

# Thermanit 14 K Si

GMAW wire

Classifications	EN 12072	AWS A 5.9	Mat. No.
	G 13	ER410 (mod.)	1.4009

**Characteristics and field of use** Stainless; corrosion-resistant similar to matching 13 % Cr(Ni) steels/cast steel grades. For surfacing applications with matching or similar 13 % Cr steels/cast steel grades. For surfacing sealing faces of water, steam and gas valves and accessories made of unalloyed and low-alloy steels/cast steel grades for service temperatures up to 450 °C (842 °F).

Materials	(X8Cr14 (1.4008)) X6Cr13 (1.4000)	X10Cr13 (1.4006) AISI 410, 420

Typical analysis in %	C	Si	Mn	Cr	Ni
	0.08	0.9	0.65	14.0	0.4

Mechanical properties of the weld metal according to EN 1597-1 (min. values at RT)	Heat-treatment	Yield strength 0.2% N/mm <sup>2</sup>	Tensile strength N/mm <sup>2</sup>	Elongation (L <sub>0</sub> =5d <sub>0</sub> ) %	Hardness HB30 HRC
	680 °C / 8 h AW	450	650	15	180 35

**Structure** Martensite with part ferrite, suitable for quenching and tempering

## Welding instruction

Materials	Preheating	Postweld treatment
Surfacing: martensitic Cr steels/cast steel grades	Acc. to wall thickness: 200-400 °C (392-752 °F)	Cooling to around 120 °C (248 °F), then tempering or quenching and tempering
Surfacing: unalloyed/low-alloy steels/cast steel grades	Larger wall thickness: 100-200 °C (212-392 °F)	None; if necessary tempering to required hardness
Surfacing: higher-strength steels/cast steel grades	100-200 °C (212-392 °F)	None; if necessary tempering to required hardness

**Polarity = +**  
**Shielding gas (EN 439) M12, M13**

Packaging and weights	Diam. (mm)	Spool	kg / pack
	1.2	B300	15
	1.6	B300	15

# Thermanit 1610 Si

GMAW wire

Classifications	EN 12072	AWS A 5.9	Mat. No.
	G Z17 Ti	ER430 (mod.)	1.4502

**Characteristics and field of use** Stainless; corrosion-resistant similar to matching 17 % Cr steels/cast steel grades (seawater, diluted organic and inorganic acids). For joining and surfacing work on matching ferritic and similar Cr steels/cast steel grades, suitable for quenching and tempering. Lowest possible heat input is required, as ferritic 17 % Cr steels are susceptible to embrittlement due to grain growth.

Materials	X6Cr17 (1.4016)	X8CrTi17 (1.4502)

Typical analysis in %	C	Si	Mn	Cr	Ti
	0.065	1.0	0.6	17.5	>8xC

Mechanical properties of the weld metal according to EN 1597-1 (min. values at RT)	Heat-treatment	Yield strength 0.2% N/mm <sup>2</sup>	Tensile strength N/mm <sup>2</sup>	Elongation (L <sub>0</sub> =5d <sub>0</sub> ) %	Hardness HB30
	800 °C / 1 h AW	300	500	20	130 170

**Structure** Ferrite

## Welding instruction

Materials	Preheating	Postweld treatment
Matching ferritic steels	200 - 300 °C (392 - 572 °F)	Cooling in air. For reduction of stresses induced by welding and restoration of grain decomposition resistance annealing at 800 °C (1472 °F), cooling in air. Not necessary for single-layer welds under corresponding service temperatures.
Matching steels/cast steel grades, suitable for quenching and tempering	300 - 400 °C (572 - 752 °F)	Cooling to roughly 120 °C (248 °F), then temper or quench and temper, according to parent metal

**Polarity = +**  
**Shielding gas (EN 439) M12, M13**

Packaging and weights	Diam. (mm)	Spool	kg / pack
	1.0	B300	15
	1.6	B300	15

# Thermanit 35/45 Nb

GMAW wire

<b>Classifications</b>	<b>EN 12072</b>
	G Z35 45 Nb H

**Characteristics and field of use**  
Resistant to scaling up to 1180 °C (2156 °F).  
For joining and surfacing work on matching/similar heat resistant cast steel grades

**Materials**  
GX45NiCrNbSiTi45-35

<b>Typical analysis in %</b>	<b>C</b>	<b>Si</b>	<b>Mn</b>	<b>Cr</b>	<b>Ni</b>	<b>Nb</b>
	0.42	1.5	1.0	35.0	45.5	0.8

**Creep and stress rupture properties**  
In the range of matching cast steel grades

<b>Mechanical properties of the weld metal according to EN 1597-1</b> (min. values at RT)	Heat-treatment	Yield strength 0.2% N/mm <sup>2</sup>	Tensile strength N/mm <sup>2</sup>	Elongation (L <sub>0</sub> =5d <sub>0</sub> ) %
	AW	245	450	6

**Structure**  
Austenite

<b>Welding instruction</b>		
<b>Materials</b>	<b>Preheating</b>	<b>Postweld treatment</b>
Matching/similar cast steel grades	None	None

**Polarity = +**  
**Shielding gas (EN 439) M12, M13**

<b>Packaging and weights</b>	<b>Diam. (mm)</b>	<b>Spool</b>	<b>kg / pack</b>
	1.2	B300	15

# Thermanit 409 Cb

GMAW wire

<b>Classifications</b>	<b>EN 12072</b>	<b>AWS A 5.9</b>	<b>Mat. No.</b>
	G Z13 Nb L	ER409Cb	≈ 1.4009

**Characteristics and field of use**  
Stainless. Scaling resistant up to 900 °C (1652 °F).  
For joining and surfacing of similar and matching steels.  
Exhaust systems.

**Materials**  
AISI 409; X2CrTi12/X6CrTi12 (1.4512), X12Cr13 (1.4006), X15Cr13 (1.4024), X20 Cr13 (1.4021)

<b>Typical analysis in %</b>	<b>C</b>	<b>Si</b>	<b>Mn</b>	<b>Cr</b>	<b>Nb</b>
	≤0.05	0.6	0.6	11.5	≥10xC

<b>Mechanical properties of the weld metal according to EN 1597-1</b> (min. values at RT)	Heat-treatment	Hardness
	AW 750 °C / 2 h (1382 °F / 2 h)	HB30 ≈ 150 ≈ 130

**Structure**  
Ferrite

<b>Welding instruction</b>		
<b>Materials</b>	<b>Preheating</b>	<b>Postweld treatment</b>
Matching/similar steels	According to wall thickness 200 - 300 °C (392 - 572 °F)	According to wall thickness 700 - 750 °C (1292 - 1382 °F); Not necessary for single-layer welds under corresponding service temperatures

**Polarity = +**  
**Shielding gas (EN 439) M12, M13**

<b>Packaging and weights</b>	<b>Diam. (mm)</b>	<b>Spool</b>	<b>kg / pack</b>
	1.0 1.2	B300 B300	15 15