

Advenira® AdvenShield™ SDN® Nanocomposite Coating

Product Description

AdvenShield™ SDN® nanocomposite coating provides hard, anti-scratch protection for polycarbonate, glass, and touchscreens.

Product Features

- Colorless, transparent, with excellent gloss;
- Suitable for a wide range of pH (pH 0-10);
- Excellent resistance to hydrochloric acid, sulfuric acid, and salt water;
- Can be applied over ITO, SiO₂ and other coatings.

Abrasion: Excellent resistance to abrasion and mechanical damage. Taber abrasion superior to stainless steel, electroless-Ni, Type III anodization, and many commercially available hardcoats for polycarbonate.

Adhesion: Excellent on degreased, corrosion-free, and activated glass, Al, and polycarbonate.

Chemical Resistance: The fully cured coating offers excellent resistance to aqueous solutions and industrial chemicals.

Properties:

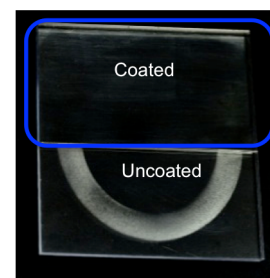
Property	Value(s)																	
Color	Colorless/Transparent																	
Curing Time	<10 min possible with high thermal budget substrates																	
<i>Typical curing time for single layer coatings on glass and aluminum. Actual curing times may vary depending on application and equipment specifications.</i>																		
	<table border="1"> <thead> <tr> <th rowspan="2">Substrate Temp</th> <th colspan="2">Cure Time (min)</th> </tr> <tr> <th>Convection</th> <th>SW-IR</th> </tr> </thead> <tbody> <tr> <td>110 °C</td> <td>900</td> <td>180</td> </tr> <tr> <td>135 °C</td> <td>600</td> <td>60</td> </tr> <tr> <td>150 °C</td> <td>180</td> <td>30</td> </tr> <tr> <td>180 °C</td> <td>20</td> <td>10</td> </tr> </tbody> </table>	Substrate Temp	Cure Time (min)		Convection	SW-IR	110 °C	900	180	135 °C	600	60	150 °C	180	30	180 °C	20	10
Substrate Temp	Cure Time (min)																	
	Convection	SW-IR																
110 °C	900	180																
135 °C	600	60																
150 °C	180	30																
180 °C	20	10																
Wt% Solids	60%																	
Viscosity	10 cP @ 25°C (Brookfield cone/plate)																	
pH	Acidic																	
Specific Gravity	1.07																	
Typical Thickness	2-3 μm																	
Total thickness	Up to 15 mm with multiple coatings; max thickness is substrate and temp. dependent																	
Coverage	80 m ² /kg/μm																	

Performance Data:

Property	Value
Optical Properties	TL improved for coated glass and polycarbonate Haze < 0.2% (10 μm coating)
Surface Abrasion Resistance (ASTM D1044)	ΔHaze <2% (1000 cycles) (Taber 5135, 500 g, CS-10F)
Abrasion Resistance (ASTM 4060)	1.4 mg/1000 cycles 0.15 μm/1000 cycles (Taber 5135, 1 kg, CS-10)
Hardness (ISO 14577-1) (ASTM D3363)	8-9H (Pencil) on glass/metal 3-5H (Pencil) on plastics 100-115 (MicroVickers) 375-425 MPa (Martens)
Cross-hatch Adhesion (ASTM D3359)	4-5B
Corrosion Resistance (Acid Bubble Test)	>250 hr/μm - 1M HCl (continuous exposure)
Thermal Cycling	Pass 100 cycl. 25°C - 125°C
Chemical Resistance (ASTM D5402)	Pass - MEK, Toluene, 100 double rubs Methanol, Butyl acetate, Hexane, Windex, 1M HCl, 1M H ₂ SO ₄ , 1M KOH
Dielectric Breakdown Strength	140 V/μm @ 20°C DBV ≈ 3kV @ 20 μm thickness

Selected ANSI 61 compliant water extraction test data
(ND - not detected)

Parameters:	Amount	Unit
Heavy Metals (HMS): Zn - US EPA limit is 5 mg/L	0.023	mg/L
Other HMS: As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mo, Ni, Se, Ag, Tl, V, Hg	ND	mg/L
Halogenated compounds (chloroform etc.)	ND	μg/L
Phthalates	ND	μg/L
Toxic solvents (benzene, pyridine etc.)	ND	μg/L
Gasoline, diesel, motor oil	ND	mg/L



Abrasion comparison: AdvenShield coated and uncoated Polycarbonate after ASTM D1044 test.