



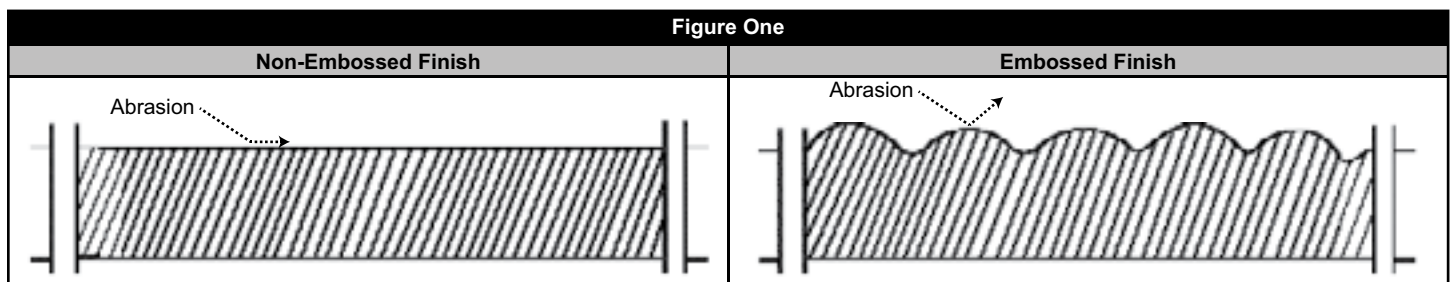
FRP Embossed Finish vs. Non-Embossed Finish Performance Review

PRODUCT

Crane Composites fiberglass reinforced plastic (FRP), also referred to as glass reinforced plastic (GRP), wall and ceiling panels have an embossed finish. Crane Composites also has non-embossed FRP products. The embossed product has been used for over 30 years worldwide and has a proven superior performance history for abrasion resistance and cleanability over non-embossed FRP. While Crane Composites can provide either finish for application, we believe an embossed finish will best serve the customer.

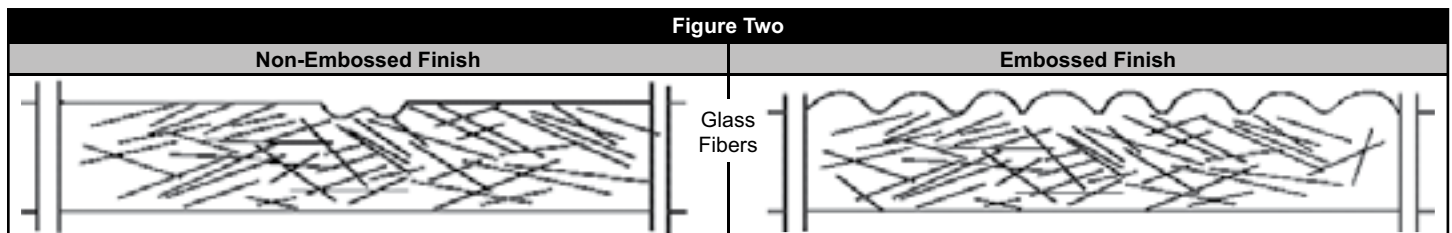
MORE ABRASION RESISTANCE

An embossed finish has several advantages over a non-embossed finish in regards to abrasion resistance. Each "bump" on the surface face is solid resin mix. Any abrasion sustained by the panel is concentrated on the surface of the "bumps". On a non-embossed surface, the entire face of the panel is exposed and susceptible to the abrading action (figure 1). Therefore, more of the actual panel is abraded, leaving room for bacteria growth and stains. Additionally, an abrasion will also be more obvious on a non-embossed finished panel than on an embossed panel.



LONGER WEARING

An embossed finish is substantially better at preventing glass fiber "breakout" because the fibers are buried well below the wear surface, whereas on a non-embossed finished panel, the fibers are closer to the surface. When a non-embossed panel is abraded, these surface fibers are exposed. Once exposed, microorganisms and liquids can penetrate deep into the panel by a "wicking" action along the glass fibers, giving the panel a permanent dirty appearance and reducing sanitation (figure 2). As a result, embossed panels remain sanitary and easier to clean longer than non-embossed finished panels.



CLEANABILITY TESTING

MIRINZ, an independent laboratory in New Zealand, performed a study at a meat slaughtering plant. Embossed wall panels were located next to stainless steel and melamine plastic wall panels in several key splash and abrasion areas. Each panel was exposed at eye-level, waist-level and knee-level to dirt, blood, excrement and various animal products. The test samples were cleaned together using the same methods and materials. Each day, for 30 days, in addition to being inspected for physical deterioration, the panel was monitored by microbiological analysis along with the stainless steel and smooth plastic panels.

The conclusions of the MIRINZ testing were:

- **Physical Deterioration:** "The panels were found to be clean and unstained at all times during the trial and did not show signs of visible damage."
- **Microbiological Hygiene Adequacy:** "Over the 4-week period, bacterial counts at all levels (eye, waist and knee) were generally within the MIRINZ guidelines and found to be no higher in bacteria counts than that of the existing cladding, stainless steel and melamine plastic panels."
- **Conclusions:** "Hygiene adequacy of Crane Composites installed at the three site monitors over the four week period was found to be within the MIRINZ guideline, and to be no worse than that of the existing cladding. On sites contaminated by dirt and blood splash, the increase in bacteria numbers generally during the day was greater on the existing claddings than on Crane Composites."

Full report details are available from Crane Composites, Inc.

Embossed panels have been tested to be as cleanable as non-embossed panels and maintain an acceptable appearance longer than non-embossed panels. With over 30 years of proven performance, Crane Composites strongly supports the use of embossed finished panels over non-embossed panels for years of cleanable, durable, and sanitary life.

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Crane Composites is the manufacturer of Glasbord, Sequentia, Sanigrad II and a variety of other fiberglass reinforced plastic (FRP) composite wall panels. Inspired by the Kemlite tradition, Crane Composites has over 55 years of experience in Commercial Building Products and is a recognized industry leader in FRP applications.