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Adhesion of PRECIDIUM™ Rail Floor to Phenolic Composite Panels

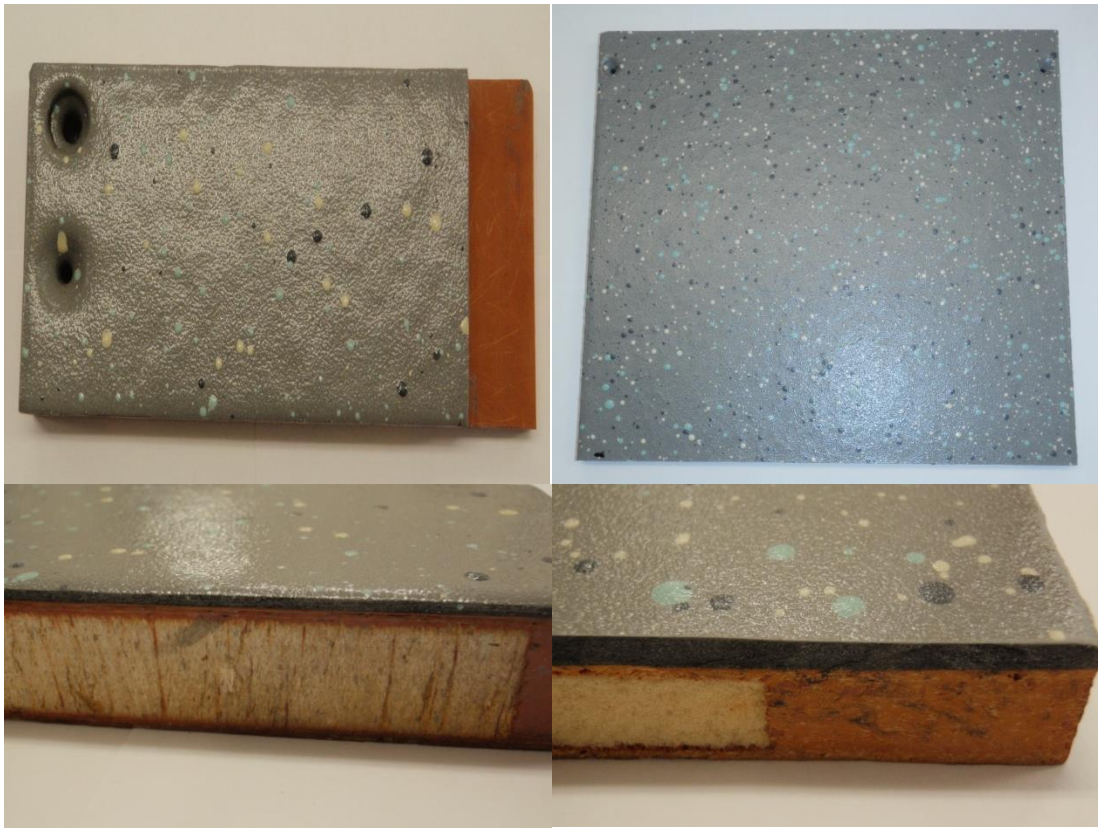
Objective

A request was made for adhesion data for the **PRECIDIUM™ Rail Floor System** on phenolic composite panels.

Sample Preparation

Two pre-existing samples on phenolic panels were tested. Both panels had been primed with **PRECIDIUM™ Rail Floor Primer** and sprayed with **PRECIDIUM™ Rail Floor FR Membrane**. The base coat was a medium grey, with charcoal, blue and beige accents. Both were top coated with **PRECIDIUM™ Rail Floor Topcoat NS-100**.

The panels were both phenolic composites, but two different styles. 'Panel A' was a 3/4" shiplap panel and 'Panel B' a 7/16" normal panel. Top and side views of Panel A are shown on the left, Panel B on the right, in the photos below.



15 Riel Drive, St. Albert, AB, Canada T8N 3Z2 • Telephone: 780.458.3355 • Fax: 780.458.2852
Toll Free: 1.877.454.9166 • www.quantumchemical.com

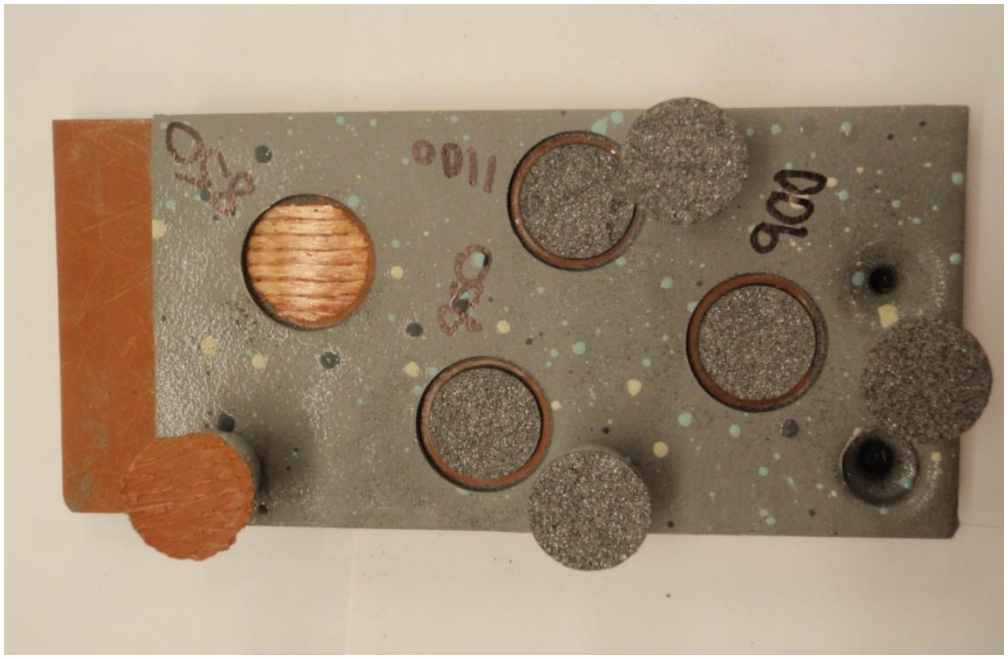
Test Procedure

In order to ensure adhesion of the test dollies, the panel surface and bottoms of dollies were scuffed with a ScotchBrite Pad and solvent wiped with MEK. Loctite Hysol E-20HP Epoxy Adhesive was used to attach the dollies. After curing, the panels were cut to the substrate around the dollies, at which point the panels were ready for testing. A PosiTest AT-CM Pull-Off Adhesion Tester was used to pull the dollies until failure.

Results

Due to size restrictions, only four dollies fit on Panel A. Six dollies were placed at random on Panel B. The results are summarized in the table below, followed by pictures of the failures.

	Panel A		**Panel B**	
	(psi)	Failure	(psi)	Failure
Dolly #1	850	Primer	400	Panel
Dolly #2	850	Membrane	400	Panel
Dolly #3	1100	Membrane	500	Panel
Dolly #4	900	Membrane	700	Panel
Dolly #5			500	Panel
Dolly #6			525	Panel
Average	925		504	



Above: Panel 'A' after testing

Below: Panel 'B' after testing

Above left to right: Panel failure on A, membrane failure on A, panel failure on B

Conclusions

The results show excellent adhesion to both of the panels, but also illustrate the difference between types of phenolic panels. Panel B had an average of 504 psi, just over half of Panel A's 925 psi, but this can be misleading as every failure for Panel B was the panel itself. The close-up picture shows the panel surface being pulled cleanly off of the random fiberglass structure beneath it. Panel A only had one panel failure, with the rest coming from the membrane exceeding its tensile strength, indicating the panel was much more resilient. It is evident from this that the structure and type of phenolic panel will play a large role in the adhesion numbers obtained.

As the adhesion of the **PRECIDIUM™ Rail Floor** was close to or greater than the cohesion of the panels themselves, these results show the system as being very suitable for use on phenolic composite substrates.