

# The Effects of Substrate Thickness, Substrate Composition, and Steel Reinforcement on the Adhesion of Navy Formula 150 and Formula 1110 Epoxy-Polyamide Coatings

Eugene Marinelli  
Upper Darby High School  
Naval Surface Warfare Center Carderock Division  
Materials Process and Engineering Branch - Code 622  
Advisor: Jeffrey Duckworth

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## **Abstract**

In the coating of naval vessels, adhesion, the stress required to pull a coating from a substrate, is important in assessing the performance of a coating. The objective of this research was to determine the effects of substrate thickness, substrate composition, and steel reinforcement on the adhesion of Navy Formula 150 and Formula 1110 epoxy-polyamide coatings. Using ASTM test method D-4541 with a PATTI adhesion tester, the adhesion of these coatings to steel and aluminum substrates with varying thicknesses was measured. Adhesion was greater with steel substrates and reinforced substrates, and it correlated to greater profile and thicker substrates. Little difference was observed between the adhesion of each coating. The results of this research will increase understanding of the effects of substrate thickness and composition on coating adhesion and contribute to the development of a more accurate method of testing ship coating adhesion in the field.