Over Print Varnish Performance Program Report

Supplier Information	
Supplier Name	ASHLAND INC.
Supplier Address	5200 Blazer Parkway
	Dublin, OH 43017

Product Information	
OPV Name	PureRad DP9140E Matte Direct Thermal
Manufacturing Facility	EMEA
OPV Type	UV Curable
Coating Finish	Matte
Substrate Application	Polypropylene
Press	ws-6000 Digital Press
Ink Type	HP ElectroInk 4.5

Coating Device	AB Graphics Omega Digicoat
Date of Evaluation	1/30/2014
Anilox Roller	360 Line Screen, 7BCM, 10.85 cm^3/m^2 60 Deg ART Engraving
Corona Intensity (kW)	0.87
Dryer Temp (F/C)	N/A
UV Intensity	Set Point 50% (UV GEW VPC 35 412 W / in^2 @ 100%)
Coating Speed	15.24 (m/min) 50 (ft/min)
Evaluation Process	Full Baseline, Heat Resistance

Evaluation	Measurement	Result	Grade (stars)
Adhesion	Tape pull test	Best Performance	☆☆☆
Mechanical Wear	Resistance to peeling, scuffing, abrasion, creasing, bending, cross cut	Best Performance	☆☆☆
Solvent Resistance	Resistance to water, IPA, ISOPAR	Best Performance	☆☆☆
Optical	Gloss, density, whiteness, shade	Good Performance	☆☆
Heat Resistance	Heat seal, aging, sterilization, microwave, hot surface	Best Performance	☆☆☆
Sunlight Exposure	Color change, ΔE_{00}	N/A	

Comment Detail:

	★★★	★★	★
Evaluation	**Best Performance**	**Good Performance**	**Limited Performance**
Mechanical Wear	All evaluations acceptable	4 evaluations acceptable	< 4 evaluations acceptable
Solvent Resistance	All evaluations acceptable	2 evaluations acceptable	< 2 evaluations acceptable
Optical Tests	No color changes/yellowing	Mild color changes/yellowing	Visual color changes/yellowing
Heat Resistance	5-6 evaluations acceptable	3-4 evaluations acceptable	1-2 evaluations acceptable
Aging / Sunlight Exposure	0-2 ΔE_{00}	3-4 ΔE_{00}	>4 ΔE_{00}

Star Rating

★★★ Best performance: acceptable results on all conditions evaluated.

★★ Good Performance: acceptable results on many of the conditions evaluated.

★ Limited Performance: acceptable results on some of the conditions evaluated.

The OPV tested was applied to an HP Indigo certified substrate for the HP Indigo ws6000 Digital Press. Test results correlate solely to the listed substrate and may not reflect similar performance on other certified or in-house control substrates.

Please contact the coating supplier to discuss the full detailed report if required.