

## Product Datasheet

### Resicoat® R4-ES for Electrostatic Spray Application on Preheated Surfaces Code: HLF93QF (Corvel® 10-7208)

#### Product Description

Resicoat® R4 is a high quality thermosetting epoxy powder coating for the corrosion protection of pipes, valves fittings and joints, manufactured from cast iron or steel. The powder coating is applied in one layer on a preheated surface by electrostatic spray application. The resultant thermoset epoxy has a high mechanical resistance with excellent electrical insulation properties. Drinking water approvals are available to confirm the coatings suitability, as a hygienic and environmental friendly coating. The outstanding adhesion of Resicoat R4® epoxy powders to the metal substrate provides long term protection of the coated component. It ensures a reliable conservation to the function and value of the parts for the common water and gas distribution network. The applicator of Resicoat® R4 benefits from a modern and environmentally friendly process. Resicoat® R4-ES HLF93QF complies with AWWA specifications C213-79 and C550-81.

#### Powder Properties

	Typical value	Method
<b>Binder System</b>	Epoxy	
<b>Specific gravity</b>	1.42	
<b>Coverage (theoretical)</b>	135 ft²/lb/mil	
<b>Gel time @ 400° F</b>	30 – 40 seconds	
<b>Shelf life @ &lt; 80° F</b>	12 months from delivery date	

#### Application Guidelines

Curing schedule	Temp.	Postcure / Min. time, min.
	450° F	4
	425° F	8
	400° F	12
	375° F	16
	350° F	20

#### Coating Process

- 1. Pre-cleaning** The surface must be free of oil, grease, salt, and other impurities.
- 2. Blasting** Moulding sand, rust and sharp edges must be removed with angular steel grit. The graphite from the cast iron must be removed from the blasting material according NACE No.2 / SSPC-10 / Sa 2.5. Recommended anchor profile of 1.5 – 3.0 mil should be stored max. 4 hours before pre-heating (dust-free and dry).
- 3. Pre-heating** This form of heating produces a uniform, defined temperature in the component. Any oxidation should be avoided.
- 4. Coating application** Immediately after preheating, the coating process starts without losing any object temperature. The coating is done in the shortest possible time in a single pass with no interruption.
- 5. Coating cure** Curing is achieved by the heat contained in the object. If the heating capacity of the work piece is sufficient. To confirm fully curing, MIBK is dropped for 30 sec. on the film surface with no visible change.

		Typical value	Method
<b>Coating Test Data</b>	<b>Abrasion resistance</b>	< 150 mg	ASTM D-1044 CS-17, 1000 gms, 5000 cycles
	<b>Adhesion</b>	excellent	Knife-cut
	<b>Adhesion-shear</b>	> 4,000 psi	ASTM D-1002 ½" overlap
	<b>Dielectric strength</b>	> 1000 volts/mil > 600 volts /mil	ASTM D-149 in oil @ 8 – 16 mils in oil @ 8 – 16 mils
	<b>Elongation</b>	10 % 5 %	ASTM D-2370 8 – 16 mils on steel dogbone 8 – 16 mils free film
	<b>Flexibility</b>	> 3.0° /LDU @ RT > 3.0° /LDU @ 32° F	4 point bend 1/8" x 1" x 12" strap, average
	<b>Hardness</b>	75	Shore D
	<b>Hot water immersion</b>	no loss of adhesion, no blisters	150° F, 500 hrs., scribed
	<b>Impact resistance, direct</b>	160 in-lbs 80 in-lbs	1/8" x 3" x 4" panel, 5/8 lup 1/4" x 3" x 4" panel, 5/8 lup
	<b>Salt spray</b>	no effect	ASTM B-117, 2000 hrs
	<b>Tensile strength, free film</b>	> 9,000 psi	ASTM D-2370
	<b>Thermal Shock, 10 cycles</b>	no effect	16 hrs. @ 40° F/2 hrs. RT/ 4 hrs. 300° F/2 hrs. RT
	<b>Water immersion</b>	< 0.25 % wt. gain	RT, 24 hrs
	<b>Water extractables</b>	< 0.5 mg/in²	AWWA C213-79
	<b>Drinking Water Approval</b>	US: ANSI/NSF 61 Drinking Water System Components – Health Effects, NSF Listing: CORVEL® 10-7208 GRAY	
<b>Date of issue:</b>	<b>May 19, 2015</b>		
<b>Authorized by:</b>	<b>GK</b>		
<b>Revision no.:</b>	<b>1</b>		

Disclaimer: This Product Data Sheet is based on the present state of our knowledge and on current laws. The data referring to Powder Properties, Application Data and Physical Tests is based on lab based samples. Factors such as quality or condition of the substrate may have an effect on the use and application of the product. It remains the responsibility of the user to test thoroughly if the product is applicable for the intended use. The use of the product beyond our recommendation releases us from our responsibility, unless we have recommended the specific use in writing. It is always the responsibility of the user to take all necessary steps to fulfill the demands set out in the local rules and legislation. We are not liable for any application-technological advice. The Product Data Sheet shall be updated from time to time. Please ensure you have the latest version before using the product. All products and Product Data Sheets are subject to our standard terms and conditions of sale (GCS). You can receive the latest copy of GCS via internet or our post address. Brand names mentioned in this Product Data Sheet are trademarks of or are licensed to the AkzoNobel group.

## Resistance against chemical substances of Resicoat® R4 at room temperature

Acetic acid	10 %	2 years	no change
Ammonia	10 %	2 years	no change
Ammonia	36 %	1.5 years	no change
Antifrogen L	50 %	1 year	no change
Antifrogen N	50 %	1 year	no change
Benzol		1 month	no change
Bore oil		1 year	no change
Butanol		6 months	no change
Carbon tetra chloride		1 year	no change
Caustic soda solution	10 %	2 years	no change
Caustic soda solution	50 %	2 years	no change
Chlorine cleanser and disinfectant		1.5 years	no change
Citric acid		2 years	no change
Deicer Safeway KF HOT		1 year	no change
Deicer Safeway SF (solid)		1 year	no change
Deicer Safewing MP II 1951		1 year	no change
Dichromatic potassium	10 %	1 year	no change
Diesel		2 years	no change
Engine oil SAE 20		1 year	no change
Ethanol		1 year	no change
Ethyleneglycole		1 year	no change
Formaldehyde	37 %	6 months	no change
Formic acid	5 %	2 years	no change
Formic acid	10 %	1.5 years	no change
Glycerol		1 year	no change
Glysantin		1 year	no change
Hydrochloric acid	concentrated	1 week	no change
Hydrochloric acid	10 %	2 years	no change
Hydrochloric acid	25 %	1.5 years	no change
Hydrofluoric acid	1 %	1 day	no change
Hydrogen peroxide	3 %	1 year	no change
Hydrogen peroxide	10 %	1 year	faded

Lactic acid	10 %	1 week	no change
Methanol		1 week	no change
Methyl tert-butyl ether (MTBE)	100%	6 months	softening
Nitric acid	10 %	1.5 years	no change
Nitric acid	25 %	1 year	no change
Oxalic acid	5 %	6 months	no change
Palm oil	at 90° C	7 days	no change
Petrol		2 years	no change
Petroleum		1 year	no change
Phosphoric acid	10 %	2 years	no change
Phosphoric acid	50 %	2 years	no change
Potassium hydroxide	10 %	1 year	no change
Potassium hydroxide	25 %	1 year	no change
Potassium hydroxide	50 %	1 year	no change
Propanol		1 year	no change
Sea water		2 years	no change
Sodium acetate	10 %	1 year	no change
Sodium carbonate	20 %	1 year	no change
Sodium hypochlorite (15 % Cl <sub>2</sub> )		10 weeks	no change
Sodium chloride	2 %	1 year	no change
Sodium chloride	20 %	1 year	no change
Sodium formiate	10 %	1 year	no change
Suds	1 %	1 year	no change
Sulphuric acid	2 %	2 years	no change
Sulphuric acid	20 %	2 years	no change
Sulphuric acid	50 %	2 years	no change
Tartaric acid	5 %	1 year	no change
Toluol		1 year	no change
Turpentine oil		1 year	no change
Urea	10 %	1 year	no change
Urine		1 year	no change
Xylol		1 year	no change

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