



FCW DATA SHEET

SUMMARY

UNALLOYED AND LOW ALLOYED STEELS

FCW 51-M.....	4
FCW 51-M HP.....	5
FCW 51-R.....	6
FCW 56-R.....	7
FCO 56.....	8
FCW OA.....	9
FCW M75Cu.....	10
FCW 81-M.....	11
FCW 81-R.....	12
FCW 77-M.....	13
FCW 77-R.....	14
FCW 77-B.....	15

STAINLESS STEELS

FCW 308L.....	16
FCW 308LP.....	17
FCW 316L.....	18
FCW 316LP.....	19
FCW 309L.....	20
FCW 309LP.....	21
FCW 310.....	22
FCW 310LP.....	23
FCW 2209.....	24
FCW 2209P.....	25
FCW 2509MO.....	26
FCW 2509MOP.....	27
FCW 307M.....	28
FCW 307.....	29
FCW 307P.....	30

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.

FCT 308L.....	31
FCT 316L.....	32
FCT 309L.....	33
FCT 347	34

NICKEL & COBALT BASIS

FCW NI182	35
FCW NI625	36
FCW FENI.....	37
FCW CO6	38
FCW CO21	39

HARDFACING, MAINTENANCE & REPAIR

FCW 45.....	40
FCW 60.....	41
FCO 65A.....	42
FCO 65	43
FCO 63	44
FCO 63TI	45
FCO FE60WC.....	46
FCW 60G	47
FCO HBMNCR.....	48
FCW HB50CO	49
FCW 65BO	50
FCO 307	51



FCW 51-M

Universal Metal Cored

Classification

AWS A5.18 : E70C-6M H4

ISO 17632-A : T 42 3 M M21 1 H5

Description & Applications

Metal cored wire for gas shielded arc welding of low alloys in all positions with Ar-CO₂ mix. Mainly used in flat and horizontal positions.

Main applications: General steel constructions, foundries, shipyards...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min											
Max	0.12	0.90	1.75	0.20	0.50	0.2	0.3	0.05	0.08	0.03	0.03
Type	0.04	0.60	1.25	0.04	0.02	0.01	0.02	0.01	0.01	0.015	0.010

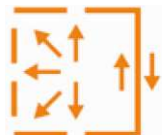
Cr+Ni+Mo+V <0.50

Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	420	500	22	-30°C 47
Max		640		
Type	465	530	30	-30°C 60

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.2	150 - 310	16 - 35	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12-15 l/min



FT En-CA02-190729

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 51-M HP

*High Performance
Universal Metal Cored wire
For all positions*

Classification

AWS A5.36 : E71T15-M21A8-CS1-H4 ISO 17632-A : T 46 6 M M21 1 H5
 AWS A5.36 : E71T15-C1A6-CS1-H4 ISO 17632-A : T 42 5 M C1 1 H5

Description & Applications

Metal cored wire for welding in all positions of Carbon, Carbon – Manganese and similar types of steels, including fine grain steels with Ar-CO₂ or pure CO₂ shielding gas. High yield, good weldability, excellent bead appearance, very low spatters losses. Excellent mechanical properties at low temperature (-60°C) in as welded conditions or after post weld heat treatment. Especially used for automated-robotized applications and for root pass welding on pipe or plate.

Main applications: General steel constructions, shipyards...

Typical Chemical Composition (%)

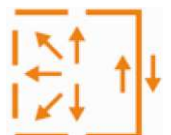
	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min											
Max	0.12	0.90	1.75	0.20	0.50	0.2	0.3	0.05	0.08	0.030	0.030
Type gaz M21	0.06	0.80	1.60	0.03	0.02	0.01	0.07	0.01	0.005	0.01	0.01
Type gaz C1	0.05	0.60	1.50	0.03	0.02	0.01	0.07	0.01	0.005	0.01	0.01

Typical All Weld Metal Mechanical Properties

		R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)	
Min	gas	460	530	22	-60°C	47
Max	M21		660			
Type	gas M21	500	600	29	-40°C	90
					-60°C	60
Type	gas C1	460	560	30	-40°C	80
					-50°C	60
TTAS	620°C/2h	420	510	24	-40°C	90

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.0	150 - 380	16 - 36	10 - 25	ISO 14175 : M21 (Ar/CO ₂) C1 (CO ₂)
	1.2				
	1.4				
	1.6				



FT En-CA10-190729

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 51-R

*Universal rutile flux cored
For all positions*

Classification

AWS A5.20 : E71T-1M

ISO 17632-A : T 46 2 P M21 1 H10

Description & Applications

Rutile flux cored wire for gas shielded arc welding of unalloyed steels like carbon and Carbon-Manganese steels in all positions with Ar-CO₂ shielding gas.

Main applications: General steel constructions, foundries, shipyards...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min											
Max	0.12	0.90	1.75	0.20	0.50	0.2	0.3	0.05	0.08	0.03	0.03
Type	0.05	0.40	1.10	0.06	0.01	0.01	0.01	0.01	0.02	0.015	0.010

Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	460	530	22	-20°C 47
Max		670		
Type	560	590	28	-20°C 70

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.2	120 - 350	15 - 25	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 20 - 25 l/min
	1.6	180 - 450	18 - 30		



FT En-CA01-190729

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 56-R

Seamless Rutile Cored wire

Classification

AWS A5.36 : E71T1-M21A4-CS1-H4
 AWS A5.36 : E71T1-C1A2-CS1-H4

ISO 17632-A : T 46 4 P M21 1 H5
 ISO 17632-A : T 42 2 P C1 1 H5

Description & Applications

Copper coated rutile flux cored wire for gas shielded arc welding low alloys in all positions for Ar-CO₂ mix or CO₂ pure gas. The fast freezing and easy remove slag is designed to weld in all positions.

Main applications: General steel constructions, pressure vessels, shipyards...

Typical Chemical Composition (%)

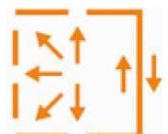
	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min											
Max	0.12	0.90	1.75	0.20	0.50	0.2	0.3	0.05	0.08	0.030	0.030
Type	0.065	0.50	1.60	0.04	0.02	0.005	0.10	0.01	0.01	0.015	0.010

Typical All Weld Metal Mechanical Properties

		R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)	
Min	gas	460	530	22	-40°C	47
	M21				-45°C	27
Max			660			
Type	gas M21	510	580	26	-40°C	75
					-45°C	65
Type	gas C1	>420	500-640	>22	-20°C	>60

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.0	160 - 270	21 - 34	10 - 25	ISO 14175 : M21 (Ar/CO ₂) C1 (CO ₂) 14 - 20 l/min
	1.2	190 - 320	22 - 35		



FT En-CA03-190729

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO 56

*Flux cored wire without gas
All positions*

Classification

AWS A5.36 : E71T11-AZ-CS3

ISO 17632-A : T 38 Z Z NO 1

Description & Applications

Flux cored wire for welding low alloys steels without gas in all positions. Especially used for welding in positions low thickness (< 5 mm).

Main applications: General steel constructions, foundries, shipyards

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	V	Al	P	S
Min											
Max	0.30	0.60	1.75	0.20	0.50	0.2	0.35	0.08	1.8	0.030	0.030
Type	0.10	0.30	1.65	0.05	0.04	0.04	0.05	0.01	1.4	0.015	0.012

All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)
Min	400	490	22
Max		600	
Type	440	580	25

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = -	1.2	100 - 200	20 - 22	30 - 40	-
	1.6	150 - 300	20 - 24	30 - 40	



FT En-CA06-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW OA

Flux cored wire OPEN-ARC

Classification

AWS A5.20 : E71T-GS

ISO 17632-A : T 42 Z W NO 1 H15

Description & Applications

Flux cored wire to weld carbon steels for Open-Arc welding without shielding gas in all positions. Easy slag removal. For single pass only.

Main applications: Steel constructions, for shipbuilding, for railways, for maintenance works in mines, quarries, agriculture.

Base materials:

Construction steels for general use :

Designation-EN	S185 – S355 P235 – P355	L210 – L360
ASTM	A285 grade C A442 grade 55, 60	A414 grade C, D, E A515 grade 55, 60

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	V	Nb	Al	P	S
Min												
Max			2.0	0.2	0.5	0.2	0.3	0.08	0.05	2.0		
Type	0.15	0.40	1.0	0.02	0.03	0.02	0.02	0.005	0.01	0.9	0.015	0.010

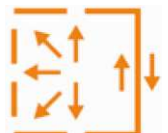
Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)
Min	420	500	20
Max		640	
Type	470	570	24

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.0	90 - 240	15 - 28		-
	1.2	90 - 310	16 - 35		

FT En-CA08-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW M75Cu

*Metal cored wire
Type CORTEN*

Classification

AWS A5.28 : E70C-G-H4

ISO 17632-A : T 46 2 Z M M21 1 H5

Description & Applications

Metal cored wire with Chromium, Nickel and Copper alloyed for welding COR-TEN type steels with Ar + CO₂ gas shielded. Good weldability, low spatter.

Main applications: Public works, steels construction, shipyard...

Base material:

Steels with improved resistance to atmospheric corrosion

EN- Designation	S235J0W, S235J2W, S355J2G1W
	COR-TEN A, COR-TEN B, Patinax 37...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	V	Nb	P	S
Min											
Max											
Type	0.05	0.50	1.1	0.50	0.40	0.02	0.40	0.005	0.01	0.015	0.015

Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	460	530	20	-20°C
Max		680		
Type	510	570	24	-20°C

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.2	100 - 350	15 - 35	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 12 - 15 l/min
	1.6	130 - 450	15 - 35	15 - 25	

FT En-CF08-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 81-M

*Metal Cored Wire
For cold tough steel*

Classification

AWS A5.36 : E80T15-M21A8-Ni1-H4

ISO 17632-A : T 50 6 1Ni M M21 1 H5

Description & Applications

Metal cored wire, Nickel alloyed, for welding of carbon, carbon-manganese and high strength steels with Ar + CO₂ shielding gas. Resistant to low temperature down to -60°C. Good characteristics of cold toughness up to -60°C. Good weldability, very low spatter losses and excellent weld bead appearance. Easy slag removal.

Main applications: General steel constructions, foundries, shipyards

Base materials

Fine grain construction steels, cold tough:

EN	: S355JR, S355J0, S355J2, S450J0, S355N-S460N, S355NL-S460NL, S355M-S460M, S355ML-S460ML, S460Q, S500Q, S460QL, S500QL, S460QL1, S500QL1, P355GH, P355NH, P420NH, P460NH, P355N-P460N, P355NH-P460NH, P355NL1-P460NL1, P355NL2-P460NL2, L245NB-L415NB, L245MB-L485MB, L360QB-L485QB, aldur 500Q, aldur500QL, aldur 500QL1
ASTM	: A 350 Gr. LF2; A 516 Gr. 65, 70; A 572 Gr. 42, 50, 60, 65; A 573 Gr. 70; A 588 Gr. B, C, K; A 633 Gr. A, C, D, E; A 662 Gr. B, C; A 678 Gr. B; A 707 Gr. L2, L3; A 841 Gr. A, B, C; API 5 L X42, X52, X60, X65, X70, X52Q, X60Q, X65Q, X70Q

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min					0.80						
Max	0.12	0.80	1.4	0.15	1.10	0.2	0.3	0.05	0.05	0.030	0.030
Type	0.06	0.50	1.3	0.04	0.90	0.01	0.10	0.01	0.02	0.015	0.010

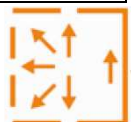
Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	500	560	19	-60°C
Max		690		47
Type	530	620	27	-60°C

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
= +	1.0	160 - 270	21 - 34	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12-15 l/min
	1.2	190 - 320	22 - 35		
	1.4	200 - 350	23 - 36		
	1.6	210 - 380	23 - 37		

FT En-CF05-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 81-R

*Rutile Cored Wire all positions
For cold tough steels*

Classification

AWS A5.36 : E81T1-M21A8-Ni1-H4

ISO 17632-A : T 50 6 1Ni P M21 1 H5

Description & Applications

Rutile cored wire, Nickel alloyed for welding in all positions of Carbon, Carbon – Manganese and high strength steels with Ar-CO₂ shielding gas. High yield, good weldability, excellent bead appearance, very low spatters losses, fast freezing and easy to remove slag. Excellent mechanical properties at low temperature (-60°C) in as welded conditions or after post weld heat treatment.

Main applications: Offshore...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min					0.80						
Max	0.12	0.80	1.4	0.15	1.10	0.2	0.3	0.05	0.05	0.030	0.030
Type	0.07	0.45	1.3	0.04	0.85	0.01	0.10	0.01	0.02	0.015	0.010

Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	500	550	19	-60°C 47
Max		690		
Type	550	610	25	-40°C 100 -60°C 75

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.0	160 - 270	21 - 34	10 - 25	ISO 14175 : M21 (Ar/CO ₂)
	1.2	190 - 320	22 - 35		
	1.4	200 - 350	23 - 36		
	1.6	210 - 380	23 - 37		



FT En-CF04-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 77-M

*Metal cored wire
For high strength steels*

Classification

AWS A5.28 : E110C-K4-H4

ISO 18276-A : T 69 4 Mn2NiCrMo M M21 1 H5

Description & Applications

Metal cored wire, Nickel, Chromium and Molybdenum alloyed for welding low alloyed and high strength steels with Ar + CO₂ shielding gas. Exceptional mechanical properties at low temperatures (-60°C). Good weldability, excellent bead appearance, low spatter losses.

Main applications: Cranes, vessel and apparatus construction

Base material:

High strength steels

EN- Designation	S550Q-S690Q, S550QL-S690QL, P550Q-P690Q, P550QL-P690QL alform 550 M-700 M
ASTM	A 514 Gr. F, H, Q ; A 709 Gr. 100 Type B, E, F, H, Q ; A 709 Gr. HPS 100W

Typical Chemical Composition (%)

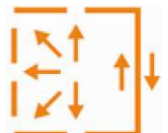
	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min	0.03		1.40	0.30	1.80	0.30					
Max	0.10	0.80	2.00	0.60	2.50	0.60	0.3	0.05	0.03	0.020	0.020
Type	0.06	0.60	1.60	0.50	2.40	0.50	0.09	0.01	0.005	0.015	0.015

Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)	
Min	690	770	17	-40°C	47
				-50°C	27
Max		940			
Type	760	820	18	-40°C	65
				-50°C	40

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.0	160 - 270	21 - 34	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12-15 l/min
	1.2	190 - 320	22 - 35		
	1.4	200 - 350	23 - 36		
	1.6	210 - 380	23 - 37		



FT En-CF10-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 77-R

*Rutile flux cored wire, all positions
For high strength steels*

Classification

AWS A5.36 : E111T1-M21A8-G-H4

ISO 18276-A : T 69 6 Z P M21 1 H5

Description & Applications

Rutile flux cored wire alloyed with Nickel and molybdenum for high strength steels with Ar + CO₂ shielding gas. Exceptional mechanical properties at low temperatures (-60°C). Good weldability, excellent bead appearance, low spatter losses.

Main applications: Cranes, vessel and apparatus construction

Base material:

High strength steels

EN- Designation	S690Q, S690QL, S690QL1, 700 M, aldur 700 Q, 700 QL, 700 QL1
ASTM	A 517 Gr A – P ; A 572 Gr 65

Typical Chemical Composition (%)

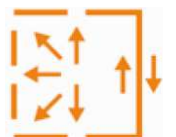
	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min											
Max											
Type	0.07	0.40	1.7	0.20	2.0	0.15	0.08	0.01	0.005	0.015	0.015

Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	690	770	17	-60°C 47
Max		900		
Type	770	800	19	-40°C 75 -60°C 60

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
= +	1.0	160 - 270	21 - 34	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 15 l/min
	1.2	190 - 320	22 - 35		
	1.4	200 - 350	23 - 36		
	1.6	210 - 380	23 - 37		



FT En-CF11-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 77-B

*Basic flux cored wire
For high strength steels*

Classification

AWS A5.36 : E110T5-M21A8-K4-H4

ISO 18276-A : T 69 6 Mn2NiCrMo B M21 3 H5

Description & Applications

Basic flux cored wire, Nickel, Chromium and Molybdenum alloyed for welding low alloyed and high strength steels with Ar + CO₂ shielding gas. Exceptional mechanical properties at low temperatures (-60°C). Good weldability in flat position, excellent bead appearance, and low spatters losses.

Main applications: Cranes, vessel and apparatus construction

Base material:

High strength steels

EN- Designation	S620Q, S620QL, S690Q, S690QL, S620QL1-S690QL1, alform plate 620 M, 700 M, aldur 620 Q, 620 QL, 620 QL1, aldur 700 Q, 700 QL, 700 QL1
ASTM	A 514 Gr. F, H, Q ; A 709 Gr. 100 Type B, E, F, H, Q ; A 709 Gr. HPS 100W

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	V	P	S
Min	0.03		1.40	0.30	1.80	0.30					
Max	0.10	0.80	2.00	0.06	2.60	0.60	0.3	0.05	0.03	0.020	0.020
Type	0.06	0.40	1.4	0.4	2.20	0.40	0.10	0.01	0.005	0.015	0.015

Typical All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	690	770	17	-60°C 47
Max		900		
Type	760	850	20	-60°C 80

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.0	160 - 270	21 - 34	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12-15 l/min
	1.2	190 - 320	22 - 35		
	1.4	200 - 350	23 - 36		
	1.6	210 - 380	23 - 37		



FT En-CF12-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 308L

High productivity 308L type
Flux cored wire

Classification

AWS A5.22 : E308LT0-1/-4

ISO 17633-A : T 19 9 L R M21(C1) 3

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 304L stainless steel. Flux cored wire with high productivity in down hand and fillet welding. Easy slag removal. For all type of steel construction with a service temperature does not exceed 400°C.

Main applications: Thermal Plant, piping, construction on sea coast

Base materials:

UNS	Grade	EN 10088	N° Mat.
S30400	304	X5CrNi18-10	1.4301
S30403	304L	X2CrNi19-11	1.4306
S32100	321	X6CrNiTi18-10	1.4541
S34700	347	X6CrNiNb18-10	1.4550

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	18.0	9.0				
Max	0.04	1.0	2.0	21.0	11.0	0.30	0.5	0.030	0.025
Type	0.03	0.70	1.4	19.5	10.6	0.01	0.10	0.020	0.008

FN 8 (Feritscope)

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	320	520	30	
Max				
Type	400	560	40	+20°C : 50 -196°C : 32

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 280	23 - 33	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12 - 20 l/min
	1.6	150 - 400	23 - 35	10 - 25	

FT En-CN04-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 308LP

All position 308L type
Flux cored wire

Classification

AWS A5.22 : E308LT1-1/-4

ISO 17633-A : T 19 9 L P M21(C1) 1

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 304L stainless steel. Wire with rutile fast freezing to weld easily in all positions. For all type of steel construction with a service temperature does not exceed 400°C.

Main applications: Thermal Plant, piping, construction on sea coast

Base materials:

UNS	Grade	EN 10088	N° Mat.
S30400	304	X5CrNi18-10	1.4301
S30403	304L	X2CrNi19-11	1.4306
S32100	321	X6CrNiTi18-10	1.4541
S34700	347	X6CrNiNb18-10	1.4550

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	18.0	9.0				
Max	0.04	1.0	2.0	21.0	11.0	0.30	0.5	0.030	0.025
Type	0.03	0.70	1.4	20.0	10.5	0.10	0.10	0.020	0.008

FN 8 (Feritscope)

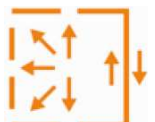
All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)	
Min	320	520	30		
Max					
Type	460	620	40	+20°C	60
				-196°C	35

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	130 - 270	22 - 35	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min

FT En-CN06-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 316L

High productivity 316L type
Flux cored wire

Classification

AWS A5.22 : E316LT0-1/-4

ISO 17633-A : T 19 12 3 L R M21(C1) 3

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 316L stainless steel. Flux cored wire with high productivity in down hand and fillet welding. Easy slag removal. For all type of steel construction with a service temperature does not exceed 400°C.

Main applications: Thermal Plant, piping, construction on sea coast

Base materials:

UNS	Grade	EN 10088	N° Mat.
S31600	316	X5CrNiMo17-12-2	1.4401
S31603	316L	X2CrNiMo17-12-2	1.4404
S31635	316Ti	X6CrNiMoTi17-12-3	1.4571
S30400	304	X5CrNi18-10	1.4301
S30403	304L	X2CrNi18-10	1.4306

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	17.0	11.0	2.5			
Max	0.04	1.0	2.0	20.0	13.0	3.0	0.5	0.030	0.025
Type	0.03	0.80	1.4	19.0	12.0	2.8	0.10	0.020	0.008

FN 8 (Feritscope)

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	320	510	30	
Max				
Type	420	560	37	-60°C 40

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 280	23 - 33	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12 - 20 l/min
	1.6	150 - 400	23 - 35	10 - 25	

FT En-CN07-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 316LP

All position 316L type
Flux cored wire

Classification

AWS A5.22 : E316LT1-1/-4

ISO 17633-A : T 19 12 3 L P M21(C1) 1

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 316L stainless steel. Wire with rutile fast freezing to weld in all positions. For all type of steel construction with a service temperature does not exceed 400°C.

Main applications: Thermal Plant, piping, construction on sea coast

Base materials:

UNS	Grade	EN 10088	N° Mat.
S31600	316	X5CrNiMo17-12-2	1.4401
S31603	316L	X2CrNiMo17-12-2	1.4404
S31635	316Ti	X6CrNiMoTi17-12-3	1.4571
S30400	304	X5CrNi18-10	1.4301
S30403	304L	X2CrNi18-10	1.4306

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	17.0	11.0	2.5			
Max	0.04	1.0	2.0	20.0	13.0	3.0	0.5	0.030	0.025
Type	0.03	0.80	1.4	19.0	12.0	2.9	0.10	0.020	0.008

FN 8 (Feritscope)

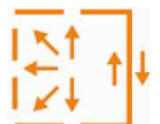
All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	320	510	30	
Max				
Type	490	600	32	-60°C 45

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	130 - 270	22 - 35	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min

FT En-CN08-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 309L

High productivity 309L type
Flux cored wire

Classification

AWS A5.22 : E309LT0-1/-4

ISO 17633-A : T 23 12 L R M21(C1) 3

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 309L stainless steel and for dissimilar joining type 304 or 316 on low alloys steels. The high ferrite content allows an important dilution without cracks. Flux cored wire with high productivity in down hand and fillet welding. Easy slag removal.

Main applications: Pressure vessels, maintenance and repair. Buttering before Low carbon cladding or Final hardfacing

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	22.0	12.0				
Max	0.04	1.0	2.5	25.0	14.0	0.3	0.5	0.030	0.025
Type	0.03	0.70	1.4	23.5	13.0	0.10	0.10	0.020	0.008

FN 23 (Feritscope)

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	320	520	30	
Max				
Type	460	580	32	-60°C 40

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 280	23 - 33	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12 - 20 l/min
	1.6	150 - 400	23 - 35	10 - 25	



FT En-CN09-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 309LP

All position 309L type
Flux cored wire

Classification

AWS A5.22 : E309LT1-1/-4

ISO 17633-A : T 23 12 L P M21(C1) 1

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 309L stainless steel and for dissimilar joining type 304 or 316 on low alloys steels. The high ferrite content allows an important dilution without cracks. Wire with rutile fast freezing to weld in all positions.

Main applications: Pressure vessels, maintenance and repair. Buttering before Low carbon cladding or Final hardfacing

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	22.0	12.0				
Max	0.04	1.0	2.5	25.0	14.0	0.3	0.5	0.030	0.025
Type	0.03	0.80	1.4	23.5	12.5	0.08	0.08	0.020	0.008

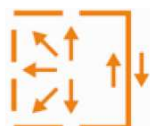
FN 23 (Feritscope)

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	320	520	30	
Max				
Type	460	580	35	-60°C 45

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	130 - 270	22 - 35	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min



FT En-CN10-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 310

High productivity 310 type
Flux cored wire

Classification

AWS A5.22 : ~E310T0-1/-4

ISO 17633-A : T 25 20 R M21(C1) 3

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 310 type stainless steel and adapted for welding dissimilar steels as heat resistant steels to stainless steels. Deposit resisting to corrosion and oxidation up to 1100°C and against hot cracks. High deposit rate in flat position. Could be used in positions.

Main applications: Ovens, boilers, thermal equipment for heat treatment, chemical and petrochemical installations.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min	0.06		1.0	23.0	18.0				
Max	0.20	1.2	5.0	27.0	22.0	0.3	0.5	0.030	0.025
Type	0.12	0.50	2.4	24.0	20.5	0.25	0.10	0.020	0.008

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	350	550	20	
Max				
Type	410	580	30	+20°C 50

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 280	23 - 33	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12 - 20 l/min
	1.6	150 - 400	23 - 35	10 - 25	



FT En-CN11-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 310LP

310 type Flux cored wire
For all positions

Classification

AWS A5.22 : ~E310T1-1/-4

ISO 17633-A : T 25 20 P M21(C1) 1

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding for 310 type stainless steel and adapted for welding dissimilar steels as heat resistant steels to stainless steels. Deposit resisting to corrosion and oxidation up to 1100°C and against hot cracks. Mainly used for welding in positions.

Main applications: Ovens, boilers, thermal equipment for heat treatment, chemical and petrochemical installations.

Typical Chemical Composition (%)

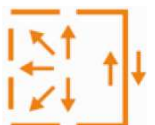
	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min	0.06		1.0	23.0	18.0				
Max	0.20	1.2	5.0	27.0	22.0	0.3	0.5	0.030	0.025
Type	0.10	0.50	2.5	25.0	20.0	0.25	0.10	0.020	0.008

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	350	550	20	
Max				
Type	410	600	35	+20°C 60

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	130 - 270	22 - 35	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min



FT En-CN12-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 2209

High productivity Duplex
Flux cored wire

Classification

AWS A5.22 : E2209T0-1/-4

ISO 17633-A : T 22 9 3 N L R M21(C1) 3

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding in flat and down hand positions of duplex steels such as Uranus 45N*, 2205, 2304. Resistant to severe corrosive environments (inter crystalline attack, pitting corrosion, crevice, and stress corrosion). High productivity in flat positions and horizontal fillet weld due to easily removal slag.

* (Trademarks of CREUSOT LOIRE)

Main applications: For pumps, vessels, piping systems etc. attacked by chloride containing solutions. But also for impellers and other components which require high strength combined with corrosion attack.

Base materials:

UNS	Alloy	EN 10088	Material N°	CLI
S31803		X2CrNiMoN22-5-3	1.4462	URANUS 45N
S32304	35N	X2CrNi23-4	1.4362	URANUS 35N
S32900	329	X3CrNiMoN27-5-2	1.4460	

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S	N ₂
Min			0.5	21.0	7.5	2.5				0.08
Max	0.04	1.0	2.0	24.0	10.0	4.0	0.5	0.030	0.025	0.20
Type	0.03	0.80	1.3	23.0	9.0	3.1	0.10	0.020	0.008	0.16

PREN : >35

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	450	690	20	
Max				
Type	630	780	28	-60°C 33

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 280	23 - 33	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12 - 20 l/min
	1.6	150 - 400	23 - 35	10 - 25	

FT En-CN18-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 2209P

All position duplex
Flux cored wire

Classification

AWS A5.22 : E2209T1-1/-4

ISO 17633-A : T 22 9 3 N L P M21(C1) 1

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding in all positions of duplex steels such as Uranus 45N*, 2205, 2304. Resistant to severe corrosive environments (inter crystalline attack, pitting corrosion, crevice, and stress corrosion). Wire with rutile fast freezing to weld in all positions.

* (Trademarks of CREUSOT LOIRE)

Main applications: For pumps, vessels, piping systems etc. attacked by chloride containing solutions. But also for impellers and other components which require high strength combined with corrosion attack.

Base materials:

UNS	Alloy	EN 10088	Material N°	CLI
S31803		X2CrNiMoN22-5-3	1.4462	URANUS 45N
S32304	35N	X2CrNi23-4	1.4362	URANUS 35N
S32900	329	X3CrNiMoN27-5-2	1.4460	

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S	N ₂
Min			0.5	21.0	7.5	2.5				0.08
Max	0.04	1.0	2.0	24.0	10.0	4.0	0.5	0.030	0.025	0.20
Type	0.03	0.80	1.1	23.0	9.0	3.1	0.10	0.020	0.008	0.15

PREN : >35

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	450	690	20	
Max				
Type	630	780	28	-60°C 35

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	130 - 270	22 - 35	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min



FT En-CN19-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 2509MO

High productivity super duplex
Flux cored wire

Classification

AWS A5.22 : E2594T0-4

ISO 17633-A : T 25 9 4 Cu N L R M21 3

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding in flat and down hand positions for Duplex and Super Duplex steels such as Uranus 45N*, 52N, 2205, 2304, 2507. Resistant to severe corrosive environments (inter crystalline attack, pitting corrosion, crevice, stress corrosion). For all construction with service temperature up to 250°C.

Main applications: For pumps, vessels, piping systems etc. attacked by chloride containing solutions. But also for impellers and other components which require high strength combined with corrosion attack.

Base materials:

UNS	Alloy	EN 10088	Mat. N°	CLI
S31803		X2CrNiMoN22-5-3	1.4462	URANUS 45
S32304	35N	X2CrNi23-4	1.4362	URANUS 35N
S32550	52N	G-X2CrNiMoCuN26 6 3	1.4517	URANUS 52N
	52N+	X2CrNiMoCuN25-6-3	1.4507	URANUS 52N+
S32750	2507	X2CrNiMoN25-7-4	1.4410	
S32760	100	X2CrNiMoCuWN25-7-4	1.4501	URANUS 70N

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	W	P	S	N ₂
Min			0.5	24.0	8.0	2.5	1.0				0.20
Max	0.04	1.0	2.5	27.0	10.5	4.5	1.5	1.0	0.030	0.025	0.30
Type	0.03	0.50	1.0	25.5	9.0	3.8	1.1	0.01	0.015	0.008	0.24

PREN : >40

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	550	760	18	
Max				
Type	830	950	22	-29°C 30

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	130 - 250	24 - 35	12 - 20	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min
	1.6	150 - 300	24 - 35	12 - 25	

FT En-CN20-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 2509MOP

All position super duplex
Flux cored wire

Classification

AWS A5.22 : E2594T1-4

ISO 17633-A : T 25 9 4 Cu N L P M21 1

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc welding in all positions for Super Duplex steels such as Uranus 45N*, 52N, 2205, 2304, 2507. Resistant to severe corrosive environments (inter crystalline attack, pitting corrosion, crevice, and stress corrosion). For all construction with service temperature up to 250°C. Wire with rutile fast freezing to weld in all positions.

Main applications: For pumps, vessels, piping systems etc. attacked by chloride containing solutions. But also for impellers and other components which require high strength combined with corrosion attack.

Base materials:

UNS	Alloy	EN 10088	Mat. N°	CLI
S31803		X2CrNiMoN22-5-3	1.4462	URANUS 45
S32304	35N	X2CrNi23-4	1.4362	URANUS 35N
S32550	52N	G-X2CrNiMoCuN26-6-3	1.4517	URANUS 52N
	52N+	X2CrNiMoCuN25-6-3	1.4507	URANUS 52N+
S32750	2507	X2CrNiMoN25-7-4	1.4410	
S32760	100	X2CrNiMoCuWN25-7-4	1.4501	URANUS 70N

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	W	P	S	N ₂
Min			0.5	24.0	8.0	2.5	1.0				0.20
Max	0.04	1.0	2.5	27.0	10.5	4.5	1.5	1.0	0.030	0.025	0.30
Type	0.03	0.50	1.0	25.5	9.0	3.8	1.1	0.01	0.015	0.008	0.24

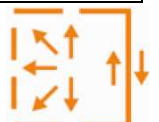
PREN : >40

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	550	760	18	
Max				
Type	710	890	24	-20°C 35

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	130 - 250	24 - 35	12 - 20	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min



FT En-CN21-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 307M

Metal cored wire 307 type

Classification

AWS A5.9 : ~EC307

ISO 17633-A : T 18 8 Mn M M12 1

Description & Applications

Metal cored wire for gas shielded (Ar + CO₂) arc welding of austenitic stainless steels and manganese steels considered difficult to weld or misidentified. Nonmagnetic stainless steel, resistant against hot cracking and work hardening weld deposit. Ideal as buffer layer before hardfacing of grades sensitive to cracking or in case of dissimilar joints between stainless steel and steel construction.

Main applications: Civil engineering, road, rail and fluvial, quarry, cement.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			4.5	17.0	7.0				
Max	0.20	1.2	7.5	20.0	10.0	0.3	0.5	0.035	0.025
Type	0.10	0.60	6.0	19.5	8.5	0.15	0.10	0.020	0.015

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)	Hardness HB	
					As welded	Work hardened
Min	350	500	25			
Max						
Type	450	630	40	+20°C 70	170	500

Welding Current & Instructions

Welding mode	Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = + / pulsed	1.2 1.6			12 - 25	ISO 14175 : M12 (Ar/O ₂) 10 - 20 l/min



FT En-CN01-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 307

*High productivity
Metal cored 307 type*

Classification

AWS A5.22 : ~E307T0-1/-4

ISO 17633-A : T 18 8 Mn R M21(C1) 3

Description & Applications

Metal cored wire for gas shielded (Ar + CO₂) arc welding of austenitic stainless steels and manganese steels considered difficult to weld or misidentified. Nonmagnetic stainless steel, resistant against hot cracking and work hardening weld deposit. Ideal as buffer layer before hardfacing of grades sensitive to cracking or in case of dissimilar joints between stainless steel and steel construction. Used for repair parts exposed to shocks and friction. Wire especially designed for flat position welding.

Main applications: Civil engineering, road, rail and fluvial, quarry, cement.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			4.5	17.0	7.0				
Max	0.20	1.2	7.5	20.0	10.0	0.3	0.5	0.035	0.025
Type	0.10	0.90	6.0	19.0	9.5	0.15	0.10	0.020	0.008

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)		Dureté HB	
Min	350	500	25			As welded	Work hardened
Max							
Type	480	630	40	+20°C	50	170	500

Welding Current & Instructions

Welding mode	Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.2	100 - 280	23 - 33	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 12 - 20 l/min
	1.6	150 - 400	23 - 35	10 - 25	



FT En-CN02-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 307P

*Metal cored 307 type
For all positions*

Classification

AWS A5.22 : ~E307T1-1/-4

ISO 17633-A : T 18 8 Mn P M21(C1) 1

Description & Applications

Metal cored wire for gas shielded (Ar + CO₂) arc welding of austenitic stainless steels and manganese steels considered difficult to weld or misidentified. Nonmagnetic stainless steel, resistant against hot cracking and work hardening weld deposit. Ideal as buffer layer before hardfacing of grades sensitive to cracking or in case of dissimilar joints between stainless steel and steel construction. Used for repair parts exposed to shocks and friction. Used for welding in all positions.

Main applications: Civil engineering, road, rail and fluvial, quarry, cement.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			4.5	17.0	7.0				
Max	0.20	1.2	7.5	20.0	10.0	0.3	0.5	0.030	0.025
Type	0.11	0.80	6.0	19.0	9.5	0.15	0.10	0.020	0.008

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)		Dureté HB	
Min	350	500	25			As welded	Work hardened
Max							
Type	480	650	32	+20°C	60	170	500

Welding Current & Instructions

Welding mode	Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.2	130 - 270	22 - 35	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min



FT En-CN03-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCT 308L

TIG cored wire
For root pass on 304L

Classification

AWS A5.22 : R308LT1-5

Description & Applications

Flux cored wire for TIG welding for 304L stainless steel. This product is dedicated to the root pass. Indeed this slag protects the reverse side from the oxidation by the atmosphere. Used for application with service temperature between -196°C and +350°C.

Main applications: Root pass for steel piping, petro chemical

Base materials:

UNS	Grade	EN 10088	N° Mat.
S30400	304	X5CrNi18-10	1.4301
S30403	304L	X2CrNi19-11	1.4306
S32100	321	X6CrNiTi18-10	1.4541
S34700	347	X6CrNiNb18-10	1.4550

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	18.0	9.0				
Max	0.03	1.2	2.5	21.0	11.0	0.75	0.75	0.04	0.03
Type	0.02	0.60	0.90	19.5	10.0	0.10	0.10	0.020	0.008

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min		520	30	
Max				
Type	460	620	45	+20°C : 140 -196°C : 60

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters		Shielding Gas
		Current (A)	Voltage (V)	
TIG = +	2.2	80 - 140	-	ISO 14175: I1 (Ar) 6 - 12 L/min

FT En-CN29-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCT 316L

TIG cored wire
For root pass on 316L

Classification

AWS A5.22 : R316LT1-5

Description & Applications

Flux cored wire for TIG welding for 316L stainless steel. This product is dedicated to the root pass. Indeed this slag protects the reverse side from the oxidation by the atmosphere. Used for application with service temperature between -196°C and +350°C.

Main applications: Root pass for steel piping, petro chemical

Base materials:

UNS	Grade	EN 10088	N° Mat.
S31600	316	X5CrNiMo17-12-2	1.4401
S31603	316L	X2CrNiMo17-12-2	1.4404
S31635	316Ti	X6CrNiMoTi17-12-3	1.4571
S30400	304	X5CrNi18-10	1.4301
S30403	304L	X2CrNi18-10	1.4306

Typical Chemical Composition (%)

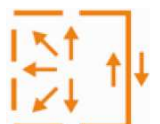
	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	17.0	11.0	2.0			
Max	0.03	1.2	2.5	20.0	14.0	3.0	0.75	0.04	0.03
Type	0.02	0.50	0.90	18.5	12.0	2.8	0.10	0.020	0.008

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min		485	30	
Max				
Type	510	630	32	+20°C -196°C
				140 50

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters		Shielding Gas
		Current (A)	Voltage (V)	
TIG = +	2.2	80 - 140	-	ISO 14175: I1 (Ar) 6 - 12 L/min



FT En-CN30-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCT 309L

*TIG cored wire
For root pass on dissimilar joint*

Classification

AWS A5.22 : R309LT1-5

Description & Applications

Flux cored wire for TIG welding for 309L stainless steel and dissimilar joint (steel with stainless steel). This product is dedicated to the root pass. Indeed this slag protects the reverse side from the oxidation by the atmosphere. Used for application with service temperature between -196°C and +400°C.

Main applications: Root pass for steel piping, petro chemical

Base materials:

UNS	Grade	EN 10088	N° Mat.
S30900	309	X15CrNiSi20-12	1.4828
S30453	304LN	X2CrNiN18-10	1.4311
S30908	309S	X12CrNi23-13	1.4833

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	P	S
Min			0.5	22.0	12.0				
Max	0.03	1.2	2.5	25.0	14.0	0.75	0.75	0.04	0.03
Type	0.02	0.80	1.5	24.5	13.0	0.10	0.10	0.020	0.008

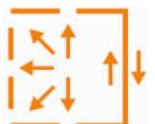
All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min		520	30	
Max				
Type	460	580	35	+20°C 70

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters		Shielding Gas
		Current (A)	Voltage (V)	
TIG = +	2.2	80 - 140	-	ISO 14175: I1 (Ar) 6 - 12 L/min

FT En-CN31-190731



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCT 347

TIG cored wire
for root pass on 347/321

Classification

AWS A5.22 : R347T1-5

Description & Applications

Flux cored wire for TIG welding for 347 or 321 stainless steel. This product is dedicated to the root pass. Indeed this slag protects the reverse side from the oxidation by the atmosphere. Used for application with service temperature between 0°C and +350°C.

Main applications: Root pass for steel piping, petro chemical

Base materials:

UNS	Grade	EN 10088	N° Mat.
S30400	304	X5CrNi18-10	1.4301
S30403	304L	X2CrNi19-11	1.4306
S32100	321	X6CrNiTi18-10	1.4541
S34700	347	X6CrNiNb18-10	1.4550

Typical Chemical Composition (%)

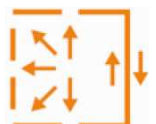
	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	P	S
Min			0.5	18.0	9.0			8 x C		
Max	0.08	1.2	2.5	21.0	11.0	0.75	0.75	1.0	0.04	0.03
Type	0.04	0.80	1.5	19.5	10.0	0.10	0.10	0.50	0.020	0.008

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min		520	30	
Max				
Type	480	640	35	+20°C 150

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters		Shielding Gas
		Current (A)	Voltage (V)	
TIG = +	2.2	80 - 140	-	ISO 14175: I1 (Ar) 6 - 12 L/min



FT En-CN32-190731

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW NI182

*Rutile-basic cored wire
Alloy 600 type*

Classification

AWS A5.34 : ENiCrFe3T0-4

ISO 12153 : T Ni 6182 (NiCr15Fe6Mn) B M21 3

Description & Applications

Flux cored nickel base wire for gas shielded (Ar + CO₂) arc welding in flat position of high nickel alloys such as Inconel 600*, Incolloy 800*. Used for special austenitic stainless steels or dissimilar joining (Low alloy/ Stainless steel, Stainless Steel / Nickel Base). Good resistance to various types of corrossions. Could be used for cryogenic applications due to its high mechanical properties at low temperature.

*Trademarks of INCO ALLOYS

Main applications: Cladding on steels of 5% and 9% Ni. Equipment subject to acid very high temperature, repair of difficult to weld steels, buffer layer.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Fe	Cu	Nb+Ta	Ti	P	S	Ni
Min			5.0	13.0			1.0				59.0
Max	0.10	1.0	9.5	17.0	10.0	0.50	2.5	1.0	0.030	0.015	
Type	0.01	0.20	6.0	16.8	6.0	0.10	1.7	0.15	0.01	0.01	>59.0

Σ Others elements : <0.50

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	360	550	25	
Max				
Type	380	610	40	-196°C 70

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.2	130 - 250	24 - 32	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min
	1.6	150 - 300	24 - 32	12 - 25	

FT-En-CI02-190801



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW NI625

*Rutile-basic cored wire
Alloy 625 type*

Classification

AWS A5.34 : ENiCrMo3T0-4

ISO 12153 : T Ni 6625 (NiCr22Mo9Nb) B M21 3

Description & Applications

Flux cored nickel base wire for gas shielded (Ar + CO₂) arc welding in flat position of high nickel alloys such as Inconel 625* type as well as for special austenitic stainless steels. Excellent resistance to pitting, crevice and stress corrosion cracking in the presence of chlorides. Could be used for cryogenic applications due to its high mechanical properties at low temperature. Used for dissimilar assembly as low alloy steel and stainless steels or nickel base alloys.

*Trademarks of INCO ALLOYS

Main applications: Cladding on steels of 5% and 9% Ni. Used in the construction of equipment submitted to oxidizing and corrosive attacks at high temperatures.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Mo	Fe	Cu	Nb+Ta	Ti	P	S	Ni
Min				20.0	8.0			3.15				58.0
Max	0.10	0.50	0.50	23.0	10.0	5.0	0.50	4.15	0.40	0.020	0.015	
Type	0.025	0.30	0.40	21.0	9.0	0.40	0.01	3.4	0.15	0.01	0.01	>58.0

Σ Others elements : <0.50

All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	KV (J)
Min	420	690	25	
Max				
Type	500	780	40	-196°C 60

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick-out (mm)	
FCAW = +	1.2	130 - 250	24 - 32	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min
	1.6	150 - 300	24 - 32	12 - 25	

FT-En-CI03-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.

www.fsh-welding.com - info@fsh-welding.fr





FCW FENI

Rutile flux cored wire for cast iron

Classification

ISO 1071 : T C NiFeT3-CI M21

Description & Applications

Rutile flux cored wire for gas shielded (Ar + CO₂) arc welding of grey, malleable, nodular cast irons. Iron/Nickel welds deposit.

Also used for dissimilar weldments between cast irons and steels.

Base material:

Lamellar cast iron	DIN 1691	GGG-40 à GGG-60
Malleable cast iron	DIN 1692	GTS 35 - GTS 65, GTW 35 - GTW 65
Nodular cast iron	DIN 1693	GGG40 - GGG70

Typical Chemical Composition (%)

	C	Si	Mn	Fe	Cu	Al	P	S	Ni
Min			3.0						45
Max	2.0	1.0	5.0	Rem.	2.5	1.0	0.03	0.03	60
Type	0.60	0.60	4.0	Rem.	0.01	0.01	0.010	0.015	45

All Weld Metal Mechanical Properties

	R _e (MPa)	R _m (MPa)	A ₅ (%)	Hardness HB
Min				As welded
Max				
Type	340	550	16	160-200

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	180 - 280	20 - 28	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min
	1.6	180 - 350	22 - 28	12 - 25	

FT En-CI06-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.

www.fsh-welding.com - info@fsh-welding.fr



Classification

AWS A5.21 : ERCCoCr-A

EN 14700 : T Co2

Description & Applications

Cobalt base tubular metal-cored wire for gas shielded (Ar 100%) hardfacing type Cobalt Grade 6. Exceptional resistance to wear combined or not to abrasion, metal-metal wear, corrosion up to 1000°C. Nonmagnetic weld deposit

Main applications: Hot shear blades, valve seats and litters, forging tools.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Fe	W	P	S	Co
Min	0.7		0.1	25				4.0			
Max	1.4	2.0	2.0	32	3.0	1.0	5.0	6.0	0.03	0.03	Rem.
Type	1.05	1.1	1.0	28.5	0.15	0.04	3.7	4.7	0.005	0.01	Rem.

Σ Others elements : <1.0

All Weld Metal Mechanical Properties

Hardness (3rd layer)
~ 42 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = + / pulsed	1.2	100 - 250	16 - 29	15 - 30	ISO 14175 : I1 (Ar) 10 - 20 l/min
	1.6	140 - 350	16 - 30	15 - 30	



FT En-CC02-210415

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.

www.fsh-welding.com - info@fsh-welding.fr

Classification

AWS A5.21 : ERCCoCr-E

EN 14700 : T Co1

Description & Applications

Cobalt base tubular metal-cored wire for gas shielded (Ar 100%) hardfacing type Cobalt Grade 21. Exceptional resistance to wear combined or not to shock, corrosion resistant to high temperature pressure in sulphurous atmosphere up to 900°C.

Main applications: Scope and valve seats, hot forging dies, gas turbine, large hardfacing areas.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Fe	W	Nb	P	S	Co
Min	0.15		0.1	25	1.5	4.5						
Max	0.40	1.5	2.0	30	4.0	7.0	5.0	0.50	1	0.03	0.03	Rem.
Type	0.25	1.1	1.0	28.5	3.0	5.5	3.5	0.01	0.01	0.01	0.01	Rem.

Σ Others elements : <1.0

All Weld Metal Mechanical Properties

Hardness (3rd layer)
~ 33 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = + / pulsed	1.2	100 - 250	16 - 29	15 - 30	ISO 14175 : I1 (Ar) 10 - 20 l/min
	1.6	140 - 350	16 - 30	15 - 30	



FT En-CC04-210415

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 45

Hardfacing metal cored wire

Classification

EN 14700 : T Fe1

Description & Applications

Metal cored wire for gas shielded (Ar + CO₂) arc hardfacing of unalloyed or low alloyed steels for resistance against impact and compression. Could be used as buffer layer or for rebuilt thickness of stamped mechanical components.

Main applications: Conveyors and transport surfaces, tires. Can be used as buffer layer prior to a higher hardness overlay.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	W	V	P	S	Fe
Min											
Max	0.4		4.5	3.5	3	1	1	1			Rem.
Type	0.35	0.60	1.4	2.5	0.01	0.50	0.01	0.01	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)

~450 HB / ~43 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 300	24 - 32	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min
	1.6	150 - 300	24 - 32	12 - 25	



FT En-CM03-200624

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 60

Hardfacing metal cored wire

Classification

EN 14700 : T Fe6

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc hardfacing without slag of carbon or low alloyed steels for an optimal balance between abrasion, friction and impact resistance. Could be used to service temperature up to +300°C.

Main applications: Dies transporter, cams, gear teeth...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Mo	Nb	P	S	Fe
Min									
Max	2.5		3	10	3	10			Rem.
Type	0.70	0.60	1.4	6.0	0.50	0.01	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)
57-62 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 280	23 - 33	10 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min
	1.6	150 - 400	23 - 35	10 - 25	



FT En-CM04-200907

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO 65A

*Hardfacing metal cored wire without gas
For extreme abrasion*

Classification

EN 14700 : T Z Fe13

Description & Applications

Tubular wire for self-shielded metal arc hardfacing. Alloy for unalloyed steels with C <0.5% to achieve extreme abrasion resistance. Abrasion resistance and hardness are achieved in one layer

Main applications: Agriculture equipment, mining, quarrying

Typical Chemical Composition (%)

	C	Si	Mn	Ni	B	P	S	Fe
Min								
Max				Not specified				Rem.
Type	0.50	1.3	2.0	2.0	4.5	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)
~65 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 300	21 - 35	12 - 25	-
	1.6	150 - 300	24 - 35	15 - 25	



FT En-CM19-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO 65

*Hardfacing metal cored wire without gas
Against abrasion*

Classification

EN 14700 : T Fe15

Description & Applications

Tubular wire for self-shielded metal arc hardfacing. High chromium cast iron for hardfacing components subject to extremely severe abrasive wear and moderate impact. The deposits resists to corrosion due to the high chromium content as well as heat up to 300°C. Hardfacing possible on 1, 2 or 3 layers. Machining only by grinding. Austenitic matrix with Chromium carbides.

Main applications: For excavating and crashing equipment, railway ballast tampers, dredge buckets and lips, dragline buckets, coke hammers, rippers, sizing screens, crushing equipment, brick industry components, Muller tires, catalyst lift pipes, pump impellers, fan blades, Rockwool rolls, wear plates operating at high temperature in the steelmaking industry

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Nb	P	S	Fe
Min	3			20						
Max	7		3	40	4	2	10			Rem.
Type	5.0	1.0	0.50	22.0	0.01	0.01	7.0	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)
62 - 65 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.6	150 - 300	26 - 35	25	-

FT En-CM20-200907

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO 63

*Self-shielded high Chromium
Hardfacing metal cored wire*

Classification

EN 14700 : T Fe15

Description & Applications

Tubular wire for self-shielded metal arc hardfacing. High chromium cast iron for hardfacing components subject to extremely severe abrasive wear and moderate impact. The deposits resists to fiction, mixed with choc and compression. Hardfacing in 1, 2 or 3 layers. Only machining by grinding. Austenitic matrix containing chromium carbides.

Main applications: For excavating and crashing equipment, surfacing of endless screws, mixer blades, pump bodies for abrasive materials, excavator teeth, concrete pumps, ore crushing ...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Nb	P	S	Fe
Min	3			20						
Max	7		3	40	4	2	10			Rem.
Type	5.0	1.5	1.5	27.0	0.01	0.01	0.01	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)
~61 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 300	21 - 35	12 - 25	-
	1.6	150 - 300	24 - 35	15 - 25	



FT En-CM22-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO 63TI

*Self-shielded hardfacing wire
For abrasion and impact*

Classification

EN 14700 : T Fe8

Description & Applications

Tubular wire for self-shielded metal arc hardfacing. High chromium cast iron for hardfacing components subject to extremely severe abrasive wear and moderate impact. The deposits resists to fiction, mixed with choc and compression. Hardfacing in 1, 2 or 3 layers. Only machining by grinding. Austenitic matrix containing chromium and titanium carbides.

Main applications: For excavating and crashing equipment, surfacing of endless screws, mixer blades, pump bodies for abrasive materials, excavator teeth, concrete pumps, ore crushing ...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Mo	W	V	Nb	Ti	P	S	Fe
Min	0.2			5								
Max	2		3	20	5	2	2	10				Rem.
Type	1.8	1.2	1.2	6.5	0.80	0.01	0.01	0.01	5.0	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)
~57 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	140 - 230	23 - 32	25 - 50	-
	1.6	180 - 300	23 - 32	25 - 50	



FT En-CM24-200907

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO FE60WC

Classification

EN 14700 : T Fe20

Description & Applications

Tubular wire for self-shielded metal arc hardfacing. Composite wire is made from a steel wire with tungsten carbide particles flux. The deposit is extremely resistant to abrasion with low impact

Main applications: Dust extracting ventilators (mining, steel industries), components for agriculture

Typical Chemical Composition (%)

Fused Tungsten Carbide
50 to 60% wt. % depending on diameter

Fe
Rem.

All Weld Metal Mechanical Properties

Hardness (1st layer)
52 - 62 HRC as welded

Hardness (2nd layer)
60 - 64 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.6	120 - 200	22 - 27	15 - 40	-



FT En-CM25-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 60G

*Hardfacing flux cored wire
Without slag*

Classification

EN 14700 : T Fe2

Description & Applications

Flux cored wire for gas shielded (Ar + CO₂) arc hardfacing without slag of carbon or low alloyed steels for an optimal balance between abrasion, friction and impact resistance. Could be used to service temperature up to +300°C.

Main applications: Dies transporter, cams, gear teeth...

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	W	Co	V	P	S	Fe
Min	0.4											
Max	1.5		3	7	1	1	1	1	1			Rem.
Type	0.50	0.60	1.2	5.7	0.01	0.80	0.01	0.01	0.01	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)
~59 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 300	24 - 32	12 - 25	ISO 14175 : M21 (Ar/CO ₂) 10 - 20 l/min
	1.6	150 - 300	24 - 32	12 - 25	



FT En-CM05-190729

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO HBMNCR

*Flux cored wire
For cavitation, abrasion and impact*

Classification

EN 14700 : T Fe9

Description & Applications

Flux cored wire without gas for arc hardfacing designs to surface all pieces subject to high impact and cavitation combined with corrosion. The work hardened austenitic deposit is exceptionally resistant to wear combined to the impact. The high amount of chromium increases the resistance against the corrosion, abrasion and cavitation.

Main applications: Railway applications (rail, switches, crossing, tongues), quarries and mines (crush jaws, excavator teeth, mill hammer).

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	V	P	S	Fe
Min			9							
Max	1.2		20	20	5	2	1			Rem.
Type	0.40	0.50	16.0	14.0	0.01	0.01	0.01	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)

210 - 240 HB as welded

45 – 55 HRC work hardened

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 300	24 - 32	12 - 25	-
	1.6	150 - 300	24 - 35	15 - 25	



FT En-CM13-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.

www.fsh-welding.com - info@fsh-welding.fr



FCW HB50CO

*Flux cored hardfacing wire
For hot working*

Classification

EN 14700 : T Z Fe3

Description & Applications

Flux cored wire without gas for arc hardfacing. The weld deposit resists to wear at high temperature (up to 550°C), thermal shock and can be machined with tungsten carbide tipped tools. Excellent resistance against cracking.

Main applications: Extrusion pistons, valves, moulds, continuous driving rolls....

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Co	P	S	Fe
Min										
Max					Not specified					Rem.
Type	0.15	0.70	0.40	13.5	0.50	2.7	12.5	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness (3rd layer)
~47 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.6	100 - 300	24 - 32	12 - 25	-
	2.4	150 - 300	24 - 35	15 - 25	



FT En-CM14-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCW 65BO

*Flux cored hardfacing wire
Cr-Ni-B Alloyed
For extreme abrasion*

Classification

EN 14700 : T Fe15

Description & Applications

Copper coated flux cored wire containing Chromium, Nickel and Boron for gas shielded (Ar + CO₂) metal arc hardfacing. Excellent resistance against extreme abrasion. Weld deposit is not machining. Good weldability, low spatters, no slag.

Main applications: Agriculture equipment, mining, quarrying

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	B	P	S	Fe
Min										
Max	1.5		3	7	4	4				Rem.
Type	0.30	0.40	1.1	0.30	1.5	0.01	4.8	0.015	0.010	Rem.

All Weld Metal Mechanical Properties

Hardness

62 - 67 HRC as welded

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	120 - 300	18 - 31		ISO 14175 : M21 15 - 20 l/min
	1.6	180 - 400	20 - 33		



FT En-CM31-190801

Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.



FCO 307

*Maintenance and repair
Stainless steel open arc wire*

Classification

AWS A5.22 : ~E307T0-3
EN 14700 : T Fe10

ISO 17633-A : T 18 8 Mn U NO 3

Description & Applications

Flux cored wire in stainless steel without gas use for welding austenitic stainless steels and manganese steels considered difficult to weld or misidentified. Could be used as buffer layer before hardfacing. Good resistance against cavitation, shocks and corrosion

Main applications: Civil engineering, road, rail and fluvial, quarry, cement. Ideal as buffer layer before hardfacing of grades sensitive to cracking or in case of dissimilar joints between stainless steel and steel construction.

Typical Chemical Composition (%)

	C	Si	Mn	Cr	Ni	Mo	Cu	Nb	P	S
Min			4.5	17.0	7.0					
Max	0.20	1.2	7.5	20.0	10.0	0.3	0.5	1.5	0.035	0.025
Type	0.10	0.50	6.0	19.0	9.0	0.10	0.10	0.01	0.015	0.008

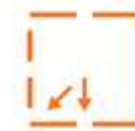
All Weld Metal Mechanical Properties

	R _{p0.2} (MPa)	R _m (MPa)	A ₅ (%)	Hardness HB	
Min	350	500	25	As welded	Work hardened
Max					
Type	400	650	32	170	500

Welding Current & Instructions

Welding mode	Wire Ø (mm)	Welding parameters			Shielding Gas
		Current (A)	Voltage (V)	Stick out (mm)	
FCAW = +	1.2	100 - 300	21 - 35	12 - 25	-
	1.6	150 - 300	24 - 35	15 - 25	

FT En-CN28-190801



Liability: This document is intended to assist the user in choosing the product. It is up to the user to verify that the chosen product is suitable for applications for which it is intended. The company FSH Welding Group reserves the right to alter specifications without prior notice of its products. The descriptions, illustrations and specifications are for reference only and cannot be held liable for FSH Welding Group. **Fumes:** Consult information on MSDS, available upon request.