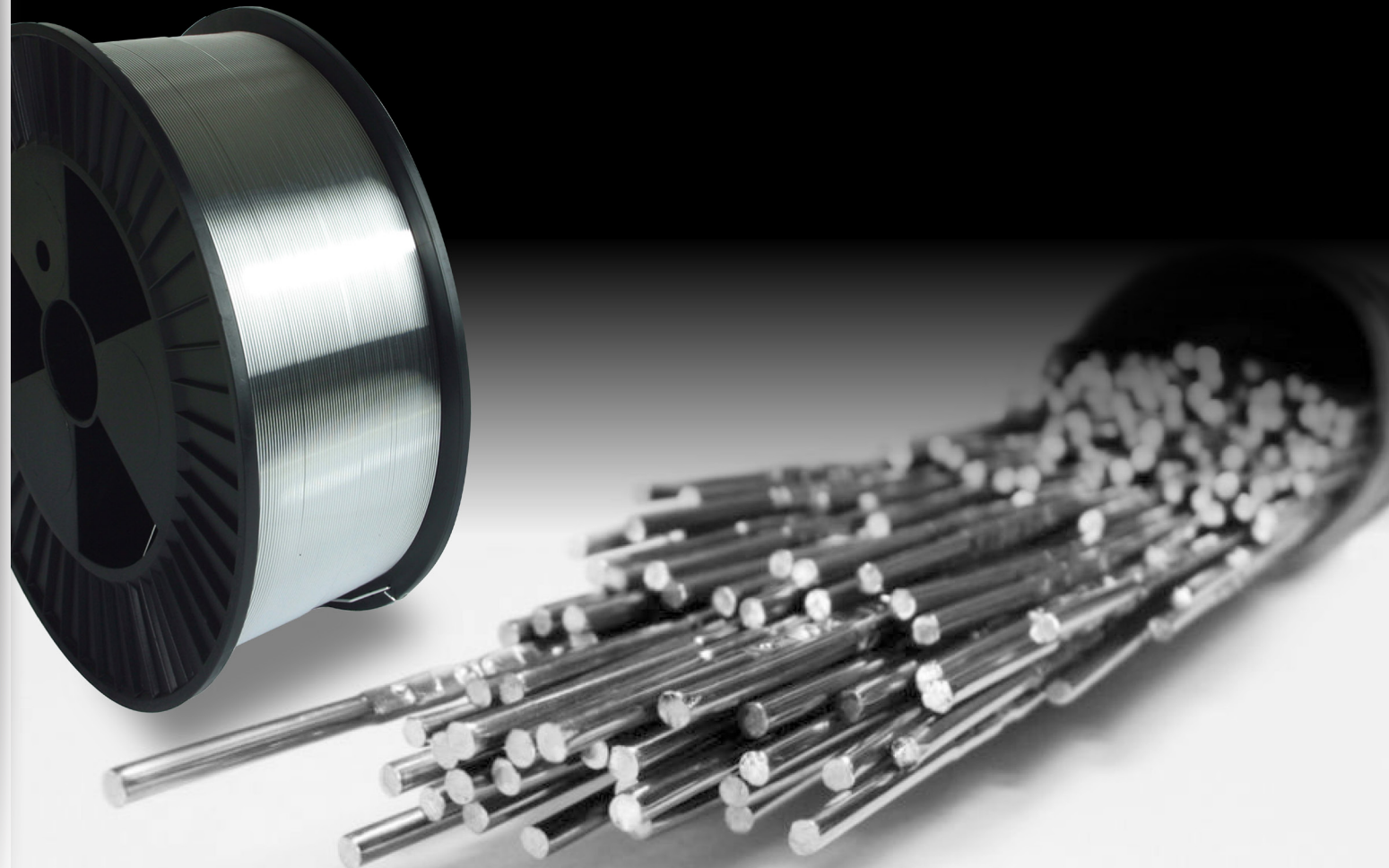


# Filler metals & tungsten electrodes

MMA	MMA COATED ELECTRODES - Rutile (6013) - Basic (7018) - Stainless steel (312R, 308L, 316L) - Cast iron (NiFeCl3) - Aluminum (4043) - Reloading (600HB)	P2 - P9
TIG	TIG FILLER METAL - Steel (G3Si1) - Stainless steel (308L, 316L) - Alu (AlMg5)	P10 - P13
	TUNGSTEN ELECTRODES - WP - WL15 - WL20 - WC20 - WR2 - E3	P14 - P20
MIG / MAG	MIG / MAG WIRE SPOOLS - Unalloyed steels • G2Si1 • G3Si1 • G3Si1 (Excellium) • G2Ti (Galvanized)	P21 - P24
	- Low alloy steels • CrMo2Si • NiMoCr90 (UHSS)	P25 - P26
	- Stainless steels • 308LSi • 316LSi	P27 - P28
	- Aluminum alloys • AlMg3 • AlMg5 • AlMg5Cr (Excellium) • AlSi5 • AlSi12	P29 - P33
	- Copper alloys • CuSi3 • CuSi3 (Excellium) • CuAl8	P34 - P36
	- Flux-cored wire (NO GAS) - Wire reloading	P37 P38
GAS	GASEOUS PROTECTION ACCORDING TO STANDARD EN 14175	P39



# COATED ELECTRODES

Universal rutile electrode specially designed for welding all positions, including vertical downward. It is very easy to start and has excellent bead aesthetics. It is recommended for general purpose constructions in unalloyed and low alloy steels.

## Application

- Metal constructions,
- Tanks,
- Piping,
- Locksmith,
- Handicrafts.

## Products

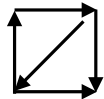
- Easy priming and re-priming.
- Good weldability in all positions.
- Flat cords slightly curved and easy to unclog.
- Excellent aesthetics of the cord.

## Classification

EN ISO 2560-A: E 42 0 RC 1 1

AWS A 5.1: E6013

## Positions and polarity



- Starting from 40V - Direct current.
- **Polarity (-) at the electrode.**

## Recommendations

Ø electrode (mm)	1.6	2.0	2.5	3.2	4.0
Thickness (mm)	1.5	1.5 ▶ 3	2.5 ▶ 6	5 ▶ 8	8 ▶
Welding current (A)	30	40 ▶ 70	60 ▶ 100	80 ▶ 130	130 ▶ 170

## Mechanical properties

D	Rm	A 5 d	KV 0 °C	VS %	Mn%	Yes %	P%	S%
440 MPa	540 MPa	24%	50 J	0.06	0.50	0.40	0.025	0.025

## Chemical properties

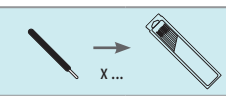
## Approval


TÜV - DB




## UNIVERSAL RUTILE (6013)

## Conditioning

Ref.	Ø (mm)	length (mm)		weight (kg)
084315	Ø 1.6	350	17	0.16
084414			50	0.41
084322	Ø 2.0	350	13	0.22
084421			50	0.71
084339	Ø 2.5	350	11	0.24
084438			50	1.00
084346	Ø 3.2	350	9	0.30
084445	Ø 4.0	350	50	1.50
084353			8	0.38
084452			50	2.24

Ref.	Ø (mm)	length (mm)		weight (kg)
085114	Ø 1.6	350	210	1.65
085121	Ø 2.0		155	2.08
085138	Ø 2.5		110	2.11
085145	Ø 3.2		70	2.09
085152	Ø 4.0		47	2.21

Ref.	Ø (mm)	length (mm)		weight (kg)
085022	Ø 2.0	350	355	4.82
085039	Ø 2.5		230	4.46
085046	Ø 3.2		165	4.85
085053	Ø 4.0		110	5.39

Ref.	Ø (mm)	length (mm)		weight (kg)
081598	Ø 2.5	350	75	-
081604	Ø 3.2	350	57	-

Ref.	Ø (mm)	length (mm)		weight (kg)
086005	Ø 2.5	350	252	4.6
086012	Ø 3.2	350	172	5
086029	Ø 4.0	350	117	5



# COATED ELECTRODES

Universal basic electrode for welding highly stressed steel assemblies (carbon and carbon manganese) (tensile strength up to 560 MPa). It is characterized by excellent mechanical properties, especially at low temperatures.

## Application

- Piping,
- Pressure tanks,
- Shipyards,
- Offshore platforms,
- Quality steel constructions.

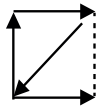
## Products

- Excellent mechanical properties.
- Very low hydrogen content.

## Classification

EN ISO 2560-A: E 42 4 B 4 2 H5  
AWS A 5.1: E 7018-1

## Positions and polarity



- Starting from 70V - Direct current.
- **Polarity at the electrode: ( ) going from root and (-) to filling.**

## Recommendations

Ø electrode (mm)	2.5	3.2	4.0
Thickness (mm)	2.5 ▶ 6	5 ▶ 8	8 ▶
Welding current (A)	60 ▶ 110	90 ▶ 140	130 ▶ 190

## Mechanical properties

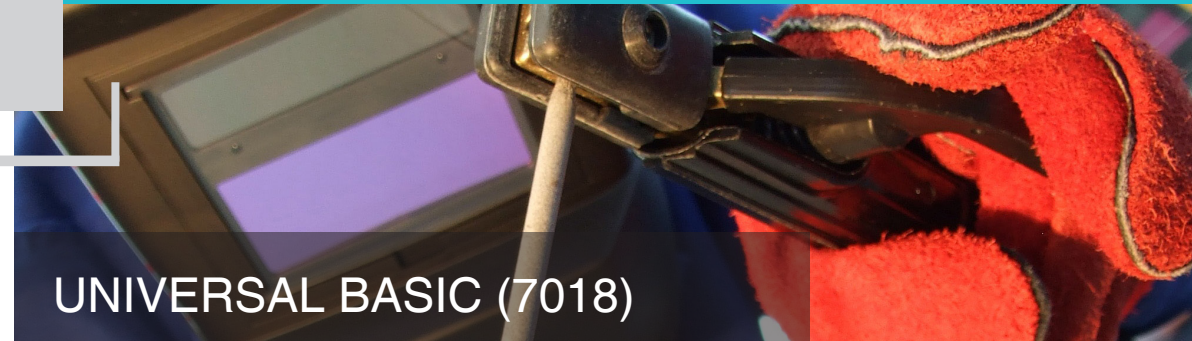
D	Rm	A 5 d	KV -40 °C
470 MPa	560 MPa	26%	60 J

## Chemical properties

VS %	Mn%	Yes %	S%	P%
0.05	1.40	0.40	0.020	0.015

## Approval

TÜV - RINA - ABS - LRS - DNV



## Conditioning

Ø (mm)	length (mm)	x ...
081918	081970	210
		84
081925	081987	130
		54
081932	081994	96
		38

## COATED ELECTRODES

Electrode with semi-basic coating designed for welding and surfacing of ferritic - austenitic steels and for steels with difficult weldability. It has very good mechanical properties and high resistance to hot cracking. It is suitable for all types of application, and recommended for repair and maintenance.

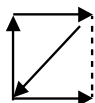
## Application

- Universal use for repair and maintenance,
- Carbon Steel,
- Galvanized steel,
- Tool steel,
- Manganese steel,
- Usable on dissimilar steels.

## Products

- Smooth and regular fusion.
- Cord of beautiful appearance.
- Good detachment from the slag.
- High resistance to cracking.

## Positions and connection



- Starting from 50V - Direct current.
- **Polarity ( ) at the electrode.**

## Classification

EN 1600 / ISO 3581-A: E 29 9 R 2  
AWS A 5.4: E 312-16

## Recommendations

Ø electrode (mm)	2.0	2.5	3.2
Thickness (mm)	2 ▶ 4	3 ▶ 6	8 ▶
Welding current (A)	30 ▶ 60	40-80	70-100

## Mechanical properties

Rs	Rm	A 5 d	KV 0 °C
450 MPa	680 MPa	25%	60 J

## Chemical properties

VS %	Mn%	Yes %	S%	Cu%	Ni%	Cr%	Mo%
0.10	1.20	0.20	0.015	0.05	10.00	30.00	0.10

INOX 312 R

SPECIAL REPAIR &amp; MAINTENANCE



## Conditioning

Ref.	Ø (mm)	length (mm)	x ...
081475	Ø 2.5	300	54
081468	Ø 3.2	350	28

## COATED ELECTRODES

Rutilo-basic electrode with very low carbon content, designed for welding austenitic stainless steels without molybdenum type 18/8 (304, 304L). It has high corrosion resistance in an oxidized environment and is suitable for all positions. It is recommended as a first pass in all cases where regular penetration and good compactness are required.

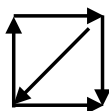
## Application

- Petrochemical, chemical, maritime & food industries.
- Pipes and tanks.

## Products

- Smooth and regular fusion.
- Cord of beautiful appearance.
- Welding of stainless steel 304, 308, 188 and 1883.
- Good detachment from the slag.
- High resistance to corrosion in an oxidizing environment.

## Positions and polarity



- Starting from 40V - Direct current.
- **Polarity ( ) at the electrode.**

## Classification

EN 1600 / ISO 3581-A: E 19 9 LR  
AWS A 5.4 : E 308 L-17

## Recommendations

Ø electrode (mm)	2,5
Thickness (mm)	3 ▶ 6
Welding current (A)	40 ▶ 80

## Mechanical properties

D	Rm	A 5 d	KV 20 °C
350 MPa	520 MPa	35%	80 J

## Chemical properties

VS %	Mn%	Yes %	S%	P%	Cu%	Ni%	Cr%	Mo%
0.03	0.70	0.70	0.015	0.015	0.05	10.00	19.00	0.10

## STAINLESS STEEL 308L



## Conditioning

Ref.	Ø (mm)	length (mm)	x ...
082328	Ø 2.5	300	10

# COATED ELECTRODES

Rutilo-basic electrode with very low carbon content, studied for welding austenitic stainless steels with and without molybdenum (316, 316L, 316 Ti / Nb). It is very resistant to chemical attacks and corrosion saline. It is therefore recommended in the petrochemical, chemical and maritime industries.

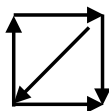
## Application

- Petrochemical, chemical, maritime industries,
- Pipes and tanks.

## Products

- Smooth and regular fusion.
- Cord of beautiful appearance.
- Welding of 316L stainless steel, 188 and 1883.
- Good detachment from the slag.

## Positions and polarity



- Starting from 40V - Direct current.
- **Polarity ( ) at the electrode.**

## Classification

EN 1600 / ISO 3581-A: E 19 12 3L R32  
AWS A 5.4: E 316 L-17

## Recommendations

Ø electrode (mm)	2	2.5	3.2
Thickness (mm)	1.5 ▶ 3	2.5 ▶ 6	5 ▶ 8
Welding current (A)	30 ▶ 60	40 ▶ 80	70 ▶ 100

## Mechanical properties

D	Rm	A 5 d	FV 20 °C
350 MPa	490 MPa	30%	60 J

## Chemical properties


VS %	Mn%	Yes %	S%	P%	Cu%	Ni%	Cr%	Mo%
0.03	0.70	0.70	0.015	0.015	0.05	12.00	18.00	2.50



316L STAINLESS STEEL



## Conditioning

Ref.	Ø (mm)	length (mm)	
082359	Ø 2.0	300	12
082335	Ø 2.5	300	10
081499	Ø 2.5	300	30
082342	Ø 3.2	350	8
081482	Ø 3.2	350	25
081963	Ø 3.2	350	600 (20 kg)

## COATED ELECTRODES

Electrode with graphite-basic coating with a high percentage of nickel, intended for the repair of different types of cast iron. It presents very good mechanical properties and high resistance to cracking. She is recommended for heterogeneous cast iron / steel connections.

## Application

Welding and surfacing of cast irons, alloyed cast irons, nodular cast irons and cast iron with steel assemblies:

- crankcase,
- cylinder head,
- engine block,
- pump body,
- cogwheel.

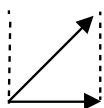
## Products

- Homogeneous ferro-nickel alloy and very resistant to cracking.
- Excellent adhesion even on old cast iron.
- High mechanical characteristics.

## Classification

EN ISO 1071: EC NiFe-CI  
AWS A 5.15: E Ni Fe CI 3  
DIN 8573: E NiFe 1 BG 13

## Positions and polarity



- Starting from 40V - Direct current.
- **Polarity ( ) at the electrode.**

## Recommendations

Ø electrode (mm)	2.5	3.2
Thickness (mm)	3 ▶ 6	3 ▶
Welding current (A)	70	100

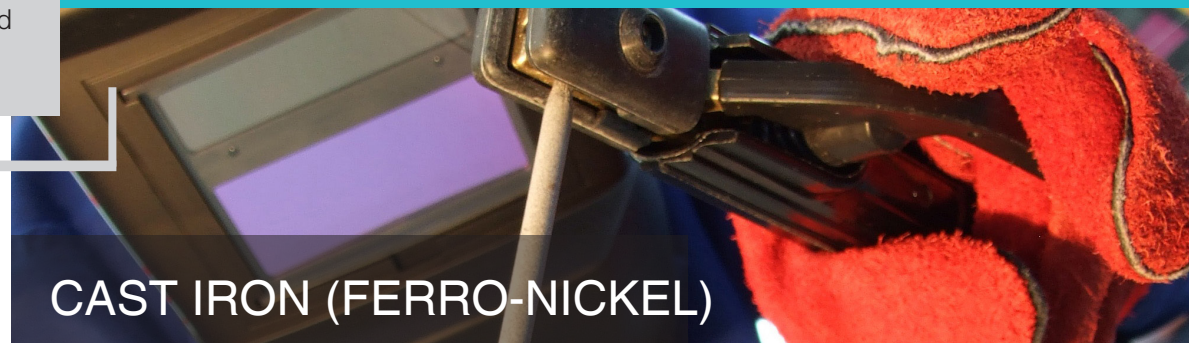
- Welding in small beads,
- Hammer during cooling.

## Mechanical properties


D	Rm
390	550

## Chemical properties

VS %	Mn%	Yes %	Ni%	Fe%
1.00	<1.00	<2.00	56.00	based



## Conditioning

Ref.	Ø (mm)	length (mm)	
083332	Ø 2.5	350	12
083349	Ø 3.2	350	9
081956	Ø 3.2	350	156

## COATED ELECTRODES

Aluminum electrode with 5% silicon studied for the assembly and repair of parts in aluminum or aluminum alloys. It exhibits excellent corrosion resistance, low porosity as well as good mechanical properties.

## Application

- Foundry alloys,
- Engine blocks,
- Cylinder heads,
- Tanks,
- Tanks,
- Containers,
- Maritime and chemical industry.

## Products

- Good mechanical properties.
- Excellent corrosion resistance.

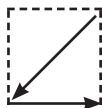
## Classification

ISO 18273: Al 4043A

AWS A 5.3: E4043

DIN 1732: EI-AISi5

## Positions and polarity



- Starting from 60V - Direct current.
- **Polarity ( ) at the electrode.**

## Recommendations

Ø electrode (mm)	3.2
Thickness (mm)	3 ▶
Welding current (A)	90

- Preheat the part to be welded so thick.

## Mechanical properties

Rm	Rp0.2	A 5 d	Hardness
110▶160 MPa	70,100▶MPa	> 15%	~ 50 HB

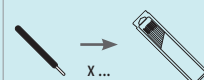
## Chemical properties

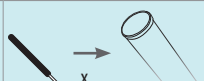
Al%	Mn%	Yes %	Fe%
based	<0.50	5.00	<0.50

## ALUMINUM 4043 (AISi5)



## Conditioning

Ref.	Ø (mm)	length (mm)	
084803	Ø 3.2	350	5

Ref.	Ø (mm)	length (mm)	
081949	Ø 3.2	350	147



# COATED ELECTRODES

Electrodes intended for recharging new parts, to protect areas that wear out quickly, and for repairing used parts. Resistant to abrasion and impact, they are very easy to start, even with equipment with low arc voltage.

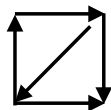
## Application

- Reloading of dies,
- Scrapers,
- Buckets And Bucket Teeth,
- Excavation equipment,
- Chisels,
- Conveyor screws,
- Track links.

## Products

- High resistance to abrasion and impact.
- Good resistance to hot wear.
- Soft fusion.
- Beautiful appearance of the cord.
- Easy to remove slag.
- Few projections.

## Positions and polarity



- Starting from 45V - Direct current.
- **Polarity (-) at the electrode.**

## Classification

EN 14700: E Fe 2  
DIN 8555: E2-UM-60

## Recommendations

Ø electrode (mm)	2.5	3.2	4
Thickness (mm)	2.5 ▶ 6	5 ▶ 8	8 ▶
Welding current (A)	90	115	160

## Mechanical properties

## Chemical properties

Brinell hardness HB	Rockwell hardness HRC	VS %	Yes %	Mn%	P%	Cr%	Fe%
580-610	55-60	1.00	0.50	1.30	0.015	4.50	based

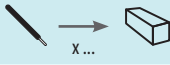


600 HB STEEL

## RECHARGING ELECTRODES



## Conditioning

	Ref.	Ø (mm)	length (mm)	
<b>TO</b>	081529	Ø 3.2	450	141
	081512	Ø 4.0	450	90
<b>B</b>	081543	Ø 2.5	350	46
	081574	Ø 3.2	450	22
	081581	Ø 4.0	450	14

# TIG FILLER METAL

TIG filler metal designed for welding unalloyed steels. It is recommended for performing root passes where controlled penetration is required and is suitable for vessel and pipe steels.

## Application

- In piping,
- For penetration passes.

## Products

- Good quality assembly of structural steels.
- Excellent mechanical qualities, in particular in TIG welding on small thicknesses.

## Classification

**AWS 5.18: ER70S-6**  
**EN 636A / EN ISO 14341A: G / W3Si1**  
**DIN 8559: WSG2**

## Recommendations

Ø electrode (mm)	1.6	2	2.4
Thickness (mm)	1.5 ▶ 2	2.0 ▶ 2.5	2.5 ▶ 3.0
Welding current (A)	60 ▶ 95	90 ▶ 110	120 ▶ 150

Gas protection according to standard EN ISO 14175  
 100% Argon (I1)

## Mechanical properties

D	Rm	A 5 d	KV 20 °C	KV 0 °C
> 420 Mpa	500-640 Mpa	> 22%	150 J	100 J

## Chemical properties

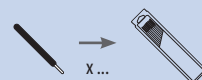
VS %	Yes %	Mn%
0.08	0.85	1.45

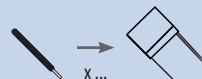
## Approval

CE - BV - ABS



## Conditioning

Ref.	Ø (mm)	length (mm)	 X ...
087224	Ø 1.6	330	60
087231	Ø 2.0	330	40

Ref.	Ø (mm)	length (mm)	 X ...
087019	Ø 1.6	1000	315
087217	Ø 2.0	1000	205
087033	Ø 2.4	1000	142

## TIG FILLER METAL

TIG Inox 308L filler metal in rods for welding austenitic stainless steels without molybdenum (304, 304L, 321, 347). It is recommended as a first pass in all cases where regular penetration and good compactness are required.

## Application

- Pipes, structures of fine thickness less than or equal to 3 mm and for penetration passes,
- Reserved for assemblies not exceeding 350 ° C in service temperature.

## Products

- Suitable for food, organic acid ... (308L).
- Resistant corrosion.

## Classification

**AWS A5.9: ER 308L**  
**EN ISO 14343-A: W19 9 L**

## Recommendations

Ø electrode (mm)	1.6	2	2.4
thickness (mm)	1.5 ▶ 2.0	2.0 ▶ 2.5	2.5 ▶ 3.0
Welding current (A)	60 ▶ 95	90 ▶ 110	120 ▶ 150

Gas protection according to standard EN ISO 14175

100% Argon (I1): 6-12 l / min

Reverse: Argon / Nitrogen: 3-6 l / min

## Mechanical properties

Rp 0.2	Rm	A 5 d	KV -196 °C
400 Mpa	600 Mpa	38%	48 J

## Chemical properties

C max%	Mn%	Yes %	Cr%	Ni%	S max	P max	Fe
0.025	1.80	0.45	20.20	10.00	0.02	0.02	Based

## Approval


TÜV - Vd TÜV - DB - CE



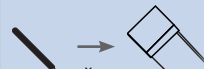
## STAINLESS STEEL TIG FILLER METAL (308L)



## Conditioning

Ref.	Ø (mm)	length (mm)	
087248	Ø 1.6	330	60
087255	Ø 2.0	330	40



Ref.	Ø (mm)	length (mm)	
087118	Ø 1.2	1000	560
087156	Ø 1.6	1000	319
087163	Ø 2.0	1000	204

## TIG FILLER METAL

TIG stainless steel 316L filler metal rod for welding austenitic stainless steels with and without molybdenum (316, 316L, 316 Ti / Nb304, 304L). It is recommended as a first pass in all cases where penetration regularity and good compactness are required.

## Application

- Pipes, structures of fine thickness less than or equal to 3 mm and for penetration passes,
- Reserved for assemblies not exceeding 350 ° C in service temperature.

## Products

- Suitable for corrosive environments, acids, chlorine ...
- Resistant corrosion.

## Classification

**AWS A5.9: ER 316L**  
**EN ISO 14343-A: W19 12 3 L**

## Recommendations

Ø electrode (mm)	1.6	2	2.4
thickness (mm)	1.5 ▶ 2.0	2.0 ▶ 2.5	2.5 ▶ 3.0
Welding current (A)	60 ▶ 95	90 ▶ 110	120 ▶ 150

Gas protection according to standard EN ISO 14175

100% Argon (I1): 6-12 l / min

Reverse: Argon / Nitrogen: 3-6 l / min

## Mechanical properties

Rp 0.2	Rm	A 5 d	KV -196 ° C
410 Mpa	600 Mpa	35%	45 J

## Chemical properties

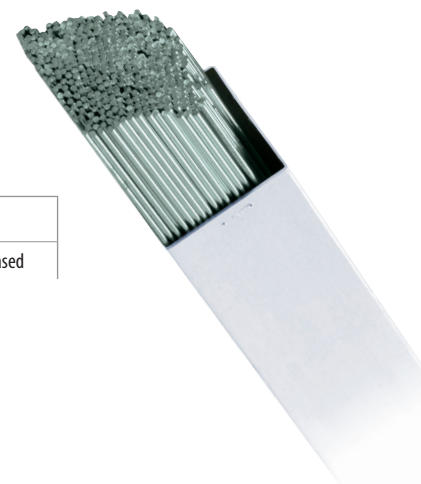
Cmax%	Mn%	Yes %	Cr%	Ni%	Mo%	Smax%	Pmax%	Fe
0.025	1.80	0.45	19.00	12.00	2.60	0.02	0.02	Based

## Approval

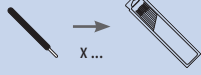
TÜV - Vd TÜV - DB - CE

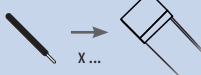


## STAINLESS STEEL TIG FILLER METAL (316L)



## Conditioning

Ref.	Ø (mm)	length (mm)	
087262	Ø 1.6	330	60
087279	Ø 2.0	330	40

Ref.	Ø (mm)	length (mm)	
087125	Ø 1.6	1000	920
087200	Ø 2.0	1000	590
087149	Ø 2.4	1000	410

# FILLER METAL TIG

TIG filler metal designed for welding Aluminum-Magnesium alloys. Its excellent mechanical properties give it a high tensile strength (250 Mpa). It is recommended for marine construction because of its extreme resistance to saline environment.

## Application

- Marine construction,
- Railway construction,
- Dumpster,
- Aeronautics, aerospace,
- Trailer.

## Products

- Extremely resistant to corrosion and seawater.
- Good mechanical resistance.

## Classification

**AWS 5.10: ER5356**  
**EN ISO 18273: S Al 5356**

## Recommendations

Ø electrode (mm)	1.6	2	2.4
thickness (mm)	1.0 ▶ 1.5	2.0 ▶ 2.5	2.5 ▶ 3.0
Welding current (A)	55 ▶ 60	70 ▶ 80	110 ▶ 120

Gas protection according to standard EN ISO 14175

100% Argon (I1): 5-10 l / min

Argon / Helium mixture (I3): 5-10 l / min

## Mechanical properties

## Chemical properties

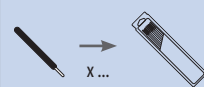
Rp 0.2	Rm	A 5 d	Al%	Mg%	Mn%	Cr%	Ti%	Yes %	Cu%	Fe%	Zn%
120 Mpa	280 Mpa	30%	Based	4.80	0.15	0.10	0.13	0.05	0.002	0.13	0.01

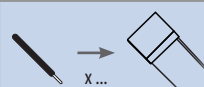


FILLER METAL TIG ALU (AlMg5) (5356)



## Conditioning

Ref.	Ø (mm)	length (mm)	
087286	Ø 2.0	330	40

Ref.	Ø (mm)	length (mm)	
087170	Ø 1.6	1000	319
087187	Ø 2.0	1000	204
087194	Ø 2.4	1000	142



# TUNGSTEN ELECTRODES

Pure Tungsten electrodes (green end) are designed without additives for welding aluminum and its alloys with good arc stability. They make it possible to obtain a well-formed ball at the end of the electrode, this ball forms spontaneously from the first seconds. The tungsten electrode for this type of welding does not sharpen.

## Application

- Can only be used in alternating current (AC) for welding aluminum and its alloys.

## Products

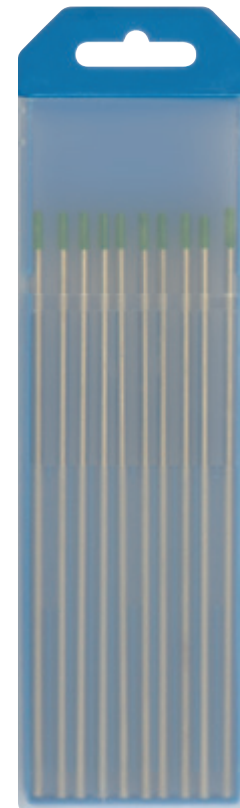
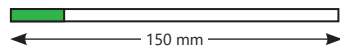
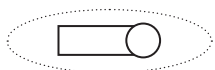
- Made up without additives (pure tungsten)
- Good arc stability,
- Does not require sharpening.

## Classification

See standard **EN26848**  
**ISO 6848**

## Recommendations

Ø electrode (mm)	1.6	2	2.4	3.2
thickness (mm)	1.5 ▶ 2.0	1.5 ▶ 2.0	2.5 ▶ 4.0	4.0 ▶ 5.0
Max welding current (A)	Imax AC 55 ▶ 80	70 ▶ 80	110 ▶ 160	160 ▶ 180



## Conditioning

Ref.	Ø (mm)	length (mm)	x ...
044555	Ø 1.6	150	x10
046719	Ø 2.0	150	x10
044579	Ø 2.4	150	x10
046726	Ø 3.2	150	x10

# TUNGSTEN ELECTRODES

Lanthanum Tungsten electrodes (gold end) are universal TIG electrodes that can be used in direct and alternating current. They are particularly recommended for welding pure materials or aluminum, titanium, nickel, copper and magnesium alloys. The higher rate of lanthanum oxide in their composition gives them slower wear and less current-intensive ignition than for WR2 electrodes. They are recommended for low currents.

## Application

- Welding all metals, Aluminum alloy, Titanium, Nickel, Copper and Magnesium.

## Products

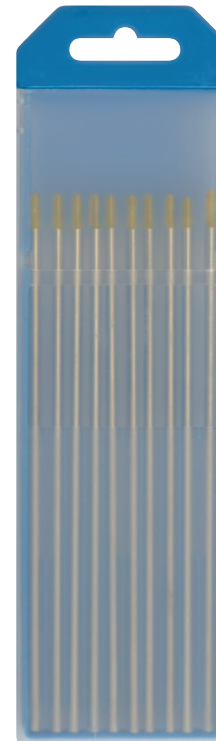
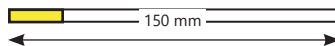
- Good starting quality.
- Composed of Lanthanum Oxide.

## Classification

See standard **EN26848**  
**ISO 6848**

## Recommendations

Ø electrode (mm)	1.6	2	2.4	3.2
thickness (mm)	1.5 ▶ 2.0	1.5 ▶ 2.0	2.5 ▶ 4.0	4.0 ▶ 5.0
Welding current (A)	Imax AC	55 ▶ 80	70 ▶ 80	110 ▶ 180
	Imax DC	25 ▶ 95	60 ▶ 130	100 ▶ 250



## Conditioning

Ref.	Ø (mm)	length (mm)	x ...
045330	Ø 1.6	150	x10
045347	Ø 2.0	150	x10
045354	Ø 2.4	150	x10
045361	Ø 3.2	150	x10

# TUNGSTEN ELECTRODES

Lanthanum Tungsten electrodes (gold end) are universal TIG electrodes that can be used in direct and alternating current. They are particularly recommended for welding pure materials or aluminum, titanium, nickel, copper and magnesium alloys. The higher rate of lanthanum oxide in their composition gives them slower wear and less current-intensive ignition than for WR2 electrodes. They are recommended for low currents.

## Application

- Welding all metals, Aluminum alloy, Titanium, Nickel, Copper and Magnesium.

## Products

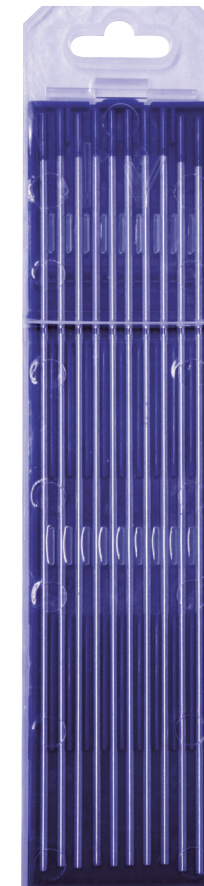
- Good starting quality.
- Composed of Lanthanum Oxide.

## Classification

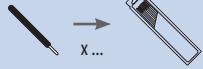
See standard **EN26848**  
**ISO 6848**

## Recommendations

Ø electrode (mm)	1.6	2	2.4	3.0	3.2	4.	
thickness (mm)	1.5 ▶ 2.0	1.5 ▶ 2.0	2.5 ▶ 4.0	4.0 ▶ 5.0	4.0 ▶ 5.0	4.0 ▶ 5.0	
Welding current (A)	Imax AC	55 ▶ 80	70 ▶ 80	110 ▶ 160	160 ▶ 180	180 ▶ 220	220 ▶ 250
	Imax DC	25 ▶ 95	60 ▶ 130	100 ▶ 200	150 ▶ 250	250 ▶ 350	350 ▶ 450



## Conditioning

Ref.	Ø (mm)	length (mm)	 x ...
037137	Ø 1.6	150	x10
037120	Ø 2.0	150	x10
037144	Ø 2.4	150	x10
037151	Ø 3.0	150	x10
037168	Ø 3.2	150	x10
037175	Ø 4.0	150	x10



# TUNGSTEN ELECTRODES

WC Tungsten electrodes (gray end ) are suitable for both AC and DC welding. They are mainly used for welding pure materials or alloys of Aluminum, Titanium, Nickel, Copper or Magnesium and recommended in low current. The cerium oxide present in these electrodes gives them excellent starting and restriking properties.

## Application

- Particularly recommended for welding steel, stainless steel, copper and brass in low intensities,
- Versatile, it can be used in direct current (DC) and alternating current (AC).

## Products

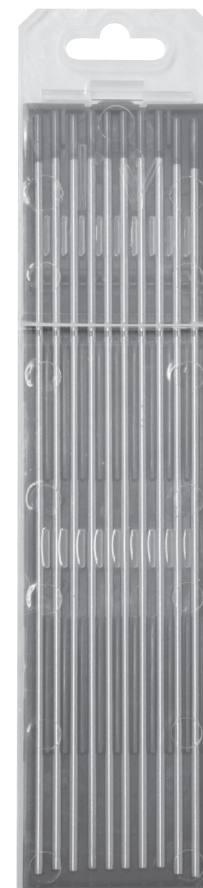
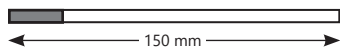
- Composed of Cerium oxide.
- Features close to the thoriated electrode.
- Excellent priming quality.
- Great arc stability.
- Reduced wear rate.
- Suitable for automatic welding.

## Classification

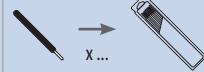
**AWS 26848**  
**EN ISO 6848**

## Recommendations

Ø electrode (mm)	1.6	2.4	3.2
thickness (mm)	1.5 ▶ 2.0	2.5 ▶ 4.0	4.0 ▶ 5.0
Welding current (A)	Imax AC	55 ▶ 80	70 ▶ 160
	Imax DC	25 ▶ 95	60 ▶ 200



## Conditioning

Ref.	Ø (mm)	length (mm)	 x ...
063174	Ø 1.6	150	x10
063181	Ø 2.4	150	x10
063198	Ø 3.2	150	x10

# TUNGSTEN ELECTRODES

WR2 Tungsten electrodes (turquoise end) are versatile TIG electrodes for welding steels and stainless steel in direct current as well as for aluminum in alternating current.

## Application

- Versatile, it can be used with direct current (DC) for Steel, Stainless steel and alternating current (AC) for Aluminum.

## Products

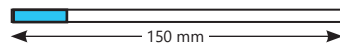
- Good starting quality.
- Better lifespan.
- Rare earth oxide compound.

## Classification

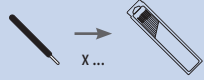
See standard **EN26848**  
**ISO 6848**

## Recommendations

Ø electrode (mm)	1.6	2	2.4	3.2
thickness (mm)	1.5 ▶ 2.0	1.5 ▶ 2.0	2.5 ▶ 4.0	4.0 ▶ 5.0
Max welding current (A)	I <sub>max</sub> AC	55 ▶ 80	70 ▶ 80	110 ▶ 160
	I <sub>max</sub> DC	25 ▶ 95	60 ▶ 130	100 ▶ 200



## Conditioning

Ref.	Ø (mm)	length (mm)	 x ...
044586	Ø 1.6	150	x10
044593	Ø 2.0	150	x10
044609	Ø 2.4	150	x10
044616	Ø 3.2	150	x10

# TUNGSTEN ELECTRODES

E3® Tungsten electrodes (Binzel) (lilac end) offer great flexibility of use. They are particularly recommended for welding steel, stainless steel, copper and brass in low or medium intensities. They also allow welding of aluminum in alternating current. Non-radioactive, they have characteristics close to the thoriated electrode. They are distinguished by a high quality of starting and ensure a good regularity in the realization of the bead. They are suitable for automatic welding.

## Application

- Particularly recommended for welding steel, stainless steel, copper and brass in low or medium intensities,
- Versatile, it can be used in direct current (DC) and alternating current (AC).

## Products

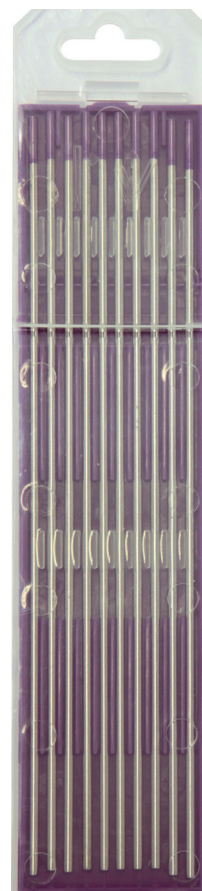
- Composed of Lanthanum Oxide.
- Features close to the thoriated electrode.
- Excellent priming quality.
- Great arc stability.
- Reduced wear rate.
- Suitable for automatic welding.

## Classification

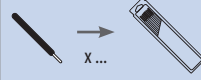
**AWS 26848**  
**EN ISO 6848**

## Recommendations

Ø electrode (mm)	1.6	2	2.4	3.2	4.0	4.8	
thickness (mm)	1.5 ▶ 2.0	1.5 ▶ 2.0	2.5 ▶ 4.0	4.0 ▶ 5.0	4.0 ▶ 5.0	4.0 ▶ 5.0	
Welding current (A)	I <sub>max</sub> AC	55 ▶ 80	70 ▶ 110	110 ▶ 160	160 ▶ 180	180 ▶ 200	250 ▶ 350
	I <sub>max</sub> DC	25 ▶ 95	60 ▶ 130	100 ▶ 200	150 ▶ 250	250 ▶ 350	400 ▶ 550



## Conditioning

Ref.	Ø (mm)	length (mm)	
046733	Ø 1.6	150	x10
046764	Ø 2.0	150	x10
046771	Ø 2.4	150	x10
046788	Ø 3.2	150	x10
046795	Ø 4.0	150	x10
063107	Ø 4.8	150	x10

# TUNGSTEN ELECTRODES

## COMPARATIVE TUNGSTEN ELECTRODES



		Stainless steel	Alu	DC — — —	AC ~	Arc stability	Arc ignition	Electrode life
	<b>WP</b>	---	++++	---	+++	++	+++	++
	<b>WL15</b>	+++	++	+++	+++	++	+++	+++
	<b>WL20</b>	+++	+	+++	+++	++	+++	+++
	<b>WC</b>	+++	++	+++	++	+++	++++	++
	<b>WR2</b>	++++	+++	++++	+++	++	+++	+++
	<b>E3</b>	++++	+++	++++	+++	+++	++++	+++

--- unsuitable correct good very good excellent

### More informations

**Sharpening the electrode:** The sharpening angle has a very large influence on the characteristics of a bead. A large angle results in a narrow weld and high penetration while a small angle results in a wide weld with less penetration.

#### Electrode sharpener (ref. 045415)

Electrodes from  $\varnothing$  1 to 4 mm  
Particle filter  
Angle 15 to 180 °



## SPOOLS OF THREAD

Solid copper wire for gas shielded welding of carbon steels, low or unalloyed. It is recommended for many applications, especially in metal constructions thanks to its high welds quality.

## Application

- Construction construction
- Manufacturing of parts in the automotive industry
- Robotic, mechanized welding
- Shipbuilding
- Tanks, boilers

## Products

- Excellent starting properties.
- Very low welding spatter.
- Good resistance of the wire to corrosion.
- Welding in all positions.

## Classification

**AWS 5.18: ER 70S-3**  
**EN ISO 14341-A: G 42 2 M 2 Si1**  
**DIN 8559: SG1**

## Polarity

**DC**

## Recommendations

Wire Ø (mm)	0.8	1.0	1.2
thickness (mm)	<5	6 ▶ 8	8 ▶ 12
voltage (V)	16 ▶ 28	17 ▶ 32	18 ▶ 34
current (A)	60 ▶ 200	80 ▶ 260	100 ▶ 360

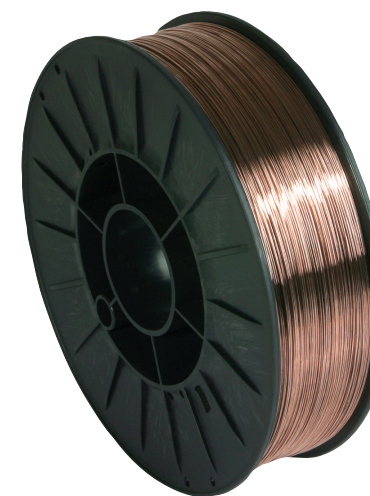
Gas protection according to standard EN ISO 14175  
 100% CO<sub>2</sub> (C1) or Argon / CO<sub>2</sub> mixture (M21, 8 <20% CO<sub>2</sub>)



## Mechanical properties

D	Rm	A 5 d	KV -20 °C	KV -40 °C
460 Mpa	550 Mpa	26%	47 J	47 J

## Chemical properties

VS %	Mn%	Yes %	S%	P%	Cu%
0.06-0.14	0.90-1.30	0.50-0.80	0.025	0.025	0.35



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
5	S200	—	086418	086401	—	—

## SPOOLS OF THREAD

Solid copper wire for gas shielded welding of carbon steels, low or unalloyed. It can be used for many applications in metal constructions due to its excellent mechanical properties.

## Application

- Automobile construction,
- Railway construction,
- Shipbuilding,
- Construction construction in general.
- Tanks, boilers

## Products

- Excellent starting properties.
- Great arc stability on high currents.
- Good resistance of the wire to corrosion.
- Welding in all positions.

## Classification

**AWS 5.18: ER 70S-6**  
**EN ISO 14341-A: G46 4 M21 3Si1 / G 42 3 C1 3Si1**  
**DIN 8559: SG2**

## Polarity

DC

## Recommendations

Wire Ø (mm)	0.8	1.0	1.2
thickness (mm)	<5	6 ▶ 8	8 ▶ 12
voltage (V)	16 ▶ 28	17 ▶ 32	18 ▶ 34
current (A)	60 ▶ 200	80 ▶ 260	100 ▶ 360

Gas protection according to standard EN ISO 14175  
 100% CO<sub>2</sub> (C1) or Argon / CO<sub>2</sub> mixture (M21, 8 <20% CO<sub>2</sub>)

## Mechanical properties

D	Rm	A 5 d	KV 20 °C	KV -20 °C	KV -40 °C
470 Mpa	560 Mpa	26%	150 J	90 J	50 J

## Chemical properties

VS %	Mn%	Yes %	S%	P%	Cu%
0.07	1.40	0.80	0.012	0.012	0.10



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
0.9	S100	—	086593	086609	—	—
5	S200	—	086111	086128	086135	—
15	S300	—	086166	086227	086234	086241
18	—	B300	—	086272	086289	086296

## SPOOLS OF THREAD

MAG copper solid wire developed for universal use in the manufacture of boilers and appliances, as well as in metal construction. Thanks to its ability to withstand strong currents, this wire is optimal for welding thick parts.

## Application

- Automobile construction,
- Railway construction,
- Shipbuilding,
- Construction construction in general.
- Tanks, boilers
- Robotics
- Production

## Products

- Very few projections.
- High chemical purity.

## Classification

**AWS 5.18: ER 70S-6**

**EN ISO 14341-A G42 3 M21 3Si1  
G42 3 C1 3Si1**

**EN ISO 14341-B G49A 3 M21 S12  
G49A 3 C1 S12**

## Polarity

**DC**

## Recommendations

Wire Ø (mm)	0.8	1.0	1.2
thickness (mm)	<5	6 ▶ 8	8 ▶ 12
voltage (V)	16 ▶ 28	17 ▶ 32	18 ▶ 34
Current (A)	60 ▶ 200	80 ▶ 260	100 ▶ 360

Gas protection according to standard EN ISO 14175

100% Argon (I1) or Argon / CO<sub>2</sub> mixture (15 to 25%) (M21) or 100% CO<sub>2</sub>(C1)

## Mechanical properties

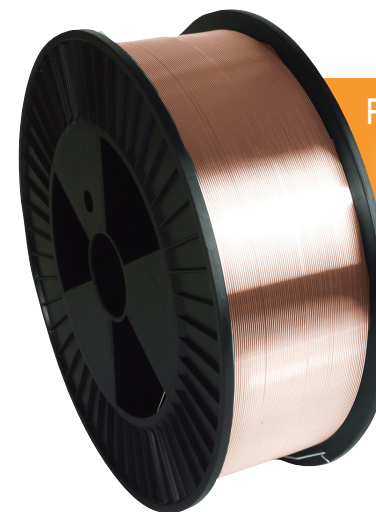
D	Rm	A 5 d	KV -30 °C
≥ 420 MPa	500-640 MPa	≥ 20%	≥ 47 J

## Chemical properties

VS %	Mn%	Yes %
0.07	1.50	0.85

## Approval

TÜV - DB - CE



PRODUCT OF THE RANGE  
**EXCELLIUM**

weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
15	S300	—	—	—	086302	086319

## SPOOLS OF THREAD

Solid wire with copper coating, used for MAG welding of low alloy steels intended to be carbonated, galvanized. It is recommended in general construction, for the manufacture of parts in the automotive industry, the manufacture of pressure vessels and for shipbuilding. This wire produces high quality welds in steels with various carbon contents.

## Application

- General construction,
- Automobile industry,
- Manufacture of pressure vessels,
- Shipbuilding.

## Products

- High quality welding.
- Excellent starting properties.
- Very low level of welding spatter.
- Welding in all positions.

## Classification

**AWS 5.18: ER 70S-2**

**EN ISO 14341-A: G42 2 M G2Ti**

**G 38 2 C C2Ti**

## Recommendations

Wire Ø (mm)	0.6	0.8
voltage (V)	15 ▶ 26	16 ▶ 28
current (A)	50 ▶ 180	60 ▶ 200

Gas protection according to standard EN ISO 14175

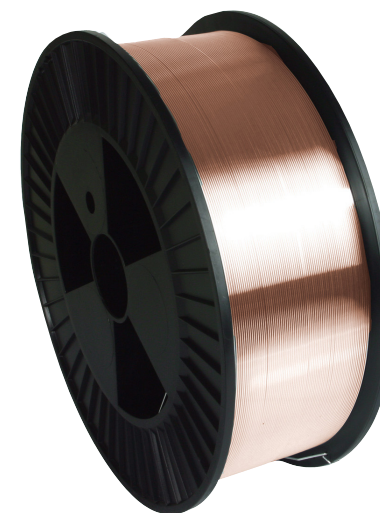
100% CO<sub>2</sub> (C1) or Argon / CO<sub>2</sub> mixture (M21, 8 <20% CO<sub>2</sub>)

## Mechanical properties

D	Rm	A 5 d	KV 20 °C	KV - 20 °C
440 Mpa	520 Mpa	28%	130 J	70 days

## Chemical properties

VS %	Yes %	Mn%	Ni%	Mo%	Cr%	V%	Zr%	Al%
0.06	1.10	0.50	0.012	0.012	0.15	0.10	0.09	0.10



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
5	S200	—	086760	086777	—	—



## SPOOLS OF THREAD

Low alloy copper plated solid wire with 2.25% Cr and 1% Mo, used for welding hot creep resistant steels. Recommended in facilities petrochemicals, on fusions and for repairing castings. To be used under Ar O2 gas protection.

## Application

- Chemical industry,
- Boilers,
- Piping,
- Pressure vessels with temperature up to 600 ° C,
- Heat exchanger.

## Products

- High resistance.
- Welding in all positions.

## Classification

**AWS 5.28: ER 90S-B3**  
**EN ISO 2195L-B: Cr 62 M22 2 C1 M**

## Polarity

**DC**

## Recommendations

Wire Ø (mm)	0.8
voltage (V)	17 ▶ 20
current (A)	80 ▶ 180

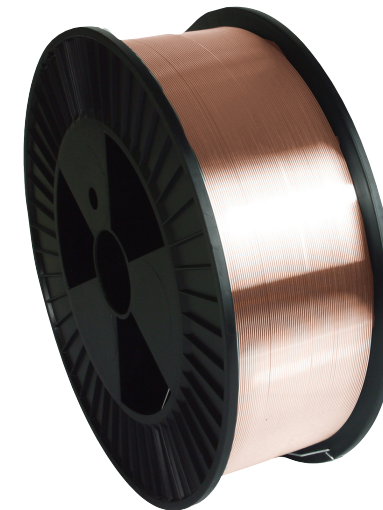
Gas protection according to standard EN ISO 14175  
 100% CO<sub>2</sub> (C1) or Argon / CO<sub>2</sub> mixture (M20, M21, M31): 12-16 l / min.

## Mechanical properties

D	Rm	A 5 d	KV 20 °C
560 Mpa	650 Mpa	> 20%	170 J

## Chemical properties

VS %	Yes %	Mn%	Mo%	Cr%	S%	P%	Cu%
0.08	0.60	0.60	1.00	2.50	0.010	0.01	0.12



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
15	S300	—	—	086258	—	—

## SPOOLS OF THREAD

UHSS (Ultra High Strength) steel wire. UHSS steel is particularly used in bodywork. This material makes it possible to reduce the thickness and weight while preserving the extreme strength and collision resistance of the fittings.

## Application

- Sheet metal,
- Bodywork work.

## Products

- Ultra high resistance.
- High hardness.
- High elongation values.
- Low projection (High chemical purity).

## Classification

**AWS / ASME SFA-5.28: ER 120 S - Cr**  
**EN ISO 12534: Mn4Ni2, 5CrMo**

## Polarity

**DC**

## Recommendations

Gas protection according to standard EN ISO 14175  
 Argon / CO<sub>2</sub> mixture (0 to 5%) (M11)

## Mechanical properties

D	Rm	A 5 d	AV 20 °C
930 Mpa	1020 Mpa	> 15%	130 days

## Chemical properties

VS %	Yes %	-Mn%	Ni%	Mo%	Cr%	V%
0.10	0.75	1.80	2.10	0.50	0.40	0.10

## Approval

DB - UDT



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
5	S200	—	—	086203	—	—

## SPOOLS OF THREAD

Solid wire filler metal for MIG welding of austenitic stainless steels without molybdenum type 304, 304L, 321, 347. It is recommended for all types of metal constructions not exceeding 350 ° C in service temperature.

## Application

- Reserved for constructions not exceeding 350 ° C in service temperature.
- General use in mild corrosion conditions.

## Products

- Excellent corrosion resistance.
- good mechanical properties.

## Classification

**AWS 5.9: ER 308L Si**  
**EN ISO 14343-A: G19 9 L Si**

## Polarity

**DC**

## Recommendations

Gas protection according to standard EN ISO 14175  
Argon / CO<sub>2</sub> (2 to 3%) (M12) or Argon / O<sub>2</sub> (1 to 2%): 12-18 l / min

## Mechanical properties

D	Rm	A 5 d	KV 96 ° C
400 Mpa	600 Mpa	40%	48 J

## Chemical properties

VS %	Yes %	Mn%	Ni%	Cr%	S% max	P% max	Fe%
0.025	0.90	1.80	10.00	20.50	0.02	0.02	Based

## Approval

TÜV, Vd TÜV, DB, CE



S100

S200

weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
1	S100	—	—	086616	—	—
5	S200	—	—	086579	086340	—
15	S300	—	—	—	086357	—

## SPOOLS OF THREAD

Low carbon filler metal for MIG welding of austenitic stainless steels (type 316, 316L, 304, 304L). The presence of molybdenum allows better resistance to corrosion in the presence of chloride (saline environment). The fluidity and wettability of the molten metal is improved by the high silicon content.

## Application

- Reserved for constructions not exceeding 400 ° C in operating temperature,
- Seaside construction,
- Chemical and food industry.

## Products

- Excellent mechanical characteristics.
- Resistance to salt and chemical corrosion.
- Beautiful appearance of the cord.

## Classification

**AWS A5.9: ER 316LSi**  
**EN ISO 14343-A: G 19 12 3 L Si**

## Polarity

**DC**

## Recommendations

*Gas protection according to standard EN ISO 14175*  
Argon / CO<sub>2</sub> (2 to 3%) (M12) or Argon / O<sub>2</sub> (1 to 2%): 12-18 l / min

## Mechanical properties

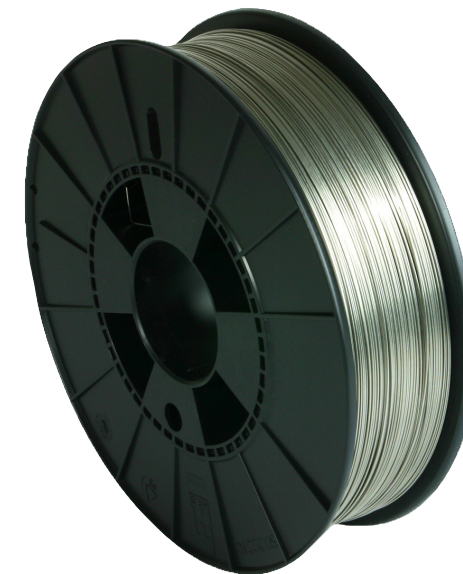
Rp 0.2	Rm	AT 5	KV -196 °C
400 Mpa	600 Mpa	36%	50 J



## Chemical properties

C% max	Yes %	Mn%	Ni%	Cr%	Mo%	S% max	P% max	Fe%
0.02	0.90	1.70	12.50	18.50	2.60	0.02	0.02	Based

## Approval

TÜV, Vd TÜV, DB, CE



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
5	S200	—	—	086326	086364	—
15	S300	—	—	—	086371	—

## SPOOLS OF THREAD

Solid wire for gas shielded welding of aluminum-magnesium alloys, of homogeneous composition at 2.7% Mg or heterogeneous. It is particularly recommended in marine construction for its excellent resistance to saline environment.

## Application

- Chemical tank,
- Shipbuilding,
- Railway construction,
- Automotive.

## Products

- Corrosion resistant.

## Classification

**AWS 5.10: ER 5554**  
**EN ISO 18273: S Al 5554**  
**DIN 1732: SG-AlMg2,7Mn**

## Recommendations

Wire Ø (mm)	1.2
voltage (V)	20 ▶ 29
current (A)	125 ▶ 260

Gas protection according to standard EN ISO 14175  
 100% Argon (I1) or Argon / Helium mixture (I3): 14-23 l / min



## Mechanical properties

D	Rm	A 5 d
100 Mpa	240 Mpa	18%

## Chemical properties

Al%	Mg%	Mn%	Cr%	Ti%	Fe%	Cu%	Yes %	Zn%
Based	2.60	0.80	0.10	0.10	0.30	0.08	0.20	0.20



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
2	S200	—	—	—	—	086517
7	S300	—	—	—	—	086500

## SPOOLS OF THREAD

Solid wire for gas shielded welding of aluminum-magnesium alloys of homogeneous composition at 5% Mg, or heterogeneous. Its excellent mechanical properties and its resistance to corrosion make it an ideal material for marine construction, railways (wagons), and road transport.

## Application

- Used in shipbuilding,
- Reservoirs,
- In railway construction,
- Transport environment (dumpsters and trailers).

## Products

- Excellent corrosion resistance.
- Very good mechanical characteristics.

## Classification

**AWS 5.10: ER 5356**  
**EN ISO 18273: S Al 5356**  
**DIN 1732: SG-AlMg5**

## Polarity

**DC**

## Recommendations

Gas protection according to standard EN ISO 14175  
 100% Argon (I1)

## Mechanical properties

D	Rm	A 5 d
110 Mpa	250 Mpa	25%

## Chemical properties

Al%	Mg%	Mn%	Cr%	Ti%
Based	5.00	0.35	0.10	0.15

## Approval

TÜV - DB - UDT



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
0.5	S100	—	—	086548	—	—
2	S200	—	—	086555	086562	—
7	S300	—	—	—	086524	086531

## SPOOLS OF THREAD

5% Mg alloy aluminum wire intended for MIG welding of AlMg alloys (Mg up to 5%) resistant to marine corrosion. The deposited metal is more resistant to hot cracking than Aluminum-Magnesium alloys with a lower Mg content. It is suitable for beads of similar colors on materials suitable for anodizing.

## Application

- Naval constructions,
- Road and rail transport,
- Bennes,
- Armament,
- Signaling,
- Automotive.

## Products

- Excellent resistance to corrosion (saline environment).
- Very good mechanical characteristics.

## Classification

**AWS 5.10: ER 5356**  
**EN ISO 18273: S Al 5356 (AlMg5Cr)**

## Polarity

**DC**

## Recommendations

*Gas protection according to standard EN ISO 14175*

100% Argon (I1) or 100% Helium (I2) or Argon / Helium mixture (3): 14 to 24 l / min

## Mechanical properties

Rp0.2	Rm	A 5 d
110 Mpa	240 Mpa	17%

## Chemical properties

Yes %	Fe%	Cu%	Mn%	Mg%	Cr%	Zn%	Be%	Ti%
<0.25	0.40	<0.10	0.05 - 0.20	4.50 - 5.50	0.05 - 0.20	<0.10	<0.0003	0.06 - 0.20

## Approval

DNV, ABS, DB, Vd TÜV, Bureau Veritas, Germanisher Lloyd



PRODUCT OF THE RANGE  
**EXCELLIUM**

Coil type			Wire diameter (mm)			
weight (kg)			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
7	—	B300	—	—	086487	086494

## SPOOLS OF THREAD

Solid wire for gas shielded welding of aluminum-silicon alloys up to 7% silicon. It is widely used for the repair of foundry parts.

## Application

- Repair of foundry parts.
- Automotive.

## Products

- Cord of beautiful appearance.
- Good thermal conductivity of the deposited metal.
- Very fluid solder bath.

## Classification

**AWS 5.10: ER 4043**  
**EN ISO 18273: S Al 4043 (AlSi5)**  
**DIN 1732: SG-AlSi5**

## Polarity

**DC**

## Recommendations

Gas protection according to standard *EN ISO 14175*  
 100% Argon (I1): 14 - 24 l / min.

## Mechanical properties

D	Rm	A 5 d	KV 20 °C
100 Mpa	160 Mpa	15%	20 J

## Chemical properties

Al%	Yes %
Based	5.00

## Approval

TÜV, DB, UDT

## SOLID ALUMINUM WIRE AISi5 (4043)



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
0.5	S100	—	—	086685	—	—
2	S200	—	—	—	086142	086159



## SPOOLS OF THREAD

Solid wire for gas shielded welding of aluminum alloys silicon up to 12% silicon. It is recommended for repairs to castings or poorly defined grades of aluminum alloys as often encountered in maintenance of agricultural equipment.

## Application

- Maintenance of agricultural equipment,
- Repair of foundry parts.
- Automotive bodywork.

## Products

- Good flowability.
- High cooling speed.
- Good corrosion resistance.
- High quality welding.

## Classification

**AWS 5.10: ER 4047**  
**EN ISO 18273: S Al 4047**  
**DIN 1732: SG-ALSi12**

## Polarity

**DC**

## Recommendations

Gas protection according to standard EN ISO 14175  
 100% Argon (I1): 14 - 24 l / min.

## Mechanical properties

D	Rm	A 5 d	KV 20 °C
100 Mpa	200 Mpa	5%	20 J

## Chemical properties

Al%	Yes %	Mn%
Based	5.00	0.20

## Approval

DB, UDT



weight (kg)	Coil type		Wire diameter (mm)			
	⊕↕	⊕	Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
0.5	S100	—	—	086678	—	—
2	S200	—	—	—	086067	086074
7	S300	—	—	—	—	086043

## SPOOLS OF THREAD

Filler metal for welding Cu-Si, Cu-Mn alloys with each other or with common steels. MIG brazing of electro-galvanized or galvanized steels. It is recommended for joining copper materials and various steel sheets. It is particularly used in the automotive industry (HSS steels, more efficient wetting).

## Application

- Automotive,
- Assembly industries.

## Products

- High corrosion resistance.
- High temperature resistance.

## Classification

**AWS A5.7: ERCuSi-A**  
**EN ISO 24373: S Cu 6560 (CuSi3Mn1)**  
**DIN 1733 SG-CuSi3**

## Polarity

**DC**

## Recommendations

Gas protection according to standard EN ISO 14175  
 100% Argon (I1)

## Mechanical properties

D	Rm	A 5 d	AV 20 °C	Hardness
120 Mpa	350 Mpa	40%	60 J	80 HB



## Chemical properties

Cu%	Yes %	Mn%	Sn%	Fe%	Zn%
Based	3.00	1.00	0.10	0.07	0.10

## Approval

TÜV, UDT



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
1	S100	—	—	086692	—	—
5	S200	—	—	086647	086654	—

## SPOOLS OF THREAD

Wire used for welding copper-based alloys: copper-silicon, copper-zinc ... It is designed to join steel to copper and to serve as a coating for steel. It has great resistance to corrosion and high temperatures. It is very commonly used for galvanized steel.

## Application

- HSS steels,
- Automotive bodywork.

## Products

- High quality welding.
- High corrosion resistance.
- High temperature resistance.

## Classification

**AWS A5.7: ER CuSi3**  
**EN ISO 24373: S Cu 6560 (CuSi3Mn1)**  
**DIN 1733 SG-CuSi3**

## Polarity

**DC**

## Recommendations

*Gas protection according to standard EN ISO 14175*  
 100% Argon (I1) or 100% Helium (I2), Argon / Helium mixture (I3)

## Mechanical properties

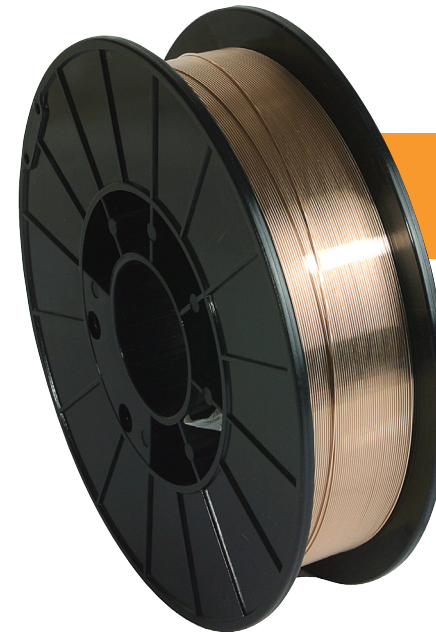
Rm	A 5 d
330-370 Mpa	40%

## Chemical properties



Al%	Yes %	Mn%	Sn%	Zn%	Pb%	Fe%	P%
<0.02	2.80 - 4.00	0.50 - 1.50	<0.20	<0.40	<0.02	<0.50	<0.05



**SOLID WIRE CuSi3**



PRODUCT OF THE RANGE  
**EXCELLIUM**

weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
5	S200	—	—	086210	—	—

## SPOOLS OF THREAD

Filler metal for welding Cu-Al alloys, aluminum bronze type (up to 10% Al), but also for heterogeneous Cu / steel assemblies and brazing of galvanized steels. It is recommended in shipbuilding, chemical industries (seawater desalination treatment) but also in heterogeneous Cu / Steel assemblies, on galvanized steels.

## Application

- Shipbuilding,
- Chemical industry,
- Automotive bodywork.
- Repair steels High Limit EDeelastic bodywork.

## Products

- Resistant to saline environment.
- Recommended by PSA

## Classification

**AWS A5.7: ERCuAl-A1**  
**EN ISO 24373: S Cu 6100 (CuAl7)**  
**DIN 1733: SG-CuAl8**

## Polarity

**DC**

## Recommendations

*Gas protection according to standard EN ISO 14175*  
 Argon (I1)

## Mechanical properties

Rp 0.2	Rm	AT 5	AV 20 °C	Hardness
200 Mpa	430 Mpa	40%	100 J	140 HB

## Chemical properties

Cu%	Al%
Based	8,00



weight (kg)	Coil type		Wire diameter (mm)			
			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
5	S200	—	—	086661	086197	—
15	S300	—	—	—	086180	—

# SPOOLS OF THREAD

Filler metal for welding carbon steels and carbon manganese steels without shielding gas. It is mainly used for thin thicknesses (<5 mm) for welding in position. This wire is particularly suitable for galvanized materials. However, it is not recommended when the material is subjected to high stresses.

## Application

- General purpose construction,
- Metal frame,
- Shipyard,
- Mining industry,
- Construction and maintenance of agricultural equipment,
- Tanks, boilers.

## Products

- Welding all positions.
- Homogeneous slag coverage.
- Low level of projections.

## Classification

**AWS A5.20: E71T-GS**  
**EN ISO 17632-A: T 42 ZWN 1 H15**

## Polarity

**DC -**

## Mechanical properties

D	Rm	A 5 d
450 Mpa	560 Mpa	23%

## Chemical properties

VS %	Mn%	Yes %	S%	P%	Al%
0.17	0.90	0.38	0.008	0.014	1.40



weight (kg)	Coil type		Wire diameter (mm)		
			Ø 0.9	Ø 1.0	Ø 1.2
0.9	S100	—	086104	—	—
4.5	S200	—	086265	086623	086630
15	S300	—	—	086388	086395

## SPOOLS OF THREAD

Metallic powder flux-cored wire without slag for the hardfacing by welding under M21 gas shielding of parts made of carbon or alloy steels, subjected to ambient temperature. It is intended for protection against excessive abrasive wear combined with pressure forces or with significant impacts.

## Application

- Excavator bucket teeth,
- Screw conveyor,
- Crusher flange and cone.

## Products

- Robust steel (resistant to wear and heavy loads).

## Classification

**DIN 8555: MSG 6-GF-60-P**

## Polarity

**DC**

## Recommendations

Gas protection according to standard EN ISO 14175  
Argon / CO<sub>2</sub> (M21, 8 <20% CO<sub>2</sub>)

## Mechanical properties



Rockwell hardness HRC	Brinell hardness HB
~ 60 HRC	600

## Chemical properties

VS %	Mn%	Yes %	Cr%	Mo%
0.60	1.50	0.60	8.00	0.90

## CORED WIRE RELOADING



Coil type			Wire diameter (mm)			
weight (kg)			Ø 0.6	Ø 0.8	Ø 1.0	Ø 1.2
16	—	B300	—	—	—	086173

# GAS PROTECTION ACCORDING TO STANDARD EN 14175




Main groups		Percentage composition					
Main group	Subgroup	Oxidizer		Inert		Reduced	Poorly reactive
		CO <sub>2</sub>	O <sub>2</sub>	Ar	Hey	H2	N2
<b>I</b>	1			100			
	2				100		
	3			Rest	0.5 <He <95		
<b>M1</b>	1	0.5 <CO <sub>2</sub> <5		Rest*		0.5 <H2 <5	
	2	0.5 <CO <sub>2</sub> <5		Rest*			
	3		0.5 <O <sub>2</sub> <3	Rest*			
	4	0.5 <CO <sub>2</sub> <5	0.5 <O <sub>2</sub> <3	Rest*			
<b>M2</b>	0	5 <CO <sub>2</sub> <15		Rest*			
	1	15 <CO <sub>2</sub> <25		Rest*			
	2		3 <O <sub>2</sub> <10	Rest*			
	3	0.5 <CO <sub>2</sub> <5	3 <O <sub>2</sub> <10	Rest*			
	4	5 <CO <sub>2</sub> <15	0.5 <O <sub>2</sub> <3	Rest*			
	5	5 <CO <sub>2</sub> <15	3 <O <sub>2</sub> <10	Rest*			
	6	15 <CO <sub>2</sub> <25	0.5 <O <sub>2</sub> <3	Rest*			
	7	15 <CO <sub>2</sub> <25	3 <O <sub>2</sub> <10	Rest*			

Main groups		Percentage composition					
Main group	Subgroup	Oxidizer		Inert		Reduced	Poorly reactive
		CO <sub>2</sub>	O <sub>2</sub>	Ar	Hey	H2	N2
<b>M3</b>	1	25 <CO <sub>2</sub> <50		Rest*			
	2		10 <O <sub>2</sub> <15	Rest*			
	3	5 <CO <sub>2</sub> <25	2 <O <sub>2</sub> <10	Rest*			
	4	25 <CO <sub>2</sub> <50	10 <O <sub>2</sub> <15	Rest*			
	5	25 <CO <sub>2</sub> <50	10 <O <sub>2</sub> <15	Rest*			
<b>VS</b>	1	100					
	2	Rest	0.5 <O <sub>2</sub> <30				
<b>R</b>	1			Rest*	0.5 <H2 <15		
	2			Rest*	0.5 <H2 <50		
<b>NOT</b>	1						100
	2			Rest*			0.5 <N2 <5
	3			Rest*			5 <N2 <50
	4			Rest*	0.5 <H2 <10		0.5 <N2 <5
	5			-	0.5 <N2 <5		Rest*

\* In this classification, argon can be partially or fully replaced by helium.




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