### Solid Wire For Gas Metal Arc Welding For MAG Welding



## **MC-50** For mild steel and 50kgf/mm<sup>2</sup> class high tensile strength steel

AWS A5.18 ER70S-G KS D 7025 YGW11 JIS Z3312 YGW11

### Application

Butt and fillet MAG welding of structures such as vehicles, buildings, ships, machinery and bridges.

### Characteristics

- (1) As a solid wire, deposition rate is high and the penetration is quite deep. So, high efficiency welding can be performed.
- (2) The deposition efficiency is high because of no slag formation, the welding time can be reduced.
- (3) The arc stability is good and spatter loss is low. So, welding job is easy.

### Typical chemical composition of weld metal (%)

(Shield Gas : 100%CO<sub>2</sub>)

С	Mn	Si	Р	S
0.09	1.09	0.46	0.013	0.012

### Typical mechanical properties of weld metal

(Shield Gas : 100%CO2)

YP N/mm²(kgf/mm²)	TS N/mm²(kgf/mm²)	EL %	IV J (kgf-m) ୦୯	PWHT
470(48)	560(57)	30	120(12.2)	As welded
420(43)	520(53)	34	140(14.3)	620℃×1hr SR

An example of joint weld test (Shield gas: 100%CO2)

				١	Welding	conditio	n	Joint ten	sile test	IV J
Posi- tion	Steel	Dia. (mm)	Depositing sequence	Pass	Amp.	Volt.	Speed (cm/ min)	TS N/mm² (kgf/mm²)	Fractured position	(kgf-m) 0℃
F	SM 50A	1.2 1.6		1 (1.2mm) 2-7 (1.6mm)	260 350	29 32	30 30-40	560(57)	Base metal	81(8.3)
Н	SM 50A	1.2 1.6		1 (1.2mm) 2-8 (1.6mm)	260 350	29 32	40 30-55	560(57)	Base metal	98(10)

### Size & recommended current range (DC +)

C	Dia. (mm)	1.0	1.2	1.4	1.6	2.0
A	F	50-220	100-350	150-450	200-550	250-650
Amp.	Н	50-200	100-300	150-350	200-400	-

· Approval : ABS, BV, DNV GL, KR, LR, NK

## **MC-50T** For mild steel and 50kgf/mm<sup>2</sup> class high tensile strength steel

AWS	A5.18	ER70S-6
KS	D 7025	YGW12
JIS	Z3312	YGW12

### Applications

Butt and fillet MAG welding of structures such as automobiles, vehicles, electric appliances, ships, steel frames, bridges in all position.

### Characteristics

- (1) MC-50T is a solid wire whose arc stability is good at low current ranges (short-circuiting arc range) and spatter loss is low.
- (2) It is suitable for all-position welding of steel sheets by CO<sub>2</sub> or Ar+CO<sub>2</sub> mixtured gas shielding, for higher speed welding.
- (3) The arc stability is good in wide range of current.

### Notes on Usage

- (1) Flow rate of shielding gas (CO<sub>2</sub>) should be 20  $\ell$  /min generally.
- (2) Flow rate of shielding gas should be 25~30 l /min under the condition of 2m/sec wind speed and use wind screen under the condition of over 2m/sec wind speed.
- (3) Keep the distance between tip and basemetal within  $10 \sim 20$ mm at less than 300A Welding current and within  $20 \sim 25$ mm at over 300A.

Typical chemic	al composition of	o) (Shie	eld Gas : 100%CO2)	
С	Mn	Si	Р	S
0.09	1.8	0.50	0.015	0.012

### Typical mechanical properties of weld metal

	YP	TS	EI	IV J (I	kgf-m)	
PWHT	N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	m <sup>2</sup> N/mm <sup>2</sup> m <sup>2</sup> ) (kgf/mm <sup>2</sup> )		30	-20°C	Shield gas
As welded	470(48)	550(56.1)	30	120(12.2)	100(10.2)	100%CO2
As welded	540(55.1)	610(62.2)	28	140(14.3)	120(12.2)	80%Ar+20%CO2

### Size & recommended current range (DC+)

	Dia. (mm)	0.9	1.0	1.2	1.4	1.6
	F	50-200	50-200	80-350	100-470	200-550
Amp.	Н	50-140	50-140	50-160	100-180	-
	OH	50-120	50-120	50-140	-	-

· Approval : ABS, BV, DNV GL, KR, LR, NK, CWB

### MC-50A For mild steel and 50kgf/mm<sup>2</sup> class high tensile strength steel

AWS A5.18 ER70S-3 KS D 7025 YGW16 JIS Z3312 YGW16

### Applications

Butt and fillet welding of vehicles, buildings, ships, machinery etc.

### Characteristics

- (1) MC-50A is a solid wire designed for all position welding.
- (2) High speed welding of steel sheets can be performed easily by short-circuit welding.
- (3) Arc is stable and spatter loss is low.

### Notes on Usage

- (1) Use welding grade with  $75 \sim 85\%$ Ar +  $15 \sim 25\%$ CO<sub>2</sub>.
- (2) Flow quantity of shielding gas should be 25 l /min. generally.
- (3) Use the wind screen against wind.
- (4) Keep the distance between tip and basemetal of  $6 \sim 15$ mm for less than 250A, and  $15 \sim 25$ mm for more than 250A of welding current.

### Typical chemical composition of weld metal (%)

(Shield Gas: 80%Ar+20%CO2)

С	Mn	Si	Р	S
0.08	0.98	0.48	0.015	0.012

### Typical mechanical properties of weld metal

(Shield Gas : 80%Ar+20%CO2)

YP	TS	EL	IV J (kgf-m)
N/mm²(kgf/mm²)	N/mm²(kgf/mm²)	%	-20℃
450(46)	540(55)	30	145(15)

### Sizes Available and Recommended Currents (Amp.)

Dia. (mm)		0.9	1.0	1.2	1.4	1.6
Amn	F	50-200	50-220	80-350	140-400	200-500
Amp.	V-up&OH	50-120	50-140	50-160	100-250	120-300

### MC-50S For mild steel and 50kgf/mm<sup>2</sup> class high tensile strength steel

AWS	A5.18	ER70S-6
KS	D 7025	YGW12
JIS	Z3312	YGW12

### Applications

Butt and fillet MAG welding of structures such as vehicles, buildings, ships, machinery and bridges in all position.

#### Characteristics

(1) MC-50S is a solid wire. So, all position welding and high speed welding of steel sheets can be performed easily by short circuit welding.

(2) As the arc stability is good and spatter loss is low, usability is excellent.

(3) The deposition efficiency is high because of no slag formation, the welding time is reduced.

### Typical chemical composition of weld metal (%)

(Shield Gas : 100%CO2)

С	Mn	Si	Р	S
0.09	0.98	0.44	0.013	0.012

### Typical mechanical properties of weld metal

YP N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	TS N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	EL %	IV J (kgf-m) ുന	PWHT	Shield gas
460(47)	540(55)	31	140(14)	As welded	100%CO2
360(37)	490(50)	34	160(16)	620℃×1hr SR	100%CO2
480(49)	580(59)	32	180(18)	As welded	80%Ar+20%CO2

### An example of joint weld test

(Shield Gas: 100%CO2)

				N	/elding	conditi	on	Joint ten	sile test	IV J
Posi- tion	Steel	Dia. (mm)	Depositing sequence	Pass	Amp.	Volt.	Speed (cm/ min)	TS N/mm² (kgf/mm²	Fractured position	(kgf-m) 0°C
F	SM 50A	1.2		1-8	260	28	15-30	530(54)	Base metal	93(9.5)
V-up	SM 50A	1.2		1-8	140	19	4-8	520(53)	Base metal	95(9.7)

C	Dia. (mm)	0.9	1.0	1.2	1.4	1.6
	F	50-200	50-200	80-350	100-470	200-550
Amp.	V	50-140	50-140	50-160	100-180	-
	OH	50-120	50-120	50-140	-	-

### MC-50B For mild steel and 50kgf/mm<sup>2</sup> class high

 AWS
 A5.18
 ER70S-G

 KS
 D 7025
 YGW15

 JIS
 Z3312
 YGW15

### tensile strength steel

### Applications

Butt and fillet MAG welding of structures such as automobiles, vehicles, electric appliances, ships, steel frames, bridges in all position.

### Characteristics

- (1) MC-50B is solid wire designed for all position welding.
- (2) High speed welding of steel sheets can be performed easily by short-circuit welding.
- (3) Arc is stable and spatter loss is low.

### Notes on Usage

- (1) Use welding grade with  $75 \sim 85\%$ Ar $+ 15 \sim 25\%$ CO<sub>2</sub>.
- (2) Flow quantity of shielding gas should be 25 ℓ /min. generally.
- (3) Use the wind screen against wind.
- (4) Keep the distance between tip and basemetal of  $6 \sim 15$ mm for less than 250A, and  $15 \sim 25$ mm for more than 250A of welding current.

|--|

(Shield Gas: 80%Ar+20%CO2)

С	Mn	Si	Р	S
0.08	0.98	0.48	0.014	0.012

### Typical mechanical properties of weld metal

(Shield Gas: 80%Ar+20%CO2)

YP	TS	EL	<u>IV J (kg</u> f-m)	S.R
N/mm²(kgf/mm²)	N/mm²(kgf/mm²)	%	-20℃	(PWHT)
450(46)	540(55)	30.0	140(14)	As Welded

Dia.	(mm)	0.9	1.0	1.2	1.4	1.6
	F&H-F	50~200	50~200	80~350	100~470	200~250
Amp.	V	50~140	50~140	50~160	100~180	-
	ОН	50~120	50~120	50~140	-	-

## **MF-50T** For mild steel and 50kgf/mm2 class high strength steel

AWS A5.18 ER70S-6 KS D7025 YGW12 JIS Z3312 YGW12

### Applications

Butt and filler MAG welding of structures such as automobiles, vehicles, electric appliances, ships, steel frame, bridges in all position.

### Characteristics

- (1) MF-50T is a solid wire whose arc stability is good at low current ranges (short-circuiting arc range) and spatter loss is low.
- (2) It is suitable for all-position welding of steel sheets by  $CO_2$  or  $Ar + CO_2$ mixtured gas shielding, for higher speed welding.
- (3) The arc stability is good in wide range of current.

### Notes on Usage

- (1) Flow rate of shielding gas (CO<sub>2</sub>) should be 20 ℓ /min generally.
- (2) Flow rate of shielding gas should be 25~30 l /min under the condition of 2m/sec wind speed and use wind screen under the condition of over 2m/sec wind speed.
- (3) Keep the distance between tip and base metal within 10~20mm at less than 300A Welding current and within 20~25mm at over 300A.

rypical chemic	a composition (	S) (Shie	(Shield Gas 100%CO2)		
С	Mn	Si	Р	S	
0.08	1.46	0.88	0.009	0.005	

### Typical mechanical properties of weld metal

Typical chamical composition of wold motal (0/)

(Shield Gas : 100%CO2)

YP	TS	EL	IV	(J)
N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	%	℃ 0	-30 °C
460 (47)	537 (55)	32	110	97

#### Size & recommended current range (DC $\pm$ )

Dia.	(mm)	0.9	1.0	1.2	1.4	1.6
	F	50-200	50-200	80-350	100-470	200-550
Amp.	Н	50-140	50-140	50-160	100-180	-
	ОН	50-120	50-120	50-140	-	-

Approval : -

# MC-50C

For mild steel and 50kgf/mm2 class high strength steel

AWS A5.18 ER70S-2 JIS Z3312 G 49 A 3 C(M) 2

### Applications

Butt and filler MAG welding of structures such as automobiles, vehicles, electric appliances, ships, steel frame, bridges in all position.

### Characteristics

- (1) MF-50T is a solid wire whose arc stability is good at low current ranges (short-circuiting arc range) and spatter loss is low.
- (2) It is suitable for all-position welding of steel sheets by  $CO_2$  or  $Ar + CO_2$ mixtured gas shielding, for higher speed welding.
- (3) The arc stability is good in wide range of current.

### Notes on Usage

- (1) Flow rate of shielding gas (CO<sub>2</sub>) should be 20  $\ell$  /min generally.
- (2) Flow rate of shielding gas should be 25~30 ℓ /min under the condition of 2m/sec wind speed and use wind screen under the condition of over 2m/sec wind speed.
- (3) Keep the distance between tip and base metal within 10~20mm at less than 300A Welding current and within 20~25mm at over 300A.

Typical chemic	al composition of	6) (Shie	eld Gas : 100%CO2)	
С	Mn	Si	Р	S
0.05	1.19	0.56	0.016	0.005

### Typical mechanical properties of weld metal

(Shield Gas : 100%CO2)

YP	TS	EL	IV (J)
N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	%	-30 °C
504 (51)	551 (56)	29	124

### Size & recommended current range (DC $\pm)$

Dia.	(mm)	0.9	1.0	1.2	1.4	1.6
	F	50-200	50-220	80-350	100-470	200-550
Amp.	Н	50-140	50-140	50-160	100-180	-
	ОН	50-120	50-120	50-140	-	-

Approval : -



### Applications

Butt and fillet MAG welding of structures using 55kgf/mm<sup>2</sup> class high tensile strength steel such as civil construction equipment, steel frames, bridges and pressure vessels in all position.

### Characteristics

- (1) MC-55 is a solid wire designed for all position welding.
- (2) High speed welding of steel plates can be performed easily by short-circuit welding.
- (3) The arc stability is good and spatter loss is low.

#### Notes on Usage

- (1) Use welding grade with 75~85%Ar-15~25%CO2
- (2) Flow quantity of shielding gas should be 25 l /min.
- (3) Use the wind screen against wind.
- (4) Keep the distance between tip and base metal as short as possible.

### Typical chemical composition of weld metal (%)

(Shield Gas: 80%Ar+20%CO<sub>2</sub>)

С	Mn	Si	Р	S
0.07	1.87	0.92	0.015	0.007

#### Typical mechanical properties of weld metal

(Shield Gas: 80%Ar+20%CO2)

YP	TS	EL	IV J (kgf-m)	S.R
N/mm²(kgf/mm²)	N/mm²(kgf/mm²)	%	-20℃	(PWHT)
509(51)	613(62)	30.0	150	As Welded

Dia. (mm)		1.2 (0.045)	1.4 (0.052)	1.6 (1/16)
	F&H-F	80~350	100~470	200~250
Amp.	V	50~160	100~180	-
	OH	-	-	-

# **MC-60**

For 60kgf/mm<sup>2</sup> class high tensile strength steel

### Applications

Butt and fillet MAG welding of structures using 60kgf/mm<sup>2</sup> class high tensile strength steel such as civil construction equipments, steel frames, bridges and pressure vessels.

### Characteristics

- shows excellent usability which is equal to the solid wire for mild steels and 50kgf/mm<sup>2</sup> high tensile steels.
- (2) As the deposition rate is very high and the penetration is deep, high efficiency welding is obtained.
- (3) The arc stability is good and spatter loss is low. So, welding job is easy.
- (4) The deposition efficiency is high because of no slag formation, the welding time is saved.

#### Notes on usage

Preheating at 100~150℃ is required when a plate is thick and restraint is high.

### Typical chemical composition of weld metal (%)

	1			(Shield	Gas : 100%CO <sub>2</sub> )
С	Mn	Si	Р	S	Мо
0.07	1.35	0.49	0.009	0.010	0.25

### Typical mechanical properties of weld metal

(Shield Gas : 100%CO2)

		-	
YP	TS	EL	IV J (kgf-m)
N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	N/mm <sup>2</sup> (kgf/mm <sup>2</sup> )	%	-30 °C
590(60)	670(68)	26	90(9.2)

Dia. (mm)	1.2	1.6
Amp.	100-360	170-550

# **CS-PACK**

For mild steel and 50kgf/mm<sup>2</sup> class high tensile strength steel

### Applications

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

Item	Weight		200kg	250kg	300kg
Due du et er er e	MC-5	0	1.2ø, 1.4ø	1.2ø, 1.4ø,1.6ø	1.2, 1.4, 1.6
Product name	MC-5	0T	0.9, 1.0, 1.2		
and sizes	CSF-71T			1.2, 1.4, 1.6	
CS-PACK	DIM	Solid	507 ø x 810mm 507 ø		507 ø x 870mm
		FCW	507 ø x 810mm	507øx870mm	663 ø x 810mm
	Total weight		about 211kg	about 265kg	about 315kg
Fuchacian	Dimension		105 Ø V	495 Φ x 300mm	
Exclusive pulled out device			495 € X 50011111		FCW (656 Ø x520mm)
	Weigl	nt	about1.9kg about1.9kg (3.		about1.9kg (3.2kg)
Prepared by user		Conduit tube			

### Specifications

. The weight can be changed according to the reguirement of the customer



### Characteristics

- (1) As the wire is set to be elastically twisted in the pall, so the wire can the pulled out straightly and makes good tracking on a welding seam.
- (2) As the wire feeding is smoothly, it can be applied for stable welding.
- (3) Unique reforming devices such as wire straightener are not necessary for CS-PACK.
- (4) Since a great amount of wire is contained than spool-wound types, there is less need to change wires, ensuring improved efficiency in large welding jobs.