

## Product data sheet

# Resicoat<sup>®</sup> HKH12QF (Corvel<sup>®</sup> 10-6051) Pipe Internal Coating

### Product Description

Resicoat<sup>®</sup> PI HKH12QF (Corvel<sup>®</sup> 10-6051 green) is a melt-mixed, 100% solids Novolac-modified epoxy designed for pipe internal coating. Resicoat<sup>®</sup> PI HKH12QF (Corvel<sup>®</sup> 10-6051 green) is used at elevated temperatures and pressures in drill pipe, production tubing, CO<sub>2</sub> injection tubing, valves and fittings. The product displayed no swelling, no blistering, no cracking, no detachment from the substrate, and nearly no color change when the coated substrate was exposed to controlled tests at temperatures of up to 300 °F.\* Resicoat<sup>®</sup> PI HKH12QF (Corvel<sup>®</sup> 10-6051 green) offers a good combination of toughness and flexibility which will resist damage and cracking during handling and coupling operations. When applied, as recommended, over Resicoat<sup>®</sup> 596301 primer (Corvel<sup>®</sup> EP-10 1P-0010), Resicoat<sup>®</sup> PI HKH12QF is resistant to H<sub>2</sub>S, CO<sub>2</sub>, CH<sub>4</sub> and petroleum distillates.

	Typical value	Method
<b>Powder Properties</b>		
Binder system	Novolac-modified epoxy	
Specific gravity	1.65 – 1.75	calculated
Coverage	112 ft <sup>2</sup> /lb/mil	calculated
Gel time @ 400 °F (204 °C)	75 – 125 sec.	ISO 8130-6
Storage stability	12 months at ≤ 74 °F (23 °C), stored in dry conditions	

### Application Data

<b>Surface preparation</b>	All oil, grease, mill scale, and rust must be removed. A blast profile of 1.5 – 2.5 mils (38 – 64 µm) minimum NACE #1 is required.	
<b>Anchor profile</b>	1.5 sharp, dense recommended	
<b>Resicoat<sup>®</sup> 596301 primer, dry thickness</b>	0.5 – 1.0 mil (13 – 25 µm)	
<b>Preheating</b>	20 min. at 320 °F (160 °C)	
<b>Post-curing</b>	30 min. at 425 °F (218 °C)	
<b>Recommended film thickness</b>	8 – 12 mils (200 – 300 µm)	
<b>Particle size distribution</b>	70 Mesh: 3 % max. 140 Mesh: 15 – 30 % 325 Mesh: 50 – 65 %	ASTM D 3451 (% retained)

### Material Properties

<b>Color</b>	green	
<b>Flow</b>	smooth	
<b>Direct impact resistance</b>	100 in. lbs	ASTM D 2794 (5/8" intender)

\* This statement is specifically limited to the evaluation conditions specified in the autoclave test section of this product data sheet. This is not a guarantee of actual performance at the operating temperature. This representation is also subject to the disclaimer contained on Page 3 of this product data sheet.

	Typical value	Method	
<b>Material Properties (continued)</b>	<b>Taber abrasion</b>	ASTM D 1044 CS-10, 1000 g, 5000 cycles CS-17, 1000 g, 5000 cycles	
		< 100 mg < 140 mg	
	<b>Hardness, Shore D</b>	> 90	
	<b>Flexibility at 74° F (23° C)</b>	pass 1°	CSA Z245.20-10
	<b>Edge coverage</b>	30 % at 8 – 15 mils (200 – 375 µm)	MPTM, Method B: Preheat: 15 min. at 320 °F (160 °C) Dip cycle: 2 sec. Post-heat: 15 min. at 425 °F (218 °C)
	<b>Salt spray resistance</b>	≤ 1/8" undercut at 1700+ hours	ASTM B 117, X-Scribe
	<b>Adhesion shear</b>	> 4000 psi	ASTM D 1002, ½" overlap.
	<b>Elongation</b>	11 % 2.4 %	ASTM D 2370 10 – 15 mils on steel dogbone 10 – 15 mils on free film
	<b>Tensile strength free film</b>	> 7,500 psi	ASTM D 2370
	<b>Water immersion</b>	< 0.30 % wt.gain	Room temp., 24 h
	<b>Hot water immersion</b>	No blisters, good adhesion	190 °F (88 °C), 120 days
	<b>Dielectric strength</b>	> 1000 volts/mil > 600 volts/mil	ASTM D 149 In oil at 10 – 15 mils (250 – 375 µm) In air at 10 – 15 mils (250 – 375 µm)

**Autoclave Tests**

**Resicoat® PI HKH12QF (Corvel® 10-6051 green) has been used for many years to coat mostly over phenolic primer drill pipe, production tubing and CO<sub>2</sub> injection tubing. It has been evaluated under various autoclave test conditions such as those referenced below:**

Autoclave #1

Time: 7 days  
Temp.: 350 °F (177 °C)  
Pressure: 5000 psi  
Discharge: within 2-3 min. to 100 °F (38 °C)  
Immersion: 50% in each phase  
Gas: 3 % CO<sub>2</sub>, 96.8 % CH<sub>4</sub>, 0.2 % H<sub>2</sub>S  
Liquid: Formation Water  
Sodium Chloride, Calcium Chloride  
Magnesium Sulphate, Hydrogencarbonate

no swelling, no blistering, no cracking, no detachment from the substrate  
Discoloration in the gas phase

**Autoclave  
Tests  
(continued)**

Autoclave #2

Time: 7 days  
Temp.: 400 °F (204 °C)  
Pressure: 5000 psi  
Discharge: within 2-3 min. to 100 °F (38 °C)  
Immersion: 50% in each phase  
Gas: 3 % CO<sub>2</sub>, 96.8 % CH<sub>4</sub>, 0.2 %H<sub>2</sub>S  
Liquid: Formation Water  
Sodium Chloride, Calcium Chloride  
Magnesium Sulphate, Hydrogencarbonate

no swelling, no blistering, no  
cracking, no detachment from the  
substrate  
Discoloration in the gas phase

Autoclave #3

Time: 7 days  
Temp.: 300 °F (149 °C)  
Pressure: 6500 psi  
Discharge: within 2-3 min. to 100 °F (38 °C)  
Immersion: 50% in each phase  
Gas: 3 % CO<sub>2</sub>, 92.0 % CH<sub>4</sub>, 5.0 %H<sub>2</sub>S  
Liquid: Formation Water  
Sodium Chloride, Calcium Chloride  
Magnesium Sulphate, Hydrogencarbonate

no swelling, no blistering, no  
cracking, no detachment from the  
substrate, no color change

Autoclave #4

Time: 120 days  
Temp.: 302 °F (150 °C)  
Pressure: 70 psi  
Discharge: within 10 min. to 100 °F (38 °C)  
Immersion: 100% in water

no swelling, no blistering, no  
cracking, no detachment from the  
substrate

**Date of issue:**

[July 8, 2014](#)

**Authorized by:**

**GK**

**Revision No.:**

**5**

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 fulfil 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.