

# VECTOR®

## 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.

### STANDARD STEEL GRADES FOR SPOKE WIRE

We recommend following standard grades:

### IMPORTANT PROPERTIES FOR SPOKE WIRE

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
- Corrosion properties
- Surface conditions
- Dimension and tolerance

EN	TYPE / AWS	Fagersta	C %	Si %	Mn %	Cr %	Ni %	Mo %	N %	TS N/mm² (ksi)	CWH	Md30 Nohara	PRE
1.4301	304	R 350.19	0.030	0.40	1.50	18.20	8.20	0.60	0.050	900-1200	108	9	20
1.4310	302	R 300.20	0.052	0.45	1.20	17.40	8.25	0.60	0.050	900-1200	128	4	19

Other grades can be offered on demand

### VECTOR® SPOKE WIRE

Our high-end spoke wire for racing and downhill bicycles. Vector® is our austenitic spoke wire collection. It is often used for top bike racing, triathlons, downhill racing and e-bikes. The reason for this is the unique forming properties which make it possible to reduce the center section of the spoke and therefore lower the weight, increase the strength, and fatigue resistance as well as flexibility. After reduction, the center section can also be pressed in a mold to form shapes that will improve aerodynamics. It is within this collection you can find one of the world's best spoke wires.

Our research has proven that a better adjusted chemistry will improve fatigue properties. Our A1 and A2 therefore have up to 25% better fatigue properties compared to standard 304 material.

	EN	TYPE	Fagersta	C %	Si %	Mn %	Cr %	Ni %	Mo %	N %	TS N/mm² (ksi)	CWH	Md30 Nohara	PRE
VECTOR® A1	1.4310	302	R 300.20	0.052	0.45	1.20	17.40	8.25	0.60	0.050	850-1300 (123-189)	128	4	19
VECTOR® A2	1.4310	302Mo	R 300.38	0.1	1.4	1.6	17.2	8.2	0.7	0.03	1300-1500 (189-218)	139	-31	20

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

## MECHANICAL PROPERTIES

We can control mechanical properties and surface conditions by choosing a specific grade and how we process it in production:

- **Tensile strength:** high tensile strength is needed. We supply in customized levels from 850-1500 N/mm<sup>2</sup> (123-218 ksi).
- **Forming properties:** this is important in order to be able to reduce the spoke diameter in the middle section which will save weight, increase strength, flexibility and fatigue resistance. Straightening, bending and threading properties are also important basic requirements in order to make any type of spoke wire.
- **Elongation:** By testing and calculating Md30 we can control elongation in relation to tensile strength.

## CORROSION

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. In the table above, PRE is shown for the grades we recommend for spoke wire. Surface smoothness is also an important factor to prevent corrosion.

## BRIGHT SURFACES

Spoke wire is often used in environments where there are high demands with regards to aesthetical properties. It is therefore important that the surfaces are bright and free from defects. We have developed our own various bright drawing methods which makes it possible for us to offer everything from standard to high demanding surfaces:

- FAGERSTA Vector®
- FAGERSTA Royal at request with higher mechanical properties

## 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.

