MARCEGAGLIA
FAGERSTA STAINLESS

WIRE ROD FOR COLD HEADING

Thanks to a company history starting already 1873, Fagersta Stainless belongs to one of the world leading producers of stainless wire rod and wire. With customized chemistries the products fulfill everything from simple to high demanding applications.

STANDARD STEEL GRADES FOR COLD HEADING

Our grades have tight chemistries and therefore equal properties from delivery to delivery.
We recommend following of our standard grades:

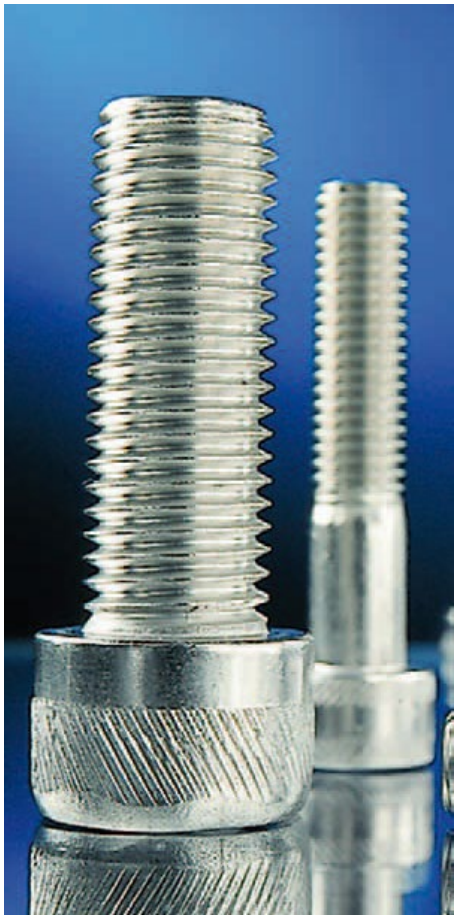
OPTIMUM

To get best possible properties for cold heading wire rod, these parameters are important:

- Tight chemistry for identical properties
- Mechanical properties and deformation hardening
- Corrosion properties
- Surfaces
- Dimension tolerances

Grade family	Marcegaglia name	Fagersta	EN	ASTM		PRE	CWH	Typical chemical composition, % by mass					
				TYPE	UNS			C	Cr	Ni	Mo	N	Others
F	409/4512	R108.10	-	409CB	-	11	-	0.03	11.3	-	-	-	Nb
F	409Ti/4512	R109.11	1.4512	409TI	-	11	-	0.015	11.3	-	-	-	-
F	430/4016	R250.11	1.4016	430	S43000	16	-	0.015	16.4	-	-	-	-
F	430L/4016	R258.10	18 LNB	-	-	18	-	0.01	18.2	-	-	-	Cu
A	304L/4306	R350.11	1.4306	304L	S30403	18	-	0.02	18.3	10.3	-	-	-
A	304/4301	R350.19	1.4301	304	S30400	18	-	0.03	18.2	8.2	-	-	-
A	304L/4307	R350.43	1.4307	304L	S30403	20	-	0.015	18.3	8.6	-	-	-
A	305/4303	R390.21	1.4303	305	S30500	20	-	0.01	17.7	11.2	-	-	-
A	316L/4404	R425.10	1.4404	316L	S31603	24	-	0.015	16.8	11.2	2.1	-	-
A	316L/4436	R440.10	1.4436	316	S31600	25	-	0.02	16.8	11.6	2.6	-	-
A	316Cu/4578	R545.11	1.4578	316Cu	-	24	-	0.02	17	10.8	2.2	-	Cu
PH	Alloy 286/4980	R569.10	1.4980	A–286	S66286	18	-	0.05	14.6	24.7	1.2	-	Al, Ti
PH	Alloy 286/4980	R569.60	1.4980	A–286	S66286	18	-	0.05	14.6	24.7	1.2	-	Al, Ti
PH	Alloy 286/4980 ESR	R569.63	1.4980	A-286	S6686	18	-	0.05	14.6	24.7	1.2	-	Al, Ti
PH	Alloy X750	R969.75	2.4669	A-X750	N07750	-	-	0.05	14.4	74.5	-	-	Al,Ti, Nb
A	304Cu/4567	R575.21	1.4567	304Cu	S30430	19	-	0.01	17.9	9.7	-	-	Cu

Grade families: F = ferritic, A = austenitic, PH = precipitation hardening



MECHANICAL PROPERTIES AND DEFORMATION HARDENING

Depending on end-product's shape and required tensile strength, the wire rod should have specific ductility (formability) for the cold heading process and specific level of deformation hardening. Following methods of measurement are used regarding deformation hardening:

- **CWH-Factor** "Cold Work Hardening Factor", a matrix consisting of C, Cr and Ni contents. The factor varies between 80 – 150 and increases with increasing deformation hardening in the steel.
- **Md30**: the temperature (°C) at which 30% true elongation (about 25% area reduction) makes 50% of the austenitic phase transform to deformation martensite. A higher temperature means higher deformation hardening in the steel.

CORROSION

PRE (Pitting Resistance Equivalent = Cr + 3.1 x Mo + 25 x N) is a factor comparing properties of different chemistries with regards to pitting and crevice corrosion in corrosive environments. A higher value means better resistance. In the table above, PRE is shown for the grades we recommend for cold heading.

SURFACES

- Direct cooling (DK) ASTM 10-13
- "In line"-annealing (DST) ASTM 5-8
- Pit furnace (SG) ASTM 3-6

Our standard procedure is to supply the wire rod in pickled condition.

DIMENSIONS

Standard: 5 – 18 mm (.197" - .709") in increments of 0.5 mm (.020") (MOQ:s for some dimensions)
Tolerance: 5.0 – 10.0 +/-0.15
>10.0 – 18.0 +/-0.20
Ovality: max 60% of the total tolerance span
Surface classes: Class 3 is the standard class which has a max defect depth of 0.10 mm for dimensions ≤ 10 mm and 1% of the diameter for dimensions > 10 mm. Welding rod has class 2 (max 0.20).

PACKAGING METHODS

Coil weight: appr. 1000 kg - **Outer diameter**: max 1250 mm - **Inner diameter**: max 950 mm

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