SUPERON

ISO 9001 BUREAU VERITAS Certification — Excluding Design — UKAS QUALITY MANAGEMENT 008

Kjellberg FINSTERWALDE ESTD. 1922

Kjellberg Finsterwalde Elektroden und Maschinen GmbH, Germany

Product Data Sheet

C-Mn and low-alloy steels — SUPER OPTIMAL 6013

- ★ Rutile medium-heavy coated, finely rippled smooth weld beads.
- ★ Very soft arc, minimum spatter, smooth fine rippled radiographic weld bead.
- ★ Superior slag detachability.
- ★ Excellent impact notch toughness at 0°C.

Classification ***AWS A*5.1:** E 6013 **EN ISO 2560-A:** E 38 0 R 12

Description and applications

Rutile type medium coated electrode, used for the welding of large structures and process pipe work in the shipbuilding and construction industries where precise fit-ups are difficult to achieve. SUPER OPTIMAL 6013 is a high quality electrode designed to give high impact toughness properties. The electrode formulation promotes a forceful arc to ensure sound fusion and is tolerant to variations in welding current, which are important considerations when welding under site conditions.

Base materials

S(P)235 to S(P)355; GP240-GP280

All weld metal mechanical properties (typical)

Heat Treatment	Tensile Strength R_m (N/mm^2)	Yield Strength R_m (N/mm^2)	Elongation A_5%	Impact Energy ISO-V(J) 0°C	Hardness
As welded	470-540	≥380	≥24	≥70	--

Typical weld metal Chemical Composition (%)

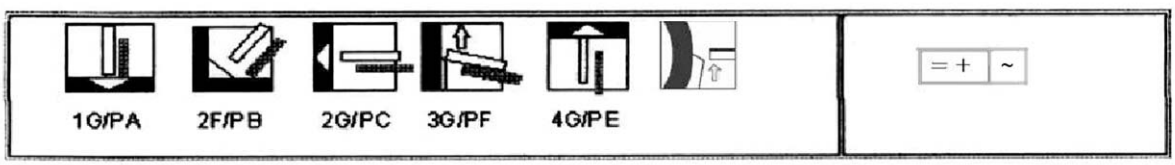
C	Si	Mn	P	S
0.07	0.20	0.50	0.03	0.03

Amperes (A)

2.50	3.15	4.00	5.00
60-80	110- 135	160-180	180-230

Storage and Redrying :

Keep dry and avoid condensation.
Re-drying not generally required. If necessary : 100-110 °C for 1 hour.



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Revised on: 22/07/2014

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Kjellberg FINSTERWALDE ESTD. 1922 DNV

Kjellberg Finsterwalde Elektroden und Maschinen GmbH, Germany

Product Data Sheet

C-Mn and low-alloy steels — SUPER OPTIMAL 7018

- ★ Ultra smooth finely rippled weld beads.
- ★ Less than 4.0 ml diffusible hydrogen level.
- ★ Excellent impact notch toughness.
- ★ Superior reliability for the critical welding of C-Mn microlloyed & low alloy structural steels.
- ★ Recommended for critical security welding applications.
- ★ Radiographic out of position welds including pipe welding.

Classification ***AWS A5.1:*** E 7018 H4 ***EN 499*:** E 42 4 B 32 H5

EN ISO 2560: E 42 4 B 32 H5

Description and applications Basic heavy coated, iron powder, low hydrogen electrode for producing tough and crack-free welded joints even on steels having a carbon content up to 0.40%. Good operating characteristics when positional welding. Weld metal has good toughness properties down to -40°C.
Used in structural engineering, boilers, tanks, bridges, ship building, vehicle constructions….

Base materials S(P)235-S(P)420; GP240-GP280; L245-L360

Approvals ABS, BV, LRA

All weld metal mechanical properties (typical)

Heat Treatment	Tensile Strength R_m (N/mm^2)	Yield Strength R_m (N/mm^2)	Elongation A_5%	Impact Energy ISO-V(J)- 30°C	Hardness
As welded	550-620	450	28	80 J	--

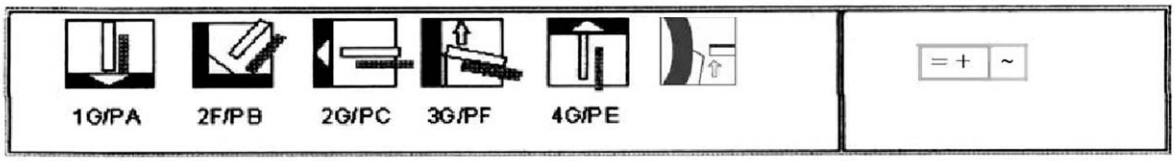
Typical weld metal Chemical Composition (%)

C	Si	Mn	P	S
0.07	0.40	1.20	0.020	0.020

Amperes (A)

2.40	3.20	4.00	5.00
60-80	110- 135	140- 180	180-230

Storage and Redrying : Keep dry and avoid condensation,
HD≤5: Re-dry at 340-360°C for 2 hours, 5 times max.
HD≤10: Re-dry at 300-350°C for 2 hours, 5 times max,



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Revised on: 04/10/2013

Product Data Sheet

SUPERTIG 316LSi

SS TIG WELDING WIRE
Stainless and Heat resistant steels

Classification :

AWS A 5.9 : ER 316 LSi
EN 12072 : W 19 12 3 LSi

Description: SUPERTIG 316LSi is an extra low carbon 19 Cr/ 12 Ni/ 3 Mo /0.85 Si type stainless steel TIG rod similar in composition to ER 316LSi suitable for the welding or surfacing of having similar compositions. The weld metal has excellent creep strength up to 850°C. Ferrite controlled between 5 to 10%. The weld metal has excellent crack resistance, intergranular corrosion and creep resistance properties. Excellent mechanical properties & excellent bead appearance .

Materials to be welded
1.4401 (X4CrNiMo17-12-2), 1.4435 (X2CrNiMo18-14-3)
1.4571 (X6CrNiMoTi17-12-2), 1.4583 (X10CrNiMoNb18-12)
AISI 316L

Typical Chemical Composition (%)

C	Mn	Si	Cr	Ni	Mo	Cu	S	P
0.03 max	1.50-2.20	0.65-1.00	18.00-20.00	11.00-14.00	2.00-3.00	0.75 max.	0.03 max.	0.03 max.

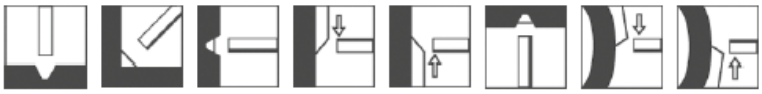
Typical All Weld Mechanical Properties

Yield Strength N/mm^2	Tensile Strength N/mm^2	Elongation A5 (%)	Impact Energy ISO-V(J) 20° C
≥ 350	≥ 510	≥ 30	≥ 47

Current Conditions: - DC (-)

Storage: - Keep dry and avoid condensation.

Welding Position:-



Packing Data

Size(mm) DxL	0.80 x 1000	0.90 x 1000	1.00 X1000	1.20 X 1000	1.60 x 1000	2.00 x 1000	2.40 x 1000	3.20 x 1000	4.00 x 1000
Net wt. per tube(kg)	5	5	5	5	5	5	5	5	5
Net wt. per Box(kg)	20	20	20	20	20	20	20	20	20

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Product Data Sheet

C-Mn and low-alloy steels — SUPER OPTIMAL 7018 S

- ★ Ultra smooth finely rippled weld beads.
- ★ Less than 4.0 ml diffusible hydrogen level.
- ★ Highest impact notch toughness in class.
- ★ Superior reliability for the critical welding of C-Mn microlloyed & low alloy structural steels.
- ★ Recommended for critical security welding applications.

Classification

***AWS A*5.1:** E 7018-1 H4 ***EN 499*:** E 42 5 B 32 H5

EN ISO 2560: E 42 5 B 32 H5

Description and applications

Basic heavy coated, electrode for producing tough and crack-free welded joints even on steels having a carbon content up to 0.40%. Good operating characteristics when positional welding. Weld metal has good toughness properties down to -50°C. Ultimate mechanical properties in 7018-1 group. Suitable for buffer layers.

Base materials

S(P)235-S(P)420; GP240-GP280; L245-L360

All weld metal mechanical properties (typical)

Heat Treatment	Tensile Strength R_m (N/mm^2)	Yield Strength R_m (N/mm^2)	Elongation A_5%	Impact Energy ISO-V(J)- 45°C	Hardness
As welded	550-620	450	30	80 J	--

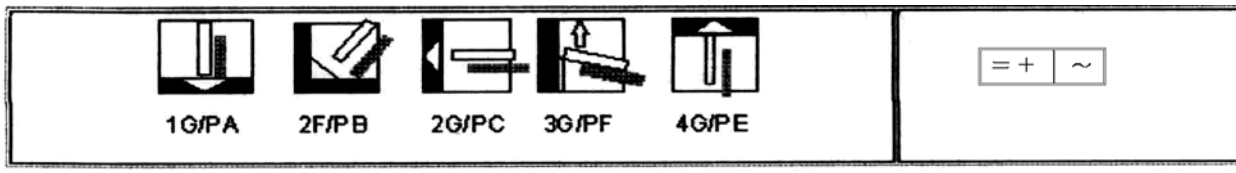
Typical weld metal Chemical Composition (%)

C	Si	Mn	P	S
0.07	0.30	1.40	0.025	0.020

Amperes (A)

2.40	3.20	4.00	5.00
60-80	110- 135	140- 180	180-230

Storage and Redrying : Keep dry and avoid condensation,
HD≤5: Re-dry at 340-360°C for 2 hours, 5 times max.
HD≤10: Re-dry at 300-350°C for 2 hours, 5 times max,



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SUPERON®
Premium Welding Consumables

SUPERON SCHWEISSTECHNIK INDIA LTD.
World Class Welding Electrodes
In Technical Collaboration with M/s Kjellberg Finsterwalde gmbh, Germany.

Rutile electrode

SUPER OPTIMAL 308L

Classification

***AWS A* 5.4:** E 308L-16 ***DIN 8556*:** E 19 9 LR 23

DIN EN 1600: E 19 9 L R 32 ***Werkstoff Nr:*** 1.4316

Description and applications

Low carbon Rutile-basic-coated 19Cr, 10Ni austenitic stainless steel electrode with controlled ferrite approx 8% for maximum resistance to cracking and corrosion. Core wire is 308LER with controlled 'P' & 'S'. Coating with very low moisture pick up. Soft fusion without spatters, very easy slag removal exceptional weld bead appearance, easy restriking. Applied for all 18/8type stainless steels at service temperature from -120°C upto + 350°C tubes, tanks, heat exchangers, piping systems…..

Base materials

Stainless steels for general use:				
UNS	**Alloy**	**EN 10088**	**Material N[a]**	**UGINE**
S30400	304	X5CrNi18-10	1.4301	UGINOX 18-9 B, D, E
S30403	304L	X2CrNi19-11	1.4306	UGINOX 18-10 T
S30800	308	X2CrNi18-10	1.4300	UGINOX 19- 11 B, D, E
S30803	308 L	X2CrNi 19-11	1.4300	UGINOX 19-11 B,D,E
S32100	321	X6CrNiTi18-10	1.4541	UGINOX 18-10 T
S34700	347	X6CrNiNb18-10	1.4550	

All weld metal mechanical properties (typical)

Tensile Strength R_m (N/Mm^2)	Elongation %	ISO- V J RT
610	44	60

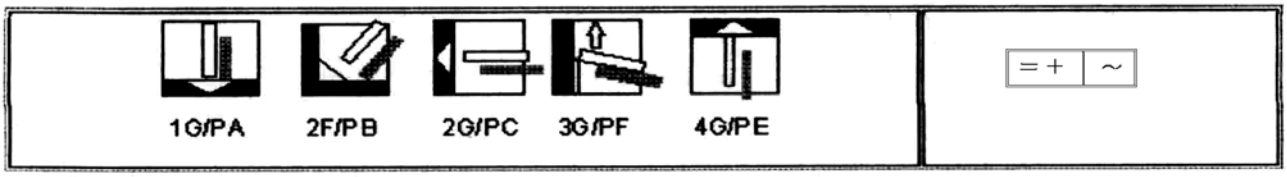
Typical weld metal Chemical Composition (%)

C	Si	Mn	Cr	Ni	Mo	S	P
< 0.03	0.70	1.00	19.0	10.0	---	0.010	0.015

Amperes (A)

2.50	3.15	4.00	5.00
50-80	80- 110	110- 150	150- 180

Welding instruction interpass temperature :< 200°C. Rebaking if necessary 1 hour at 300°C.



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