

CSF-71LF

For mild steel and 490 N/mm² class high tensile strength steel



Applications

Butt, fillet welding of mild steel & 490N/mm² high tensile strength steels of structure such as bridges, buildings, storage tanks, ships and industrial machinery.

Specification

AWS A5.20 E71T-1C/1M, 9C/9M

EN ISO 17632-A T46 2 P C1 1 H5, T46 2 P M21 1 H10
B T49 2 T1-1 C1 A-U-H5, T49 2 T1-1 M21 A-U-H10

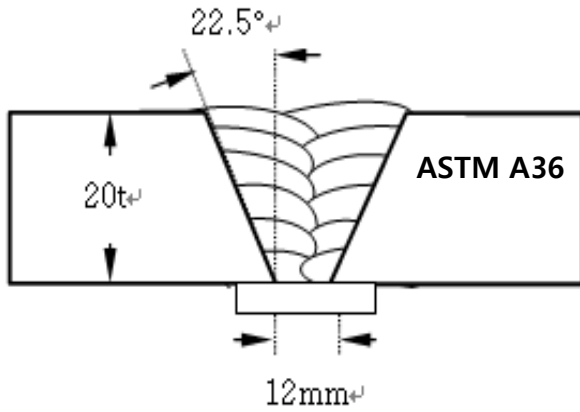
**Characteristics
on usages**

- 1) CSF-71LF is a rutile type flux cored wire and designed for all-position welding by single pass & multi pass with CO₂ and Ar/CO₂ gas shielding.
- 2) It provides the excellent usability with stable arc, less spattering, good bead appearance, better slag removal, and less quantity of welding fume comparable to solid wire.
- 3) The wire has 3Y shipping society approval for improved weld deposit impact toughness.

Notes on usages

- 1) It is suitable to use shielding gas of 20~25 ℓ/min.
- 2) The distance between tip & base metal is to be 20~25mm.
- 3) Protect the weld with a screen to prevent blowholes caused by wind where the wind velocity is 2m/sec.
- 4) Thick heavy plate should be welded under proper preheating & interpass-Temperature

Mechanical properties & Chemical compositions of all weld metal test



(Joint preparation & Layer Details)

Wire Dia.	1.6 mm
Current/Polarity	DCEP
Ampere / Voltage	280 A / 26~28 V
Shield gas	CO ₂ , 20 l/min.
CTWD	20~25 mm
Inter-pass temp.	150 ± 15 °C
Welding position	1 G
Welding speed	250 ~ 300 mm/min.

Chemical compositions

(wt.%)

	C	Mn	Si	S	P	Ni	Cr	Mo	V
AWS A5.20	0.12	1.75	0.90	0.03	0.03	0.50	0.20	0.30	0.08
100% CO ₂	0.04	1.35	0.45	0.01	0.01	0.01	0.03	0.02	0.01
75%Ar-25%CO ₂	0.04	1.45	0.50	0.01	0.01	0.01	0.03	0.02	0.01

Mechanical properties

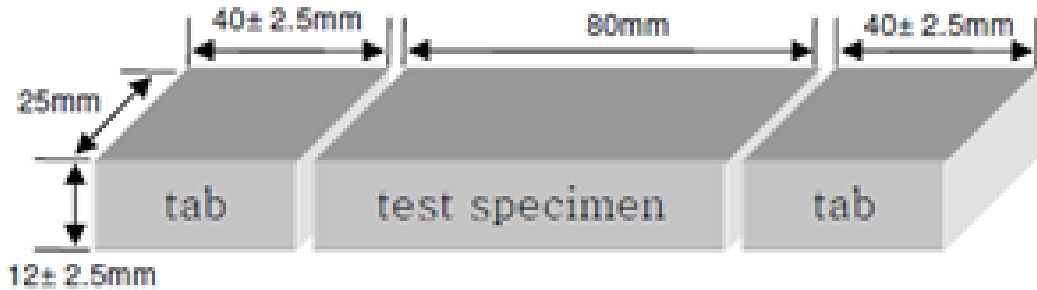
	Tensile properties			CVN-IE (J)
	YP(MPa)	TS(MPa)	El.(%)	@-30°C
AWS A5.20	≥ 400	490-660	≥ 22	≥ 27J
100% CO ₂	480	550	32.8	65
75%Ar-25%CO ₂	530	610	30.5	80



Diffusible hydrogen Content

Welding condition

Specification	AWS A4.3 / GC method
Wire Dia.	1.6 mm
Current/Polarity	DCEP
Ampere	280 A
Voltage	28 V
Shield gas	CO ₂ , 20 l/min.
CTWD	20 mm
Welding speed	280~320 mm/min.



Result

	X1	X2	X3	X4
100% CO ₂	3.2	3.6	3.8	3.4
75%Ar-25%CO ₂	5.2	4.8	5.0	5.3

Average Hydrogen Content

100% CO ₂	3.5 ml/100g
75%Ar-25%CO ₂	5.0 ml/100g



Size available / Recommend current(DCEP) Deposition rate / efficiency / Packaging

Size available/Recommend current (DCEP)

		1.2mm	1.4mm	1.6mm
Flat Horizontal fillet	A	180~270	200~290	200~320
Vertical up	A	140~200	160~240	160~260
Overhead	A	140~220	160~260	160~280

Deposition rate / efficiency

	Amp.	Volt.	Depo. Rate (kg/hr.)	Depo. Efficiency (%)
1.2mm CO ₂ gas	160	26	2.54	88.9
	200	28	3.48	88.2
	240	30	4.40	89.8
	280	32	5.70	88.6
	320	34	7.14	89.4
1.6mm CO ₂ gas	180	24	2.11	86.4
	300	30	4.56	87.2
	360	34	6.18	87.5
	420	37	7.91	88.4

Packaging

Wire Dia. (mm)	Type	Unit. (kg)
1.2 / 1.4/ 1.6	Spool	5, 12.5, 15, 20
	Pack	100, 200, 300



Approval / Wire feedability evaluation

Approval

	CO ₂ gas	Mix gas
ABS	3YSAH5	3YSAH10
BV	SA3YM H5	SA3YM H10
DNV-GL	III YMS(H5)	III YMS(H10)
LR	DXVudO, BF, 3YS, H5	DXVudO, BF, 3YS, H10
RINA		
NK	KSW53G(C)H5	KSW53G(M2)H10

Wire feedability evaluation model

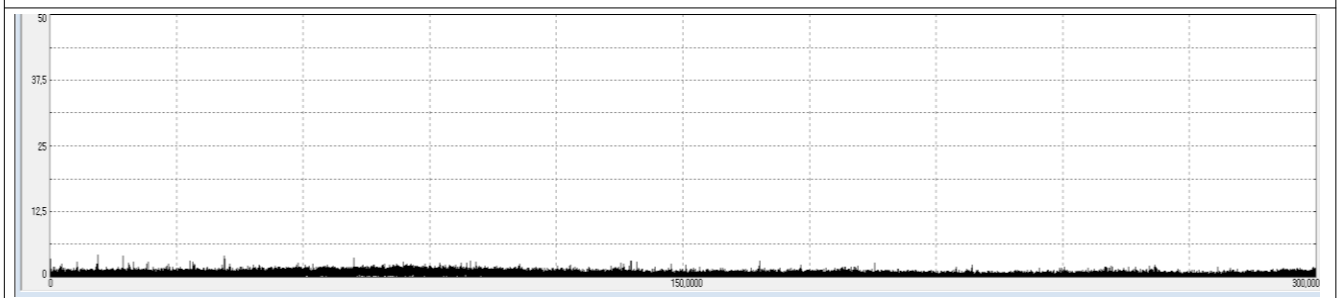
Cable type	Cable length	Welding condition	Welding time	Welding equipment	CTWD
1 turn/ 2 turn	6 m	300~320A/ 32~34V	300 sec. 3 times	Arc monitoring system	25mm

Wire feedability evaluation (Feeding resistance value)

Very good	Good	Normal	Bad	Very bad
~0.4	0.41~0.60	0.61~0.80	0.81~1.00	1.1~

Evaluation result

Feeding resistance : 0.38



AWS D 1.8 / Seismic welding test

Welding conditions

	Wire Dia. (mm)	Heat input (KJ/mm)	Shield gas	Remark
#1	1.2	1.11	100% CO ₂	Low Heat input
#2	1.6	3.45		High Heat input
#3	1.2	1.05	75%Ar+ 25%CO ₂	Low Heat input
#4	1.6	3.22		High Heat input

Test results

Spec.	Y.P. (MPa)	T.S (MPa)	El. (%)	CVN-IE (J)
	≥400	≥480	≥22	≥54 @+20°C
#1	519	587	27.5	106
#2	425	487	36.5	225
#3	604	652	25.9	130
#4	451	529	36.2	188

