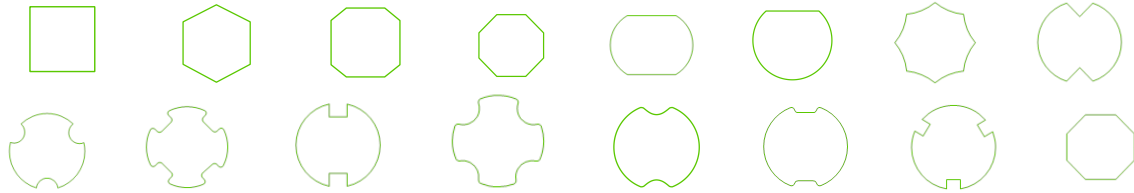


# Linecard Soft Magnetic Stainless Steels Precision Wire



Zapp is certified to ISO 9001



In the following you will get the most important information in regard of our soft magnetic stainless steels.

If there are any questions left, please do not hesitate to contact us under Phone +49 2304 79-148.

## Delivery forms and finishes

Product Form/ Finishes	Round Bars	Profiles
Size Range	<p>∅ 6 - 27 mm</p> <p>&lt; 6 mm and &gt; 27 mm on request</p>	<p>5 - 30 mm four-, six- and eight-edge for further profile geometry, see diagram</p> <p>other sizes and special shapes on request</p>
Finish	<p>drawn, annealed</p> <p>ground, polished</p> <p>crack detected acc. DIN ISO 10277 - class 1 to 4</p> <p>US-tested on request</p> <p>unchecked ends removed on request</p>	<p>drawn to section, annealed</p> <p>crack detection acc. DIN ISO 10277 - Table 1 - class 1 on request</p> <p>-</p> <p>unchecked ends removed on request</p>
Form of Delivery	bars up to 4,200 mm	bars up to 3,000 mm
Bar End Machining	sizes 6 - 27 ∅ mm both bar ends chamfered/ pointed or end-faced	chamfered (one or both ends) or both bar ends end-faced
Surface Roughness	$R_{max} < 5 \mu m$	$R_{max} < 10 \mu m$
Magnetic Properties	as denoted above	on request
Tolerances	according to DIN standard, ISO standard or according to special specification	

## Analysis of solenoid stainless steels

Brand Name	Comparable Grades According to AISI/ SAE	Abbreviation EN 10027-1	Analysis *							
			C	Si	Mn	P	S	Cr	Mo	Others
Ergste® 1.4003IA	-	X2CrNi12	< 0.03	< 1.00	< 1.50	< 0.040	0.015	10.5-12.5	-	Ni: 0.3-1.0
Ergste® 1.4005IA/IH	~AISI 416	X2CrS13*	< 0.02*	< 1.00	< 1.50	< 0.040	0.25-0.35	12.0-14.0	< 0.60	-
Ergste® 9.9013IL	-	-	< 0.02	1.0-1.5	< 1.50	< 0.040	0.15-0.35	12.0-14.0	~ 0.4	-
Ergste® 1.4105IL/IH	AISI 430FR	X5CrMoS17	< 0.03	< 1.50	< 1.50	< 0.040	0.20-0.35	16.0-18.0	0.20-0.60	-
Ergste® 1.4105IM/IU	AISI 430F	X5CrMoS17	< 0.05	< 1.00	< 1.50	< 0.040	0.20-0.35	16.0-18.0	0.20-0.60	-
Ergste® 1.4016IM	AISI 430	X6Cr17	< 0.06	< 1.00	< 1.00	< 0.040	< 0.015	16.0-18.0	< 0.60	-
Ergste® 1.4113IM	AISI 434 mod	X5CrMoS17-1*	< 0.03	< 1.80	< 1.00	< 0.040	0.20-0.35*	17.0-18.5	1.5-2.5	-
Ergste® 1.4113IL	AISI 434	X5CrMoS17-1	< 0.05	< 1.00	< 1.50	< 0.040	< 0.03	16.0-18.0	0.90-1.40	-
Ergste® 1.4511IA/IH	-	X3CrNb17	< 0.02	< 1.00	< 1.00	< 0.040	< 0.015	16.0-18.0	-	Nb:0.2-0.5

\* deviation from ISO

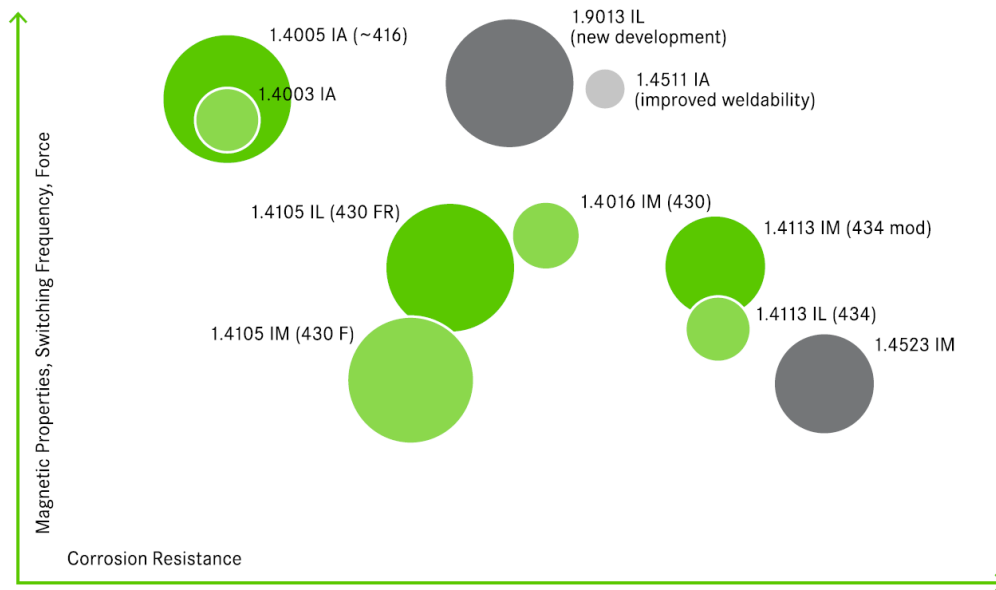
**Magnetic And Physical properties – round bars (Ø 6 - 27 mm) \***

	Ergste® 1.0715 Prelim.	Ergste® 1.4003IA ~AISI 414	Ergste® 1.4005IA ~AISI 416	Ergste® 9.9013IL	Ergste® 1.4105IL AISI 430FR	Ergste® 1.4105IM AISI 430F	Ergste® 1.4016IM AISI 430	Ergste® 1.4113IM AISI 434 mod	Ergste® 1.4113IL AISI 434	Ergste® 1.4511IA	Ergste® 1.4523IM
Saturation Polarization Js [T]	> 0,2	> 1.70	> 1.70	~ 1.60	> 1.50	> 1.55	> 1.60	> 1.50	> 1.50	>1.50	>1.40
Remanance Br [T]	-	0.7 - 1.3	0.6 - 1.3	0.8 - 1.5	0.5 - 1.1	0.5 - 1.1	0.5 - 1.3	0.5 - 1.1	0.5 - 1.1	0.5 - 1.2	0.3-0.9
Max. Permeability $\mu_{rmax}$	> 1,200	> 1,700	> 1,700	> 2,000	> 1,500	> 1,200	> 1,500	> 1,500	> 1,300	> 2,000	>1,000
Coercivity $\mu_{Hc}$ [A/m]	< 300	< 180	< 180	< 150	< 200	< 260	< 200	< 200	< 240	< 160	< 240
Specific el. Resistance $\rho$ [ $\mu\Omega m$ ]	-	> 0.55	> 0.63	> 0.60	> 0.79	> 0.62	> 0.53	> 0.82	> 0.64	> 0.56	-
Tensile Strength [MPa]	300 - 500	350 - 550	350 - 550	350 - 550	350 - 550	350 - 550	350 - 550	400 - 600	400 - 600	350 - 550	430-630

\* Other sizes and shapes on request

**LINECARD SOFT MAGNETIC STAINLESS STEELS**

Circle size indicates machinability



**Zapp Precision Metals GmbH**

**PRECISION WIRE**

Letmather Straße 69

58239 Schwerte

Phone +49 2304 79- extension: -245 (Wire/Profile), -193 (Bar)

Fax +49 2304 79-6148

[precisionwire@zapp.com](mailto:precisionwire@zapp.com)

[www.zapp.com](http://www.zapp.com)

Further information regarding our products and locations are available in our image brochure and under [www.zapp.com](http://www.zapp.com)

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