 (1/8)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Ni	Mo	Nb	V	W
As welded with 2.8/3.2mm wire	0.3	0.6	1.8	12.5	0.5	1.6	0.15	0.3	1.3

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (2.8/3.2mm)	48-55

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (55)	28	350	3.9 (8.6)
		1.7 (66)	30	390	4.6 (10.1)
		1.8 (72)	31	430	5.3 (11.6)

SC-420SG

Martentic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Submerged arc type hardfacing wire
- Martensitic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter mm (in)	Coil		
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
1.6 (1/16)	√	√	√
2.4 (3/32)	√		
3.2 (1/8)	√	√	√

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Ni	Nb
As welded with 1.6/2.4/3.2mm wire	0.2	0.6	1.5	13.0	0.2	0.15

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (1.6/2.4/3.2mm)	48-55

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.6mm (1/16 in) DC+					
Submerged Arc	25 (1)	4.9 (192)	26	240	2.4 (5.3)
		7.3 (287)	29	280	3.5 (7.7)
		11.2 (440)	30	330	4.4 (9.7)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (55)	28	350	3.8 (8.4)
		1.7 (66)	30	390	4.5 (9.9)
		1.8 (72)	31	430	5.2 (11.4)

SC-423S

Ferritic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Submerged arc type hardfacing wire(build-up)
- Ferritic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter	Pack		
	Coil	150kg (330lbs)	250kg (551lbs)
mm (in)	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
3.2(1/8)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Ni	Mo	Nb	V
As welded with 3.2mm wire	0.06	0.4	1.4	17.0	2.4	1.1	0.2	0.3

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRc) (≥3layers)
On Mild Steel (3.2mm)	5-10

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (55)	28	350	3.7 (8.1)
		1.7 (66)	30	390	4.4 (9.7)
		1.8 (72)	31	430	5.2 (11.4)

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

SC-430S

Ferritic STS Type

Conformances

Applications

- Continuous casting rolls, steel mill rolls

Features

- Submerged arc type hardfacing wire(build-up)
- Ferritic stainless steel type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter	Coil		Pac
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
3.2 (1/8)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr
As welded with 2.4/3.2mm wire	0.05	0.7	1.3	17.0

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (2.4/3.2mm)	5-10

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (55)	28	350	3.8 (8.4)
		1.7 (66)	30	390	4.5 (9.9)
		1.8 (72)	31	430	5.3 (11.6)

SC-30S

Low / Middle Alloy Type

Conformances

Applications

- Crane wheels, rod wheels, tractor roller

Features

- Submerged arc type hardfacing wire
- Low/Middle alloy type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter	Coil		
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
3.2(1/8)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Mo
As welded with 3.2mm wire	0.15	0.2	1.5	1.6	0.3

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (3.2mm)	30-33

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (58)	28	350	4.2 (9.2)
		1.7 (70)	30	390	5.1 (11.2)
		1.9 (76)	31	430	5.8 (12.7)

SMW

SAW

GMW

GTAW

FCW

Non-FERROUS

APPENDIX

SC-45S

Low / Middle Alloy Type

Conformances

Applications

- Crane wheels, rod wheels, tractor roller

Features

- Submerged arc type hardfacing wire
- Low/Middle alloy type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter	Coil		Pac
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
3.2 (1/8)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Mo
As welded with 3.2mm wire	0.2	0.4	1.8	3.0	0.5

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (3.2mm)	43~48

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (58)	28	350	4.3 (9.4)
		1.7 (70)	30	390	5.2 (11.4)
		1.9 (76)	31	430	5.9 (12.9)

SC-55S

Middle Alloy Type

Conformances

Applications

- Crane wheels, rod wheels, tractor roller

Features

- Submerged arc type hardfacing wire
- Low/Middle alloy type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter	Pack		
	Coil	150kg (330lbs)	250kg (551lbs)
mm (in)	25kg (55lbs)		
3.2(1/8)	✓	✓	✓

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Cr	Mo	W
As welded with 3.2mm wire	0.3	0.5	1.5	6.0	1.5	1.5

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRC) (≥3layers)
On Mild Steel (3.2mm)	50-55

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
3.2mm (1/8in), DC+					
Submerged Arc	25 (1)	1.4 (58)	28	350	4.5 (9.9)
		1.7 (70)	30	390	5.3 (11.6)
		1.9 (76)	31	430	6.0 (13.1)

SM/AW

SAW

GM/AW

GT/AW

FC/AW

Non-FERROUS

APPENDIX

SC-A4S

Low Alloy Type

Conformances

AWS A5.23/ ASME SFA5.23 F8P2 ECA4-A4

Applications

- High strength steel, creep resisting steel

Features

- Submerged arc type hardfacing wire
- Low alloy type

Welding Position



1G
(PA)

Current

DC +

Welding Process

SAW(with S-717/S-400HF flux)

Diameter / Packaging

Diameter	Coil		Pac
	25kg (55lbs)	150kg (330lbs)	250kg (551lbs)
2.4 (3/32)	√	√	√

Typical Chemical Composition of All-Weld Metal (%)

	C	Si	Mn	Mo
As welded with 2.4mm wire	0.10	0.5	1.4	0.5

	TS MPa(lbs/in ²)	EL (%)	Temp °C(°F)	CVN-Impact Value J (ft.-lbs)	Heat Treatment
As welded with 2.4mm wire	676 (97,000)	24.4	-29 (-20)	70 (52)	600°C (1,112°F) X 1hr FC

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
2.4mm (3/32in), DC+					
Submerged Arc	25 (1)	3.2 (127)	26	310	3.9 (8.6)
		4.0 (158)	28	360	4.6 (10.1)
		4.6 (181)	30	410	5.1 (11.2)

SC-42H

For Hard-facing

Conformances

Applications

- Crain wheels, gear, shaft etc.

Features

- Flat and horizontal fillet position welding
- Suitable for metal to metal wear and abrasion parts

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂ / FCAW process

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.6 (1/16)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	Cr	Mo	V	Nb	Co
0.1	0.5	1.5	4.9	2.5	0.35	0.35	1.0

Typical Mechanical Properties of All-Weld Metal

	Rockwell Hardness(HRc) (≥3layers)
On Mild Steel (1.6mm)	41~44

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.6mm (1/16in), DC+					
100% CO ₂	20(4/5)	5.8 (228)	27~29	260	4.9 (10.8)
		7.9 (311)	28~30	300	5.6 (12.3)
		9.7 (381)	29~31	330	7.4 (16.3)

SMW

SAW

GMW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-250H

For Hard-facing

Conformances

JIS Z3326 YF2A-C-250

Applications

- Spindle, gear, shaft etc.

Features

- Flat and horizontal fillet position welding
- Suitable for metal to metal wear parts

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂ / FCAW process

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.2 (0.045)	✓
1.6 (1/16)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Mo	Others
0.06	0.57	1.30	0.011	0.005	1.20	-	-

Typical Mechanical Properties of All-Weld Metal

Hardness (Hv)

260-300

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	9.8 (385)	25-27	230	4.0 (8.8)
		12.5 (492)	27-29	260	5.1 (11.2)
		14.2 (559)	29-31	300	6.0 (13.2)
1.6mm (1/16 in) DC+					
100% CO ₂	20 (4/5)	5.8 (228)	27-29	260	4.6 (10.1)
		7.9 (311)	28-30	300	5.4 (11.9)
		9.7 (381)	29-31	330	6.9 (15.2)

SC-350H

For Hard-facing

Conformances

JIS Z3326 YF2A-C-350

Applications

- Spindle, gear, shaft etc.

Features

- Flat and horizontal fillet position welding
- Suitable for metal to metal wear parts

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂ / FCAW process

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.2 (0.045)	√
1.6 (1/16)	√

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Mo	Others
0.10	0.6	1.6	0.015	0.006	1.2	0.3	-

Typical Mechanical Properties of All-Weld Metal

Hardness (Hv)

350-400

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	9.8 (385)	25-27	230	4.1 (9.0)
		12.5 (492)	27-29	260	5.2 (11.4)
		14.2 (559)	29-31	300	6.0 (13.2)
1.6mm (1/16 in) DC+					
100% CO ₂	20 (4/5)	5.8 (228)	27-29	260	4.7 (10.3)
		7.9 (311)	28-30	300	5.4 (11.9)
		9.7 (381)	29-31	330	7.0 (15.4)

SMAW

SAW

GMAW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-450H

For Hard-facing

Conformances

JIS Z3326 YF2A-C-450

Applications

- Crain wheels, gear, shaft etc.

Features

- Flat and horizontal fillet position welding
- Suitable for metal to metal wear and abrasion parts

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂ / FCAW process

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.2 (0.045)	✓
1.4 (0.052)	✓
1.6 (1/16)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Mo	Others
0.2	0.7	1.5	0.018	0.007	1.8	0.6	-

Typical Mechanical Properties of All-Weld Metal

Hardness (Hv)

450-500

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	9.8 (385)	25-27	230	4.3 (9.4)
		12.5 (492)	27-29	260	5.2 (11.3)
		14.2 (559)	29-31	300	6.0 (13.2)
1.6mm (1/16 in) DC+					
100% CO ₂	20 (4/5)	5.8 (228)	27-29	260	4.8 (10.5)
		7.9 (311)	28-30	300	5.5 (12.1)
		9.7 (381)	29-31	330	7.2 (15.8)

SC-600H

For Hard-facing

Conformances

JIS Z3326 YF3B-C-600

Applications

- Rollers, shear blades, screw conveyer etc.

Features

- Flat and horizontal fillet position welding
- Suitable for abrasion parts

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂ / FCAW process

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.2 (0.045)	✓
1.4 (0.052)	✓
1.6 (1/16)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	Cr	Mo	V	W	Others
0.35	0.5	0.7	4.2	0.6	-	-	-

Typical Mechanical Properties of All-Weld Metal

Hardness (Hv)

620-680

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	9.8 (385)	25-27	230	4.4 (9.7)
		12.5 (492)	27-29	260	5.3 (11.6)
		14.2 (559)	29-31	300	6.1 (13.4)
1.6mm (1/16 in) DC+					
100% CO ₂	20 (4/5)	5.8 (228)	27-29	260	4.9 (10.8)
		7.9 (311)	28-30	300	5.7 (12.5)
		9.7 (381)	29-31	330	7.3 (16.0)

SMW

SAW

GMW

GTAW

FCAW

Non-FERROUS

APPENDIX

SC-600HM

For Hard-facing

Conformances

DIN 8555 MSG 6-GF-60-P

Applications

- Rollers, shear blades, screw conveyer etc.

Features

- Flat and horizontal fillet position welding
- Suitable for abrasion parts

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

Ar + 20~25% CO₂

FCAW process

Diameter / Packaging

Diameter mm (in)	Spool kg (33lbs)
1.2 (0.045)	✓
1.6 (1/16)	✓

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	P	S	Cr	Mo
0.5	0.3	1.5	0.012	0.009	6.2	0.35

Typical Mechanical Properties of All-Weld Metal

Hardness (HRC)

58-62

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
80% Ar + 20% CO ₂	20 (4/5)	9.8 (385)	25-27	230	4.5 (9.9)
		12.5 (492)	27-29	260	5.5 (12.1)
		14.2 (559)	29-31	300	6.4 (14.1)
1.6mm (1/16 in) DC+					
80% Ar + 20% CO ₂	20 (4/5)	5.8 (228)	27-29	260	5.3 (11.6)
		7.9 (311)	28-30	300	6.2 (13.6)
		9.7 (381)	29-31	330	7.6 (16.7)

SC-700H

For Hard-facing

Conformances

JIS Z3326 YF3B-C-700

Applications

- Rollers, shear blades, screw conveyer etc.

Features

- Flat and horizontal fillet position welding
- Suitable for abrasion parts

Welding Position



1G 2F
(PA) (PB)

Current

DC +

Shielding Gas

100% CO₂ / FCAW process

Diameter / Packaging

Diameter	Spool
mm (in)	15kg (33lbs)
1.2 (0.045)	√
1.4 (0.052)	√
1.6 (1/16)	√

Typical Chemical Composition of All-Weld Metal (%)

C	Si	Mn	Cr	Mo	V	W	Others
0.7	0.6	1.3	5.2	-	-	0.4	-

Typical Mechanical Properties of All-Weld Metal

Hardness (Hv)

700-720

Typical Operating Procedures

Diameter, Polarity Shielding Gas	CTWD mm (in)	Wire Feed Speed m/min (in/min)	Voltage (volts)	Approx. Current (amps)	Deposition Rate kg/hr (lb/hr)
1.2mm (0.045 in) DC+					
100% CO ₂	20 (4/5)	9.8 (385)	25-27	230	4.4 (9.7)
		12.5 (492)	27-29	260	5.4 (11.9)
		14.2 (559)	29-31	300	6.3 (13.8)
1.6mm (1/16 in) DC+					
100% CO ₂	20 (4/5)	5.8 (228)	27-29	260	5.1 (11.2)
		7.9 (311)	28-30	300	5.9 (13.0)
		9.7 (381)	29-31	330	7.4 (16.3)

SMW

SAW

GMW

GTAW

FCAW

Non-FERROUS

APPENDIX