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Determination of fuel and water resistance of coating systems according to the Military Specification MIL-C-4556E

Bradechem ISO9001 Registered Firm

Task

Determination of fuel and water resistance of coating systems according to the Military Speciation MIL-C-4556E.

Samples

Paint steel panels with the following coating systems applied;

BC EA4 2217 Primer 2 x 100µm
BC EA4 2217 Epoxy Coating – Aviation 1 x 100µm
Total Dry Film Thickness 300µm

And

BC EA4 2217 Primer 75 - 100µm
BC EA4 2217 Epoxy Coating – Aviation 75 - 100µm
Total Dry Film Thickness 150 - 200µm

The size of the panels was 100mm x 200mm and 3 panels of each system were tested.

Performance of the Task

The panels were immersed in glass jars containing equal amount of fuel Jet A-1 and distilled water. The jars were sealed and placed in water bath maintained at 51-53°C for 21 days. At the end of the test periods the panels were removed and examined for softening and other defects. Then the panels were allowed to dry for 24 hours and then evaluated according to standard ASTM D 3359, method B.

Results

The results are giving in table 1

Table 1. Evaluating of paint systems tested according to Military Specification MIL-C-4556E.

Paint System	Panel	Adhesion ASTM D 3359 Method B		Appearance
		Fuel Jet A-1	Distilled Water	
BC EA4 2217 Primer 2 x 100µm	1A	5B	4B	No Defects
BC EA4 2217 Epoxy Coating – Aviation 1 x 100µm	1B	5B	5B	No Defects
Total Dry Film Thickness 300µm	1C	4B	4B	No Defects
BC EA4 2217 Primer 75 - 100µm	2A	4B	4B	No Defects
BC EA4 2217 Epoxy Coating – Aviation 75 - 100µm	2B	4B	4B	No Defects
Total Dry Film Thickness 150 - 200µm	2C	4B	4B	No Defects

According to the requirements given in MIL-C-4556E, there shall be no sign of softening or loss of adhesion after the test. The adhesion of the coating shall having a rating of 3B or higher when evaluated according to ASTM D 3359, METHOD B.

ACCORDING TO THE RESULTS ACHIEVED, THE TEST PAINT SYSTEMS FULFILL THE REQUIREMENTS GIVEN IN THE MILITARY SPECIFICATION MIL-C-4556E.