

## Technical information

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### 1. General

**NANOXID SC-ISOL** is a clear coat developed for electrical insulation of metal surfaces. **NANOXID SC-ISOL** is especially designed for spray-coating application, but a coil coating version is also available on request. **NANOXID SC-ISOL** combines the hardness and clarity of glass with the advantages of organic coatings (such as easy application). It creates clear, transparent, hard, electrical insulating and extremely thin layers only 1 to 4 µm thick.

**NANOXID SC-ISOL** is designed for high-tech applications, like e.g. photovoltaic cells or OLED's.

### 2. Storage and Handling

**NANOXID SC-ISOL** is a one-component system. It is recommended to use the paints within of 3 months after production date. The paints should be stored in a cool place (maximum 21 °C) and protected from sunlight.

**NANOXID SC-ISOL** is flammable. When using it, do not smoke and stay away from open lighting or other sources of fire, heat or sparks. Do not eat while working with the material. Read the safety data sheet before handling the material.

The cured coating is non-toxic.

Working tools may be cleaned with alcohol or acetone.

### 3. Substrates

**NANOXID SC-ISOL** is designed for steel, stainless steel or aluminum surfaces.

Other substrates can be possible but need specific approval first.

In order to achieve good adhesion, the metal surface must be free from all foreign agents, such as oil. In addition, a basic pre-cleaning is necessary in order to remove possible layers of oil, dirt or fingerprints, which interfere with adhesion. Therefore, we recommend cleaning the metal surface immediately before the application of **NANOXID SC-ISOL**.

### 4. Application

**NANOXID SC-ISOL** is designed for spray-coat-application, but may be applied also by brush or dipping. A coil-coating version is also available on request.

**NANOXID SC-ISOL** is ready to use and can be applied without further thinning. Should thinning nonetheless be necessary, a recommended thinner is available.

**NANOXID SC-ISOL** can be used without problems at a relative humidity of up to 60%. At higher humidity levels, the forming of the layer may be disturbed. For example, the layer may appear matte. In such a case, it has been shown to be helpful to warm the metal substrate before application of the coating. 10<sup>8</sup>

Avoid applying **NANOXID SC-ISOL** in thick layers. Otherwise, drips and runs may result, and too thick layers crack after hardening and may come off.

## 5. Curing

**NANOXID SC-ISOL** is cured between 140°C - 200°C for about 15-30 minutes. If the temperature is too low, adhesion problems occur. If the temperature is too high, color banding and decomposing of the organic component of the layer result. This may lead to the layer coming off.

A test run in the oven to be used is recommended, since heat distribution in ovens is often highly variable. The temperature of the metal substrate therefore often varies from the selected oven temperature.

The layer continues to harden after the thermal hardening. The final hardness is only reached after a few weeks.

## 6. Technical data

<b>Properties and composition</b>	Transparent and electrical insulating coating on metal substrate	<ul style="list-style-type: none"> <li>• Electrical insulating</li> <li>• Extremely scratch resistant</li> <li>• Exceptional temperature behavior</li> </ul>
<b>Applications</b>	<b>Ideal for electrical insulation of large metal surfaces.</b>	
<b>Coating technology</b>	Application	Spray coating; dipping and brush possible.
	Curing	Hot air or Infra-red
<b>Description</b>	Substrate	Steel, Stainless steel, Aluminum, ...
	Coating Thickness	4 µm
	Colors	Transparent coating
<b>Electrical properties</b>	Initial resistance	≥ 10 <sup>8</sup> Ω (too high to be measured)
	Resistance at 100 V	≥ 10 <sup>4</sup> MΩ
	Breakdown voltage	560 ± 110 V
<b>Performances</b>	Resistance to cracking on bending	≤ 1 T
	Impact resistance	18 J
	Pencil Hardness	≥ H
	Nail test (plastic tool)	≥ 20 N
	Cross-cut Test	0
	Surface "pencil" hardness	≥ 2H
	Clemen	± 2 kg
	Salt spray test (1000h)	No blistering
	QCT (500h CPI2)	No blistering
Hot water test	No blistering, no loss of adhesion after 1 h	

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Cyclic Heat Resistance	$\Delta E < 2$ at 120 C°
Light Resistance (UV 310 nm)	$\Delta E < 1$ for 500 h, 550 W/m <sup>2</sup>

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## 7. Remarks

**NANOXID SC-ISOL** transparent coating is not a classical coating paint and some classic tests for organic coating are not relevant.

The performances indicated are averages and may vary in particular according to the type of support used. The data of the present technical data sheet are not contractual and may be amended in line with technological progress relating to the product.

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