



ElectroFin[®] heat transfer coatings



TECHNICAL DATA SHEET

GENERAL DESCRIPTION
– SUBJECT TO CHANGES OR DEVIATIONS

EFINSM Pro ShieldTM 7 ElectroFin[®] E-coat + Insitu[®] Topcoat

PRODUCT DESCRIPTION

The EFINSM Pro ShieldTM 7 program provides a two-level coating system including ElectroFin[®] E-coat + Insitu[®] UV Topcoat. ElectroFin[®] E-coat, a water-based, flexible cationic epoxy polymer E-coat, and Insitu[®] UV Topcoat, a water based/water reducible synthetic flexible polymer UV Topcoat. This coating combination provides the best UV and corrosion protection level for RTPF (Round Tube Plate Fin) and Microchannel Heat Exchangers (MCHX) that Modine offers.

SPECIFICATIONS

The heat exchangers will have a flexible cationic ElectroFin[®] E-coat uniformly applied to all metallic surfaces with no material bridging between fins. The process shall ensure complete HX encapsulation of all conductive surfaces with uniform dry film thickness from 1.2-2.4 mils. ElectroFin[®] E-coat meets 5B rating for cross-hatch adhesion per ASTM D3359. Corrosion durability was confirmed through testing to no less than 15,000 hours salt spray resistance per ASTM B117 using scribed aluminum test coupons. After E-coat curing, the Heat Exchangers shall receive Insitu[®] UV Topcoat, a spray-applied, Water Based multi-resin Synthetic Flexible Polymer Topcoat to prevent UV degradation of the ElectroFin[®] E-coat film. The Insitu[®] Topcoat shall have a 60 degree gloss (>75) and a dry film thickness of 1.2-2.4 mils (15 - 30µm). Color options are available for Insitu[®] Topcoat.

EFINSM PRO-SHIELDTM 7 TECHNICAL PROPERTIES

PROPERTY	TEST METHOD	PERFORMANCE
Salt Spray	ASTM B117	15,000 hours
Pencil Hardness	ASTM D3363	2H/HB
Cross Hatch Adhesion	ASTM D3359	5B
Humidity	ASTM D2247	1000 hours
UV Resistance	ASTM D4587	1000 hours
UV Resistance	ASTM G155	2000
SWAAT Corrosion	ASTM G85-A3	>3000 hours
Dry Film Thickness	ASTM D7091	1.2 -2.4 mils
Direct Impact	ASTM D2794	Pass 160#
Mandrel Bend	ASTM D522M	Pass 1/4"
C5-I Saturated Condensation	ISO 6270	Pass CX
C5-I Salt Spray	ISO 7523	Pass CX
C5-I Chemical Resistance	ISO 282121	Pass CX

EFINSM PRO-SHIELDTM 7 VS. OTHER HX COATINGS

	ELECTROFIN [®] E-COAT	DIP PHENOLICS	ELASTOMERICS	OTHER E-COATS
Application Method	Complete Immersion Cathodic Deposition	Manual Dip or Flow	Manual Dip or Flow	Anodic or Cathodic Deposition
Flexibility	Excellent	Poor – Good	Excellent	Good
Coating Uniformity	Computer controlled Consistent (0.5-1.2 mils)	Manual Inconsistent (2-6 mils)	Manual Inconsistent (2-6 mils)	Inconsistent (0.4-1.5 mils)
Coating Penetration	Computer controlled Consistent	Uncontrolled/Potentially Inconsistent	Uncontrolled/Potentially Inconsistent	Inconsistent to Bare Metal
Bridging	None – up to 30 fpi & 16 rows	Limited to 16 fpi with some bridging	Limited to 14 fpi with some bridging	Limited to 14 fpi with some bridging
Thermal Loss	< 1%	2% – 6%	2% – 6%	1% – 4%

EFINSM PRO-SHIELDTM 7: INSITU[®] TOPCOAT TECHNICAL PROPERTIES

PROPERTY	TEST METHOD	PERFORMANCE
Salt Spray	ASTM B117	See Note 1. Below
Pencil Hardness	ASTM D3363	HB
Cross Hatch Adhesion	ASTM D3359	5B
Humidity	ASTM D2247	500 hours minimum
UV Resistance	ASTM G155	2000 hours minimum
Mandrel Bend (Flexibility)	ASTM D522M	Pass 1/4"

NOTE 1:

EFINSM Pro ShieldTM Insitu[®] Topcoat has been ASTM B117 Salt Spray tested to 2,000+ hours on Heat Exchangers and 15,000+ hours on aluminum test coupons.

APPLICATIONS SUITED FOR EFINSM PRO SHIELDTM 7: ELECTROFIN[®] E-COAT + INSITU[®] TOPCOAT

RTPF and Microchannel Heat Exchangers in coastal and industrial applications that require moderate corrosion and UV protection.