

WELDING WIRES FOR MAG(CO₂) – WELDING

Classification:

EN 440 G4Si1
 EN1668 WSG2
 DIN 8559 SG - 2
 ASME/AWS/A – 5.18 ER70S-6

Description and Application:

Solid copper coated welding wire for welding in gas shielding atmospheres. Suitable for welding unalloyed and low alloyed construction steels with tensile strength below 530N/mm² like boiler plate, fine-grained steels, pipe steels, shipbuilding steels and cast steels.

Base materials:

Description:	DIN,AISI:	EN:
Unalloyed steels	St 33 to St 60.2	10025
Fine-grained steels	St E 255 to St E 355	-
	W St E 25 to W St E 355	-
Boiler and vessel plate	HI,H II,17Mn4,19Mn5	10028-2
Pipe steels	St 35 to St 52.4	-
	E St E 210.7 to St E 360.7	-
Shipbuilding steels	A,B,D,E	10025
Cast Steel	GS 38 to GS 52	-

Typical Chemical Composition of welding wire(wt.%):

C	Si	Mn	P	S	Cu
0.10	0.80	1.250	<0.025	<0.025	0.50

Mechanical properties of all weld metal(CO₂ – Shielding gas):

Yield strength	>430	N/mm ²
Tensile strength	540	N/mm ²
Elongation	>22	%
Impact energy	>27	J(-18°C)

Suitable shielding gases: CO₂

Polarity: DC+

Wire sizes available : 0,8 ; 1,0 ; 1,2 ; 1,6 (ø mm)

Packing: Welding wires are spooled in plastic spools with precision winding of 15Kgs weight.

Classification:

EN 440 G4Si1
DIN 8559 SG - 3
ASME/AWS/A – 5.18 ER70S-3

Description and Application:

Solid copper coated welding wire for welding in gas shielding atmospheres. Slightly higher silicon and manganese alloyed than Euro Tig 2. The higher contains of silicon and manganese increase the yield stress and tensile strength of weld metal. The high silicon content promotes a low sensitivity to surface impurities and contributes to smooth weld. Suitable for welding unalloyed and low alloyed construction steels with tensile strength below 640N/mm² like boiler plate, fine-grained steels, pipe steels, shipbuilding steels and cast steels.

Base materials:

Description:	DIN,AISI:	EN:
Unalloyed steels	St 33 to St 60.2	10025
Fine-grained steels	St E 255 to St E 355	-
	W St E 25 to W St E 355	-
Boiler and vessel plate	HI,H II,17Mn4,19Mn5	10028-2
Pipe steels	St 35 to St 52.4	-
	E St E 210.7 to St E 360.7	-
Shipbuilding steels	A,B,D,E	10025

Typical Chemical Composition of welding wire(wt.%):

C	Si	Mn	P	S	Cu
0.10	0.80	1.50	<0.025	<0.025	0.50

Mechanical properties of all weld metal(CO₂ – Shielding gas):

Yield strength	>410	N/mm ²
Tensile strength	490	N/mm ²
Elongation	>20	%
Impact energy	>40	J(-29°C)

Suitable shielding gases:MAG Process: 100% CO₂, Ar + 18% CO₂, Ar + O₂
(C1,M21,M22-M33 according to EN 439)

Polarity: DC+

Wire sizes available :0,8 ;1,0 (ø mm)

Packing:Welding wires are spooled in plastic spools with precision winding of 15Kgs weight.

SOLID WELDING WIRE FOR TIG

CODING :

SFA/AWS A5.28 ER 80S-G

CHARACTERISTICS:

TOKO 80SG is a copper coated wire for TIG welding of 1Cr1/2Mo steels.

TYPICAL ALL WELD METAL CHEMICAL COMPOSITION

Element	C	Mn	Si	S	P	Cr	Mo
%	0.12	1.20	0.80	0.025	0.025	1.50	0.60

TYPICAL MECHANICAL PROPERTIES ALL WELD METAL

	min	Typical TIG
Tensile Strength	: 550N/mm ²	635N/mm ²
0.2% Proof Stress	: 470N/mm ²	520N/mm ²
Elongation on 4d	: 19%	25%
Impact energy (-10°C):	--	>200J
Hardness	: --	220(215)
Wire sizes available :	1.2 ;1.6 ; 2.4 (ø mm)	

AWS A5.9 ER308L
DIN X2 Cr Ni 19 9
JIS Y 308L

APPLICATIONS:

Tig welding of extra low carbon 18%Cr - 8% Ni Stainless Steel

CHARACTERISTICS ON USAGE:

TOKO TIG 308L is a wire for TIG welding with pure Ar gas. As the weld metal contains ferrite, its crack resistibility is excellent. Both its appearance and usability of weld metal are good. The corrosion resistibility and intergranular corrosion resistibility are extremely excellent. Furthermore, the mechanical properties are good.

TYPICAL COMPOSITION OF ALL-WELD METAL (%)

C	Si	Mn	Ni	Cr
0.020	0.40	1.70	10.00	20.00

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL

T S(N/mm²)	EL (%)	CVN-IMPACT VALUE (J) at 0°C
600	40	100

TYPICAL WELDING CONDITIONS

SIZE(mm)	A	V	Gas flow l/min	Remarks
1.2	250	26	25	Shielding gas
1.6	300	29	25	Ar

AWS A5.9 ER309L
DIN X2 Cr Ni 22 12
JIS Y 309L

APPLICATIONS:

Tig welding of 22%Cr-12%Ni steel and a variety welding stainless with mild steel. Clad steel side of 18%Cr-8%Ni clad steel.

CHARACTERISTICS ON USAGE:

TOKO TIG 309L is a wire for TIG welding with pure Ar gas. As the weld metal contains ferrite, its crack resistibility is excellent. Furthermore the heat resistibility and corrosion resistibility are extremely good.

TYPICAL COMPOSITION OF ALL-WELD METAL (%)

C	Si	Mn	Ni	Cr
0.03	0.40	1.75	12.50	24.00

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL

T S (N/mm²)	EL (%)	CVN-IMPACT VALUE (J) at 0°C
600	38	150

TYPICAL WELDING CONDITIONS

SIZE(mm)	A	V	Gas flow l/min	Remarks
1.2	280	28	25	Shielding gas
1.6	330	30	25	Ar

AWS A5.9 ER310
DIN X12 Cr Ni 25 20
JIS Y 310

APPLICATIONS:

Tig welding of 25%Cr -20% Ni Steel

CHARACTERISTICS ON USAGE:

TOKO TIG 310 is a wire for TIG welding with pure Ar gas. The weld metal display all austenite. Its heat resistibility and corrosion resistibility of weld metal are excellent. Elongation of weld metal is extremely good.

TYPICAL COMPOSITION OF ALL-WELD METAL (%)

C	Si	Mn	Ni	Cr
0.09	0.35	1.90	21.00	26.50

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL

T S (N/mm ²)	EL (%)	CVN-IMPACT VALUE (J) at 0°C
610	41	110

TYPICAL WELDING CONDITIONS

SIZE(mm)	A	V	Gas flow l/min	Remarks
1.2	280	28	25	Shielding gas
1.6	330	30	25	Ar

AWS A5.9 ER410
ER410 NiMo; H06Cr12Ni4Mo

APPLICATIONS:

ER410 is used for welding types 403, 405, 410, 414, and 416. Also an overlay on carbon steels for corrosion, erosion and abrasion resistance. It is recommended using 350oF preheat before welding.

AWS Chemical Composition Requirements

C: 0.06 % max Cr: 11.0~14.0 % max Mn: 1.0% max Ni: 3.0~5.0 % max
Si: 1.0 % max Mo: 0.4~1.0 % max S: 0.02% max Cu: 0.10 % P: 0.03 %

Available Sizes

Diameter: 0.6mm; 0.8mm; 1.0mm; 1.2mm; 1.4mm; 1.6mm; 1.8mm....4.0mm

Deposited Chemical Composition % (Typical)

C = 0.05 Mo = 0.53 P = 0.015 Cr = 11.20 Mn = 0.53 S = 0.012
Ni = 4.30 Si = 0.22 Cu = 0.058

Mechanical Properties (R.T.)

Yield Strength (Mpa) 750
Tensile Strength (Mpa) 500
Elongation (%) 17

Deposited All Weld Metal Properties:

Data is typical for ER410 weld metal deposited by Mig using Argon + 2% oxygen as the shielding gas.
Data on sub-arc is not presented, as sub-arc is dependent on the type of flux used.

AWS A5.9 ER316L
DIN X5 Cr Ni Mo 19 11
JIS Y 316

APPLICATIONS:

Tig welding of low carbon 18%Cr-12Ni-Mo Steel

CHARACTERISTICS ON USAGE:

TOKO TIG 316L is a wire for TIG welding with pure Ar gas. As the weld metal contains ferrite, its crack resistibility is excellent. Both its appearance and usability of weld metal are good. The heat resistibility and corrosion resistibility of weld metal are extremely good.

TYPICAL COMPOSITION OF ALL-WELD METAL (%)

C	Si	Mn	Ni	Cr	Mo
0.02	0.40	1.85	12.40	18.50	2.30

TYPICAL MECHANICAL PROPERTIES OF ALL WELD METAL

T S (N/mm ²)	EL (%)	CVN-IMPACT VALUE (J) at 0°C
570	44	140

TYPICAL WELDING CONDITIONS

SIZE (mm)	A	V	Gas flow (l/min)	Remarks
1.2	290	28	25	Shielding gas
1.6	340	30	25	Ar

CLASSIFICATION:

AWS A 5.14 ERNiCu-7

DESCRIPTION AND APPLICATION:

Euro Tig Monel 7 is used for TIG and MIG welding of nickel copper alloys(ASTM B127,B163,B164 and B165 UNS Number No4400). This filler metal can be used for MIG overlay on steel after a first layer with nickel 208(Filler Metal 61). Dissimilar welding applications include joining nickel copper alloys to Nickel 200 and copper nickel alloys.

CHEMICAL COMPOSITION(WT.%):

C	Mn	Si	Fe	Al	Ti
0.05	3.45	0.77	0.4	0.1	2.25
Ni	S	P	Cu		
65.2	0.002	0.009	Balance		

MECHANICAL PROPERTIES:

Tensile strength, 76500psi	530Mpa
Elongation	34
Yield Strength 52500psi	360Mpa