


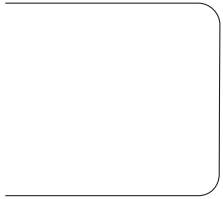
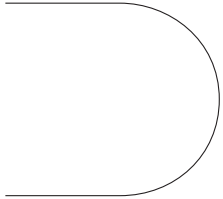
TECHNICAL SHEETS  
FLATWIRES AND  
PROFILES

## THICKNESS TOLERANCES FOR STRIP STEEL

(as per DIN EN 9445-1)

Nominal width t (mm)		Width < 125 mm	Larghezza $\geq 125$ mm < 250 mm	Width $\geq 250$ mm < 1250 mm
$\geq$	<	+/-mm	+/-mm	+/-mm
0,05	0,10	0,04 x t	0,08 x t	0,08 x t
0,10	0,15	0,006	0,008	0,010
0,15	0,20	0,008	0,010	0,012
0,20	0,25	0,008	0,010	0,012
0,25	0,30	0,009	0,012	0,015
0,30	0,40	0,010	0,012	0,015
0,40	0,50	0,012	0,015	0,018
0,50	0,60	0,014	0,015	0,020
0,60	0,80	0,015	0,018	0,025
0,80	1,00	0,018	0,020	0,025
1,00	1,20	0,020	0,025	0,030

## EDGE FINISHES

Slit	Deburred thicknesses $\leq 0,4$ mm : 150 mm max thicknesses $> 0,4$ mm : 170 mm max	Rounded thicknesses $\leq 0,4$ mm : 150 mm max thicknesses $> 0,4$ mm : 170 mm max
		

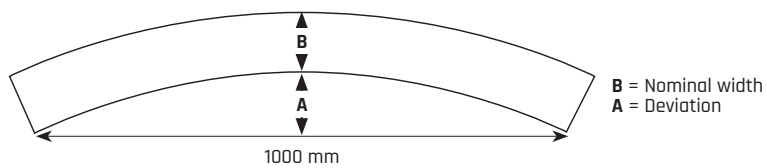
## STRAIGHTNESS SPECIFICATIONS

(as per DIN EN 9445-1)

Nominal width (mm)	Straightness value (mm/m)
2-10	2,50
10-25	1,50
25-40	1,25
40-125	1,00

## STRAIGHTNESS TABLE (1 MM/M)

Nominal length (m)	Deviation (mm)
1	1,00
2	4,00
5	25,00
10	100,00
15	225,00
20	400,00
50	2500,00



Austenitic steel

July 2016 - rev.1.0

# KLEINOX 4310

DIN X10CrNi18-8

EN 10088-2, 10151

## CHEMICAL COMPOSITION %

C%	Mn%	Cr%	Ni%	Mo%	N%
0,05	Max	16,00	6,00	Max	Max
0,15	2,00	19,00	9,50	0,80	0,11

## USES AND APPLICATIONS

**KLEINOX 4310** Cr-Ni austenitic steel alloy whose average tensile strength can be increased considerably by cold rolling. If cold worked this alloy is applicable to welding with a good fatigue resistance. It is possible increase tensile strength from 80 up to 150 N/mm<sup>2</sup> through tempering 400°C, 1-2h.

This steel is well indicated for the production of springs and plates.

## EXECUTIONS

<b>Thickness</b>	0.05 – 1.5 mm
<b>Width</b>	1.5 – 1000 mm
<b>Width tolerances</b>	DIN 59381 – on request +/- 0.03 mm
<b>Thickness tolerances</b>	DIN 59381 R, F or P
<b>Surface</b>	polished Ra max 0.15 my
<b>Edges</b>	slit, deburred, rounded
<b>Straightness</b>	1 mm/m – on request 0.75 mm/m
<b>Flatness</b>	0.20% of the width
<b>Tensile Strength</b>	1000 – 2200 N/mm <sup>2</sup>

## MECHANICAL PROPERTIES

<b>Magnetism</b>	Magnetic beyond 1300 N/mm <sup>2</sup>
<b>Density</b>	7.9 g/cm <sup>3</sup>
<b>Thermal conductivity</b>	15 W/Mc
<b>Specific heat</b>	0,50 J/gK
<b>Electric resistance 20 °C</b>	0.73 Ω mm <sup>2</sup> /m
<b>Electric resistance 200 °C</b>	0.85 Ω mm <sup>2</sup> /m
<b>Magnetic permeability</b>	50-70 gauss

Austenitic steel

April 2023 - rev.1.0

# KLEINOX 4404

## EN 10088-2 X2CrNiMo17-12-2

### CHEMICAL COMPOSITION %

C%	Mn%	Cr%	Ni%	Mo %	Si%
<b>Max</b>	<b>Max</b>	<b>16,00</b>	<b>11,00</b>	<b>2,00</b>	<b>Max</b>
<b>0,03</b>	<b>2,00</b>	<b>18,50</b>	<b>14,00</b>	<b>2,50</b>	<b>1,00</b>

### USES AND APPLICATIONS

Cr-Ni-Mo austenitic steel alloy.

As a low carbon steel, this minimizes carbide precipitation consequently to the heat input, i.e. during welding process, offering a better resistance to intergranular corrosion, excellent ductility and weldability with an increase in corrosion resistance. The characteristics of this steel make it suitable for being used in aggressive environments, in a wide temperature range: from cryogenic temperatures up to 800-850°C. It is suitable for many applications for which a good formability and weldability are required, such as Chemical industry, Oil & Gas industry, Paper industry, Textile industry, Food and Beverage industry, Pharma and Medical industry, Flanges and Valves.

Corresponds to AISI 316L W.N.1.4404.

### EXECUTIONS

<b>Thickness</b>	0.05 – 1.5 mm
<b>Width</b>	1.5 – 1000 mm
<b>Width tolerances</b>	DIN 59381 – on request +/- 0.03 mm
<b>Thickness tolerances</b>	DIN 59381 R, F or P
<b>Surface</b>	polished Ra max 0.15 my
<b>Edges</b>	slit, deburred, rounded
<b>Straightness</b>	1 mm/m – on request 0.75 mm/m
<b>Flatness</b>	0.20% of the width
<b>Tensile Strength</b>	Max 1300 N/mm2

### MECHANICAL PROPERTIES

<b>Elastic modulus</b>	200 (GPa)
<b>Density</b>	7.95 g/cm3
<b>Thermal conductivity</b>	15 W/Mc
<b>Specific heat</b>	500 (J/gK -K)
<b>Electric resistance 20°C</b>	0.75 Ω mm2/m
<b>Magnetic resistance 20°C</b>	μ 1.005
<b>Magnetic permeability</b>	50-70 gauss

Martensitic Steel

January 2021 – rev. 1.0

# KLEINOX 4028

## DIN X30Cr13 – AISI 420

### CHEMICAL COMPOSITION

C%	Si%	Mn%	P%	S%	Cr%
0,40	Max	Max	Max	Max	14,00
0,26	1,00	1,00	0,040	0,030	12

### USES AND APPLICATIONS

Martensitic Cr steel that exhibits a good corrosion resistance in alkaline solutions. Its corrosion resistance can only be satisfactory when the surface is hardened, polished and passivated. This steel is well indicated for the production of saws, knives and blades and for textile industry.

### EXECUTIONS

<b>Thickness</b>	from 0,08 mm
<b>Width</b>	from 1,5 up to 300 mm
<b>Width tolerances</b>	DIN 59381 – on request +/-0,03 mm
<b>Thickness tolerances</b>	DIN 59381 R, F o P
<b>Surface</b>	tempered, polished
<b>Edges</b>	slit, deburred, rounded
<b>Straightness</b>	1 mm/m – on request 0,75 mm/m
<b>Flatness</b>	0,20 % of the width
<b>Hardness</b>	HV 400-700 (Rm 1500-2100 Mpa)

### MECHANICAL PROPERTIES

<b>Magnetism</b>	good
<b>Density</b>	7,7 g/cm <sup>3</sup>
<b>Young's modulus 20 °C</b>	215 x 10 <sup>3</sup> N/mm <sup>2</sup>
<b>Electric resistance 20 °C</b>	0,55 Ohm. mm <sup>2</sup> /m

Martensitic Steel

July 2016 - rev.1.0

# KLEINOX 4028 Mo

## DIN X30CrMo 13-2

### CHEMICAL COMPOSITION %

C%	Si%	Mn%	P%	S%	Cr%	Mo%
0,36	0,40	0,45	Max	Max	13,50	1,00
			0,030	0,020		

### USES AND APPLICATIONS

**KLEINOX 4028 Mo** martensitic Cr steel, with addition of Mo, exhibits a good corrosion resistance in alkaline solutions. Its corrosion resistance can only be satisfactory when the surface is hardened, polished and passivated. This steel is well indicated for the production of compressor valves, saws, knives and blades and for textile industry.

### EXECUTIONS

<b>Thickness</b>	0.05 - 0.5 mm
<b>Width</b>	1.5 - 350 mm
<b>Width tolerances</b>	DIN 59381 – on request +/- 0.03 mm
<b>Thickness tolerances</b>	DIN 59381 R, F or P
<b>Surface</b>	white tempered, polished
<b>Edges</b>	slit, deburred, rounded
<b>Straightness</b>	1 mm/m – on request 0.75 mm/m
<b>Flatness</b>	0.20% of the width
<b>Tensile Strength</b>	1700 - 2000 N/mm <sup>2</sup>

### MECHANICAL PROPERTIES

<b>Magnetism</b>	good
<b>Density</b>	7,7 g/cm <sup>3</sup>
<b>Young's modulus 20° C</b>	215 x 10 <sup>3</sup> N/mm <sup>2</sup>
<b>Electric resistance 20° C</b>	0,55 Ω mm <sup>2</sup> /m

### OTHER INFORMATION

Diagrams, treatment tabs or other informations on request.

Steel for turning

July 2016 - rev.1.0

# KLEIN C 100

## W. Nr. 1.1274

### CHEMICAL COMPOSITION %

C%	Mn%	Si%	P%	S%	Cr%
0,95	0,4	Max	Max	Max	0,15
1,05	0,6	0,35	0,020	0,005	0,25

### USES AND APPLICATIONS

**KLEIN C 100** is a tempered, quenched and polished strip steel with high C content.

This steel is well indicated for the production of compressor valves, saws, knives and blades and for textile industry.

### EXECUTIONS

<b>Thickness</b>	0.05 - 0.5 mm
<b>Width</b>	1.5 - 350 mm
<b>Width tolerances</b>	DIN 59381 – on request +/- 0.03 mm
<b>Thickness tolerances</b>	DIN 59381 R, F or P
<b>Surface</b>	white tempered, polished
<b>Edges</b>	slit, deburred, rounded
<b>Straightness</b>	1 mm/m – on request 0.75 mm/m
<b>Flatness</b>	0.20% of the width
<b>Tensile Strength</b>	1750 - 2150 N/mm <sup>2</sup>

### MECHANICAL PROPERTIES

<b>Magnetism</b>	excellent
<b>Density</b>	7,7 g/cm <sup>3</sup>
<b>Young's modulus 20 °C</b>	215 x 10 <sup>3</sup> N/mm <sup>2</sup>
<b>Electric resistance 20 °C</b>	0,55 Ω mm <sup>2</sup> /m

### OTHER INFORMATION

Diagrams, treatment tabs or other informations on request.



Carbon Steel

April 2023 - rev.1.0

# KLEIN C 67

## EN 10132

### COMPOSIZIONE CHIMICA

C%	Mn%	Si%	P%	S%	Cr%	Mo%	Ni%
<b>0,65</b>	<b>0,60</b>	<b>Max</b>	<b>Max</b>	<b>Max</b>	<b>Max</b>	<b>Max</b>	<b>Max</b>
<b>0,73</b>	<b>0,90</b>	<b>0,40</b>	<b>0,025</b>	<b>0,025</b>	<b>0,40</b>	<b>0,1</b>	<b>0,40</b>

### USES AND APPLICATIONS

High carbon hardened steel strip, tempered. It is well used for the production of compressor valves, healds for textile industry, measuring tapes, knives of various types and doctor blades.

Corresponds to AISI 1070 - W. Nr. 1.1231

### EXECUTIONS

<b>Thickness</b>	0.05 - 0.5 mm
<b>Width</b>	1.5 - 350 mm
<b>Width tolerances</b>	DIN 59381 – on request +/- 0.03 mm
<b>Thickness tolerances</b>	DIN 59381 R, F or P
<b>Surface</b>	tempered white, grey and oven blue
<b>Edges</b>	slit, deburred, rounded
<b>Straightness</b>	1 mm/m – on request 0.75 mm/m
<b>Flatness</b>	0.20% of the width
<b>Tensile Strength</b>	1200 - 1900 N/mm <sup>2</sup>

### MECHANICAL PROPERTIES

<b>Magnetism</b>	excellent
<b>Density</b>	7,7 g/cm <sup>3</sup>
<b>Young's modulus 20 °C</b>	215 GPa
<b>Electric resistance 20 °C</b>	0,55 Ω mm <sup>2</sup> /m

### OTHER INFORMATION

Diagrams, treatment tabs or other informations on request.

Non-ferrous alloys

April 2023 - rev.1.0

# ARCAP AP1C - Lead-free Alpaca

## UNS-C76390, Cu56Ni25Zn17

### CHEMICAL COMPOSITION

Ni%	Zn%	OTHER	Cu%
25	17	2.5	55.5

### USES AND APPLICATIONS

AP1C is the grade suitable for the production of springs from both strip and wire for deformation, shearing and stamping. Good weldability with or without laser. AP1 C is often the best solution when the lead-free specification is required, together with corrosion resistance and non-magnetic properties.

### MAIN PROPERTIES OF USE

- Exceptional corrosion resistance, strong non-magnetism, excellent workability, High mechanical properties

### APPLICATIONS

Parts subjected to high mechanical stress, High quality closures, Electronic and fibre optic connectors, Fluid dynamic parts, Jewellery and leather goods

### MECHANICAL PROPERTIES

<b>Longitudinal modulus of elasticity (Gpa)</b>	<b>163 to 170</b>
<b>Linear expansion coefficient x 10<sup>-6</sup>/°C</b>	
	<b>0 a 300 16</b>
	<b>0 a 600 17</b>
<b>Density (g/cm<sup>3</sup>)</b>	<b>8.8</b>
<b>Thermal conductivity W/(m.°K)</b>	<b>22 to 25</b>
<b>Micro resistivity ohm.cm</b>	<b>35 to 40</b>
<b>Electrical conductivity (%IACS)</b>	<b>Da 4.3 a 4.9</b>

### OTHER INFORMATION

Diagrams, treatment tabs or other informations on request.

Non-ferrous alloys

April 2023 - rev.1.0

# NICLAL 725 – CuNi9Sn2

## NF EN 1652 CW351H

### CHEMICAL COMPOSITION

Cu%	Ni%	Sn%
89.7-86.7	8.5-10.5	1.8-2.8

### DESCRIPTION AND USE

Nical 725 Non-ferrous Cu-Ni-Sn alloy. Excellent workability, good corrosion resistance, good cold forming and deep drawing properties.

### ENVIRONMENTAL COMPLIANCE

RoHS & Reach Compliant

### APPLICATIONS

- Electronics
- Connectors
- Sensors

### PHYSICAL / MECHANICAL PROPERTIES

Young's Modulus	51.71 GPa
Density (20°C)	8.89 g/cm <sup>3</sup>
Liquid melting point (°C)	1129
Solid melting point (°C)	1060
Expansion coefficient from 20 to 300°C	9.2 x 10 <sup>-6</sup>
Specific heat in tension	0.09 joules/g °K
Young's Modulus in tension	137.90 Gpa

### ELECTRICAL / MAGNETIC PROPERTIES

Electrical Conductivity	11 % IACS
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### THERMAL PROPERTIES

Thermal Conductivity (20°)	4.47 W/m. °K
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### OTHER INFORMATION

Diagrams, treatment tabs or other informations on request.

Non-ferrous alloys

April 2023 - rev.1.0

# NICLAL 400 - MONEL 400

## ASTM B164 17743

### CHEMICAL COMPOSITION

Ni%	Cu%	Fe%
65	33	2

### DESCRIPTION AND USE

Monel 400 is a Non-ferrous Cu-Ni alloy with a very high tensile strength and an excellent corrosion resistance in acid and alkaline medium, suitable for peculiar reduction conditions. Excellent deformability and thermal conductivity. Corresponds to Wr Nr. 2.4360.

### MAIN PROPERTIES OF USE

**Excellent corrosion resistance in a variety of acid and alkaline medium**  
**Suitable for cold working**  
**Suitable for deep drawing**  
**Suitable for reduction conditions**  
**Good ductility and thermal conductivity**  
**Very suitable for seawater applications**

### PHYSICAL PROPERTIES

<b>Young's Modulus (GPa)</b>	<b>179</b>
<b>Expansion coefficient from 20 to 300°C</b>	<b>13.9 x 10<sup>-6</sup></b>
<b>Thermal Conductivity (20°)</b>	<b>22 W/(m.°K)</b>
<b>Micro resistivity μohm.cm</b>	<b>54.7</b>
<b>Electrical conductivity (%IACS)</b>	<b>7.5</b>

### APPLICATIONS

Valves  
 Pumps  
 Gaskets for Oil & Gas  
 Hydrocarbon Processing  
 Heat Exchangers  
 Naval Engineering  
 Chemical Processes

### OTHER INFORMATION

Diagrams, treatment tabs or other informations on request.



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