

# VK 2011 SW

## Technical Data Sheet

### Description

VK 2001 SW is an innovative, resistant and economical two-component epoxy coating with Bionic technology, which is especially suitable for the high - quality and durable protection of steel surfaces in steel hydraulics construction. VK 2011 SW is used as highly mechanical and chemical resistant/ hard-wearing coating that offers excellent anticorrosion properties.

### Composition

Free of heavy metals, benzyl alcohol, coal tar, anthracene oil and plasticizers.

### Recommended Applications

- Steel hydraulic construction
- Cooling water pipes
- Hydroelectric power plants
- Flood gates
- Sheet pilings

### Features

- Tough hard
- Very high chemical resistance
- Excellent corrosion protection
- Excellent adhesion strength
- Very high abrasion resistance
- high tolerance to early water stress
- excellent surface gloss (even at high relative humidity)
- No shrinkage by migration of plasticizer
- Physiologically harmless after curing
- VOC < 1 %  
EU Directive 2004/42 (Decopaint-Directive):  
According to the EU Directive 2004/42, the maximum allowed content of VOC (Product category AII/j/type Ib) is 500 g/l (Limit 2010) for the ready to use product. This product is in accordance with the EU Directive 2010.
- In exposure to weathering VK 2011 SW tends to chalking and discolouring. In case of higher demand, we recommend to use topcoat.
- **Approved by Bundesanstalt für Wasserbau (BAW)**
- **Approved by RWE**

### Resistance

#### Chemical

- Industrial and marine conditions
- Water, seawater, brackish water
- Oil, fat, lubricants and fuels
- Diluted acids
- Neutral salt solutions
- Alkalies
- Mineral oil
- aliphatic hydrocarbons

**Due to the reason that the resistance of the coating can be affected by various factors (medium, temperature, concentration, layer thickness etc.) we recommend to consult us prior to the application.**

### Surface Preparation

Appropriate surface preparation is essential in order to obtain good results with this product. The exact requirements change according to kind of application, expected serviceable life and the original status of the surface.

**During the surface preparation the dew point must be minimum +3 °C/3K (see dew point table).**

#### Steel

Surface preparation by blasting according the DIN standard  
DIN EN ISO 12944-3 and -4 as well as DIN EN 14879-1

Surface preparation methods

DIN EN ISO 8504-2 Abrasive blast cleaning

Preparation of steel substrates before application of paints and related products

DIN EN ISO 8501-1 Preparation grade Sa 2½

DIN EN ISO 8501-2 Visual assessment of surface cleanliness

DIN EN ISO 8501-3 Preparation of grade welds, edges, etc., table 1 P3

Test for the assessment of surface cleanliness

DIN EN ISO 8502-4 Dew Point

Optional:

DIN EN ISO 8502-3 Assessment of dust, quantity <2, size <2

DIN EN ISO 8502-6 Bresle method

Surface roughness characteristics of blast-cleaned steel substrates

DIN EN ISO 8503-1 Ry5 (Rz) 40 - 100 µm

For the preparation of other surfaces, kindly contact us.

Technical Data				
Shore-D hardness	ASTM D 2240, DIN EN ISO 868	80 85	+20 °C/12 h +30 °C/12 h	
Density (+23 °C)	ASTM D 792	1.60		g/cm <sup>3</sup>
Compressive strength	ASTM D 695	103.5		N/mm <sup>2</sup>
Temperature stability	dry continuous	+100*		°C
	dry short-term	+150*		°C
Hot water	continuous	+50*		°C
	short-term (1 h)	+70*		°C
Solid content	volume	100		%

\*Due to the fact that the resistance of the coating can be affected by various factors (medium, temperature, concentration, layer thickness, etc.) we recommend to consult us prior to application.

## Preparation of Material

**Important:** Use only without thinner!

Airless spraying resp. brush/roller:  
Material temperature at least +20 °C. Stir up component A with an appropriate mechanical mixer (300-400 rpm), add component B completely and mix carefully by stirring at least another 3 minutes. Include bottom and rim. Put the mixed material into a clean container and mix again for at least 1 more minute.

**Mixing ratio** 7 : 1 part by weight  
(Part A : B)

## Application Instructions

Conditions of object:  
Temperature of substrate and air no less than +10 °C to +40 °C, relative air humidity max. 85 % (after 1<sup>st</sup> coating); temperature of the surface to be coated has to be at least +3 °/3K over the respective dew-point. Low temperatures delay curing and aggravate treatment. Higher air humidity as well as falling below dew-point may result in formation of condense humidity on subsoil respectively coating surface, thus possibly causing severe impairment in adhesion. The conditions of object have to be observed during treatment and curing time. When close to these limits, the use of heaters or drying apparatus is recommended.

Efficient airless spray equipment	e. g. Graco King Xtreme
Pressure ratio	min. 1 : 68
Spray hose	approx. 30 m 3/8" + 2 m 1/4"
Inlet pressure	3-5 bar
Nozzle size	0.43-0.64 mm (0.017"-0.025")
Spraying angle	30-80°
We recommend to remove the high pressure filters and to pump the material directly without a siphon tube.	

**Important:**

To ensure a proper application at low temperatures a hose insulation and a flow heater have to be used.  
N/B:  
Please use a plural component airless spray equipment, if a longer spray hose distance (> 30 m) and an independent application time/pot life is required.

**Brush/roller:**  
Recommended for small areas, repairs or to precoat edges, angles, diffusions etc.. Recoat until sufficient film thickness is obtained. Normally a film thickness of 250-300 µm NDFT/WFT can be obtained per coat.  
For increased optical requirements, is the for hand processing optimized version VK 2011 SW-H available.

Pot life in minutes:

	+20 °C	+23 °C	+30 °C
16.0 kg	ca. 35	ca. 30	ca. 20

This schedule states the practical curing time from beginning of mixing.

## Composition of Coating/ Material Consumption

**Recommended nominal stratum thickness: 600-1200 µm.**

Theoretical consumption: approx. 1.0 kg/m<sup>2</sup> (at 600 microns NDFT)  
practical consumption: approx. 1.3 kg/m<sup>2</sup> (at 600 microns NDFT)

**The information relating to practical consumption/coverage is calculated on basis of 30 % material loss and additional consumption.**

The practical consumption/coverage depends on the conditions of the substrate. We recommend to apply a test area.

## Re-coating Intervals/Sequence Coatings

10 °C	12 hours	max. 48 hours*
23 °C	6 hours	max. 24 hours*
30 °C	3 hours	max. 12 hours*

When exceeding the interval times, surfaces has to be grinded. The re-coating interval shortens strongly through sun influence. Appropriate safety measures must be taken.

\*Note/overcoat:

Max. 3 months; the surface must be free from impurities and substances which could cause poor adhesion and not UV-contaminated. Otherwise the surface has to be cleaned by sweep blasting. Dust deposits must be removed with a suitable detergent (no water).

## Curing Time

	+10 °C	+23 °C	+30 °C
Water load:		18 hours	12 hours
Foot traffic:	24 hours	12 hours	6 hours
Mechanical load:	72 hours	48 hours	24 hours
Full chemical load:	7 days	5 days	3 days

The above mentioned values are standard values. Variations caused by practical requirements or conditions are possible. In case of a higher demand to colour stability we recommend to use a topcoat.

## Packing Units

The material is supplied in the following packing size: 16.0 kg (14.0 kg part A and 2.0 kg part B). Delivery in colour dusty grey and mint turquoise. Other colours on request.  
Due to raw material variations and manufacturing techniques, a slight colour/batch difference may occur.

## Cleaning

All tools should be cleaned with cleaning agent 999 immediately after use. If the material is allowed to set, it can only be removed by mechanical means.  
To clean and flush the spray equipment/machine we recommend to use cleaning agent 999 with a temperature of approx. +30 to +40 °C.

## Storage

The material should ideally be stored in unopened original bins under cool, dry and frost free conditions, at temperatures between +15 and +25 °C, divergence during transport is acceptable. At temperatures < +10 °C crystallisation is possible. Please observe the expiry date stated on the material.

## Safety Instructions

For the handling of our products, the significant physical, safety-related, toxicological and ecological data according the substance-specific safety data sheet are to be extracted. The applicable rules and regulations, such as for example the Hazardous Substances Regulation, have to be observed.  
A detailed safety data sheet will be delivered with the material or is available upon request.