

# Advenira® Thixorion® SDN® Nanocomposite Coating

## Product Description

The Thixorion SDN® Al-Si nanocomposite coating is an aqueous formulation that has an excellent combination of mechanical, electrical and chemical resistant properties that makes it useful for a variety of applications.

## Product Features

- Colorless, transparent, with excellent gloss
- Excellent dielectric breakdown strength
- Chemical resistant
- Can be deposited as a conformal or planarizing coating. Planarizing coatings have very low surface roughness (Ra).
- Can be used to seal porous substrate materials
- Can be synthesized to meet reduced trace metal requirements.

**Adhesion:** Excellent on degreased and corrosion free surfaces, including trimetal, brass, aluminum, steel, stainless steel, glass, quartz, and ceramics.

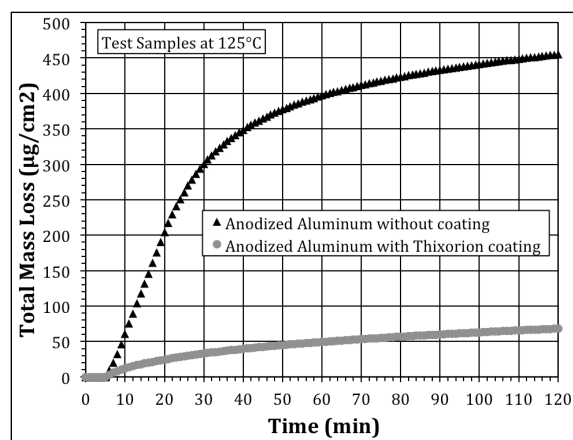
**Process Temperature:** Dry process temperature range up to 230°C.

## Properties:

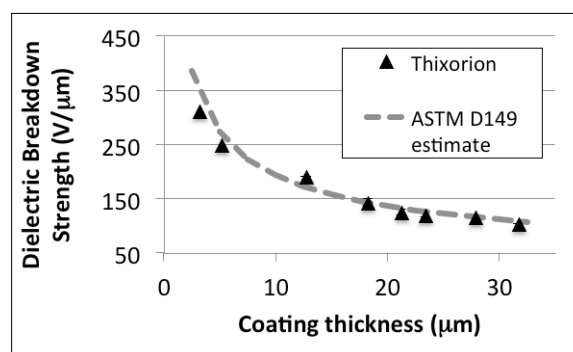
Property	Value																				
Color	Colorless/Transparent																				
Curing method	Thermal (IR/Convection)																				
Curing Time	<5 min possible with high thermal budget substrates																				
<i>Typical curing time for coatings on glass, aluminum, and stainless steel. Actual curing times may vary depending on application and equipment specifications.</i>	<table border="1"> <thead> <tr> <th rowspan="2">Substrate Temp °C</th> <th colspan="2">Cure Time (min)</th> </tr> <tr> <th>Convection</th> <th>SW-IR</th> </tr> </thead> <tbody> <tr> <td>135</td> <td>600</td> <td>120</td> </tr> <tr> <td>150</td> <td>180</td> <td>60</td> </tr> <tr> <td>180</td> <td>20</td> <td>10</td> </tr> <tr> <td>200</td> <td>10</td> <td>8</td> </tr> <tr> <td>220</td> <td>4</td> <td>3</td> </tr> </tbody> </table>	Substrate Temp °C	Cure Time (min)		Convection	SW-IR	135	600	120	150	180	60	180	20	10	200	10	8	220	4	3
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		Convection	SW-IR																		
	135	600	120																		
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	Short wave IR – 1.3µm peak output																				
Wt% Solids	7.5%																				
Viscosity	14-17 cP (typical) (Brookfield cone/plate)																				
Specific Gravity	1.03																				
pH	3.5																				
Film Thickness	3-5 µm; up to 20 µm with multilayer (max thickness is substrate and temp. dependent)																				
Coverage	65 m <sup>2</sup> /liter/µm																				
Shelf Life	1+ year (20°C, do not freeze)																				

## Performance Data:

Property	Value
Abrasion Resistance (ASTM 4060)	13 mg/1000 cycles (Taber 5135, 1 kg, CS-10) (mass loss of 4 mg/1000 cycles possible with formulation variant)
Pull-off Adhesion (ASTM D4541)	17.3-21 MPa (metals/ceram) > 7 MPa (a-Al)
Hardness	17-18 (microVickers) 150-160 MPa (Martens) 6-7H Pencil
Chemical Resistance	Pass - MEK, Methanol, Toluene, Butyl acetate, Hexane, Windex
Thermal Cycling	Pass 100 cycl. -50°C – 150°C Pass 100 cycl. 25°C – 175°C
Intrinsic Roughness	0.02 µm Ra (10 µm coating) (Ra up to 0.3 µm possible with formulation variant)
Optical	TL > 90%, Haze < 1% (Translucent, hazy coating possible with formulation variant)



Off-gassing data for Thixorion on Type III anodized-Al



Dielectric Breakdown Strength versus coating thickness