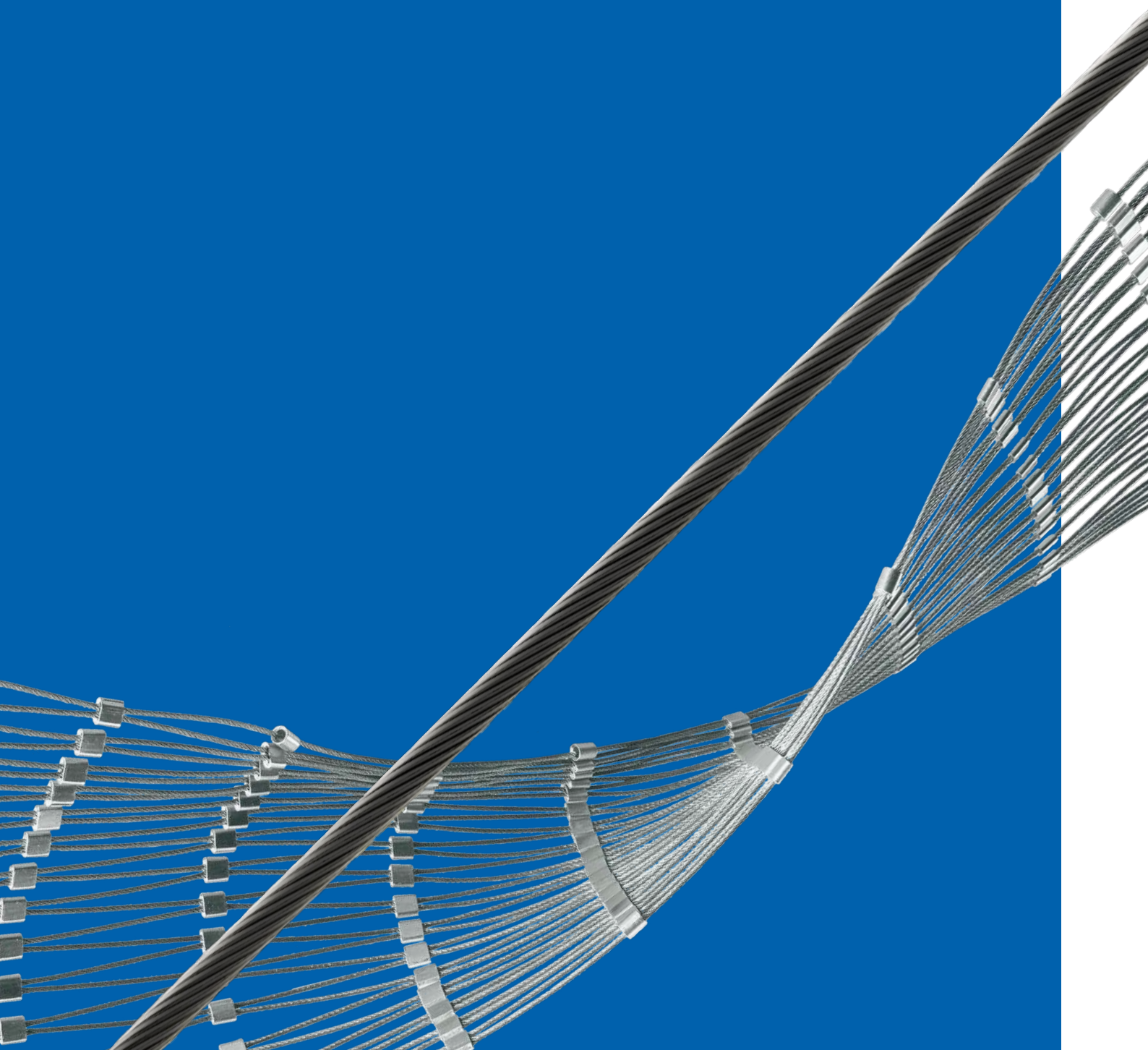


Technical information sheet

# Colors of wire ropes and nets in stainless steel



## Colors of wire ropes and nets in stainless steel

Stainless steel products are often to be colored in architectural and other design applications. The following describes the techniques of spectral coloring and electrostatic wet painting for Jakob Rope Systems customers and explains their advantages and disadvantages.

### Spectral coloring (electrochemical coloring)

Webnet products from Jakob Rope Systems can be colored in shades of black using spectral coloring. Fundamentally, spectral coloring is not a color coating, instead it is a modification of the material surface. The workpieces retain their exact shape and the colors are robust.

In electrochemical coloring, the thickness of the natural chromium oxide passive layer of stainless steel is changed in its thickness between 0.02 and 0.36 µm, so that the light is refracted differently and a different color effect is created. No dyes or pigments are added.

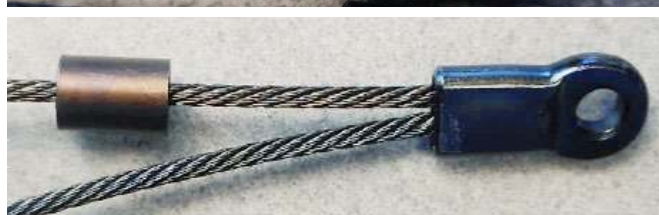
The electrochemical process is subject to variations, because the color effect depends directly on the material and surface properties of the workpieces. Ropes, sleeves and frames from our Webnet products cannot therefore have the exact same color. The colors of ropes, sleeves or other fittings can have different shades.

RAL-tones cannot be achieved with spectral coloring.

No aging of the color occurs from exposure to UV light. The materials can be formed or bent. Nets and connecting ropes are not damaged during installation.

### Limits

For technical processing reasons, stainless steel parts can be colored up to a maximum length of 50 m, Webnet up to around 100 m<sup>2</sup> area or a weight of maximum 150 kg. The coloration may be compromised at the suspension points. Small parts can be processed efficiently in bulk drum coloration systems.



Picture 1: Examples of different color effects on the different materials rope, sleeve and eyelet



Picture 2: Surface details are retained, because the workpieces are not coated during the spectral process

### Lead time

Jakob Rope Systems sends to Germany the stainless steel and net products to be treated with spectral color. The capacity of the facility as well as the transport distances have a major influence on the lead time, which can be extended by up to 5 weeks in addition to the usual delivery time if spectral coloring is requested.

### Environment

The spectral coloring technique uses dip baths with chromium VI and chromium trioxide components, which are classed as hazardous materials under the European REACH directive. The process can only be carried out by a small number of providers with the corresponding protective and preparation facilities. The final product does not contain any hazardous materials and can be used and touched without risks.

### Summary of spectral coloring

Stainless steel products such as Webnet, ropes and fittings can be colored in shades of black using spectral coloring by Jakob Rope Systems. It is not possible to achieve a RAL-tone using spectral coloring.

The color is scratch-proof, UV-proof and can be formed. The appearance of the coloring depends on the surface and the material batch, therefore ropes and fittings fundamentally appear to have different color shades.

Webnet products can be colored in their entirety up to 100 m<sup>2</sup> and 150 kg, ropes up to a maximum length of 50 m. Small parts such as eyes and sleeves can be colored in bulk.

The lead times increase due to spectral coloring by up to 5 weeks.

### Electrostatic wet coating

During coating, the atomized paint is charged at the spray gun and attracted by the grounded workpiece. The technique means that the paint loss is comparatively low. Complex workpiece geometries such as rope surfaces and nets are evenly coated.

The pre-treatment is very important for the durability of the color coating. Ropes and nets are cleaned and degreased. A primer or basecoat is applied first and then the color coating is put on in the same way.

**Adhesion basecoat:** Layer thickness: 8–15 µm

**Top coat:** Layer thickness: 8–15 µm

We comply with the normal environmental requirements as per our company guidelines, however no standard European certificates can be provided for the paint coating.

### Colors

Available RAL colors are indicated on the classic table. The complex geometries on the rope surface and the mesh knots and crimped sleeves cause a lot of micro-shadowing, which influence the appearance of the paint compared with flat surfaces even if the paint is selected correctly.

The surface appears "silk gloss". Basically, nets, frames and ropes are coated before final assembly, so that the frame surfaces are also coated under the ropes. However, minor damage can result from assembly.

### Limits

Webnet frames: Maximum frame size 2.2 × 2.9 m

Webnet: Maximum net surface 25 m<sup>2</sup>

Webnet & frames: Maximum individual weight: 50 kg

Connecting ropes / custom-manufactured ropes: Maximum 25 m



Picture 3: Examples of color effects on Webnet products.



Picture 4: Detail of the surface appearance.

### Resistance

Abrasion, weathering and UV radiation can influence the color over time, as can also be seen with other external paint surfaces. Caution: red paint ages particularly strongly. The thinly applied paint coating reduces the resistance and is not scratchproof.

The coating is only elastic to a limited extent; therefore, it can crack and flake off under bending. Moving fittings such threads in turnbuckles, joints or plug-in connections, as well as the sleeveless Webnet and products in the "Self-Assembly" product range for on-site crimping are not suitable for paint coating.

Small damages can still be repaired on site after installation. Similar to the use of paint pens on automobiles.

### Lead time

If color coating is requested, the lead time will increase by around 4 weeks compared with the uncoated product.

Due to the brittle paint coating, powder coating has not proven effective on elastic ropes and nets. Above a certain volume (around 50 pieces), it can be economically viable to powder coat frames. The paint appearance of frames and rope products may vary slightly.

### Summary of wet coating

Stainless steel products such as Webnet, frames and fittings can be coated by Jakob Rope Systems based on the RAL Classic table, using two-stage electrostatic wet coating.

Installation, movements and weathering can cause local damage. This can be repaired locally using paint pens.

The limit of the individual weight is 50 kg and the component sizes at 2.2 x 2.9 m (frames) or 25 m<sup>2</sup> (Webnet). The lead times increase due to coating by up to 4 weeks.

### Comparison of the coloring techniques

Feature	Spectral coloring	Painting
Coating	No (no paint application)	Yes
Wearresistance	High	Low
Deformability	High	Limited
Colors	Black (material-dependent) No RAL tones	Based on RAL Classic
Lead time	high, additional 5 weeks	medium, additional 4 weeks

The feasibility and the current delivery times must be checked in advance. Jakob Rope Systems will be happy to advise you personally.