

# VECTOR<sup>®</sup>

## SPOKE WIRE



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.

### IMPORTANT SPOKE WIRE PROPERTIES

After decades of close cooperation with our customers, we have developed spoke wire that fulfills the high requirements on the products properties:

- Tight chemistry which will ensure an excellent product consistency
- Consistent mechanical properties and well-defined deformation hardening
- Very good corrosion properties
- Excellent surface conditions
- Trustful dimension and narrow tolerance

### VECTOR<sup>®</sup> SPOKE WIRE

Our high-end spoke wire for racing and downhill bicycles. Vector<sup>®</sup> is our austenitic spoke wire collection. It is often used for top bike racing, - triathlons, downhill racing, and e-bikes. The unique forming properties makes it possible to reduce the center section of the spoke and therefore lower the weight, increase the strength, and fatigue durability with still kept good elasticity.

By forming / molding the center section after reduction, you can achieve improved aerodynamic properties in order to reduce drag. Our selected grades has proven to be the world's best spoke wires. Our R & D research together with the market, confirmed that our adjusted chemistry will improve the mechanical properties overall. Our chosen Vector<sup>®</sup> grades have up to 25% better fatigue properties compared to standard 304 material.

	EN	TYPE	Fagersta	C %	Si %	Mn %	Cr %	Ni %	Mo %	N %	TS N/mm <sup>2</sup> (ksi)	CWH	Md30 Nohara	PRE
VECTOR <sup>®</sup> A1	1.4310	302	R 300.20	0.052	0.45	1.20	17.40	8.25	0.50*	0.050	850-1300 (123-189)	128	4	19
VECTOR <sup>®</sup> A2	1.4310	302Mo	R 300.38	0.10	1.40	1.60	17.20	8.20	0.70	0.030	1300-1500 (189-218)	139	-31	20

\* Max  
 PRE = Cr + 3.1 \* Mo + 25 \* N

### STANDARD STEEL GRADES FOR SPOKE WIRE

We recommend following standard grades:

EN	TYPE / AWS	Fagersta	C %	Si %	Mn %	Cr %	Ni %	Mo %	N %	TS N/mm <sup>2</sup> (ksi)	CWH	Md30 Nohara	PRE
1.4301	304	R 350.19	0.025	0.40	1.50	18.20	8.20	0.60*	0.050*	900-1200	108	9	20
1.4310	302	R 320.17	0.070	0.45	1.25	18.35	8.10	0.60*	0.040	900-1200	130	-10	20
1.4482	-	R 617.13	0.020	0.65	4.25	20.30	1.80	0.40	0.16	900-1200	-	90	24

\* Max  
 Other grades can be offered on demand

## MECHANICAL PROPERTIES

We control mechanical properties and surface conditions by choosing a specific grade and wire drawing process.

- **High tensile strength** – high tensile strength is needed for the spoke strength. We customize the wire tensile between 850- 1500 N/mm<sup>2</sup> (123-218 ksi).
- **Forming properties** – our chosen grades are well defined to fit the requirements of increased strength, fatigue durability and elasticity for best cold forming, straightening, bending, and threading properties in order to make any type of spoke wire.
- **Elongation** – we measure and define the best ratio between elongation and tensile by calculating Md30 of the material ductility.

## CORROSION PROPERTIES

PRE (= Pitting Resistance Equivalent =  $Cr + 3.1 \times Mo + 25 \times N$ ) is a factor comparing properties of different chemistries with regards to pitting and crevice corrosion in corrosive environments. A higher value means better resistance. Our well-known smooth surface quality also creates less possibilities for corrosion to stick to the surface.

## BRIGHT SURFACES

Spoke wire visual appearance is often highly requested. It is therefore important that the surfaces are bright and free from defects. Our flexible drawing processes enables us to offer everything from standard to high demanding surfaces.

- FAGERSTA Vector®
- FAGERSTA Royal at request when extraordinary tensile strength is required.

## DIMENSIONS

**Standard:** 1.50-5.00 mm (.059" - .197")

**Tolerance:** h9 according to EN 10278

1.50 - 3.00            + 0 / - 0.025

3.01 - 5.00            + 0 / - 0.030

**Ovality:** max 50% of the total tolerance span

## PACKAGING METHODS

The wire is supplied in various packaging depending on the needs of the customer. See separate leaflet.

