

Verification Certificate

To: David Palermo
From: John Crawford
Date: November 10, 2008
Re: Verification of Capability of LSC-GenV

This memo summarizes the findings of Mr. John Crawford of Karagozian & Case (K&C) concerning the verification of the performance, capability, and value of LSC-GenV LSC(V)-100 polymer panels in providing protection from potential glazing debris that might be generated from a blast loading.

1. Description of LSC Polymer Panels

Life Shield Clear (LSC) polymer panels may be manufactured using several different formulations, in particularly GenI, GenII, GenIV, and GenV formulations for panels have been manufactured and tested. Herein, I have focused on the capability of the LSC-Gen V panel.

The LSC-GenV panel is constructed as a clear polymer. The 100 mil LSC GenV panel, can be combined with different layers of Mylar. Of particular interest is the response behaviors provided by such a panel, and the performance delivered by this 2-layer composite in preventing glass debris from entering a building. The composite panel offers enhanced features over panels of these materials by themselves independent of blast loading, in terms of maintenance and aesthetics and has shown its effectiveness in resisting blast loads in both test and analysis.

2. Findings

These findings are documented in two K&C reports (TR-08-32.1, published November 10, 2008 and TR-08-32) entitled "Results from Tests of Life Shield®" that comprehensively documents the capability and performance of LSC panels that were observed:

- In five blast tests conducted by the US Government.
- In a series of tensile and tear tests conducted in the laboratory.
- In several installations where its workability and install ability were documented.

These test results and the installation experiences have amply demonstrated the value of the LSC(V)-100 polymer panels in reducing the risks from window debris generated by a blast load.

3. Capability

The general capability of a LSC(V)-100 panel may be estimated from the response curves shown in Figures 1 to 3, which show the estimated capabilities for an LSC-GenV panel for different window sizes and blast loads. In general, the range is from 150 psi and 150 psi-ms to 250 psi and 350 psi-ms.

4. Recommendations

Based on K&C findings (TR-08-32.1), I can recommend the LSC-GenV polymer panels for use as a protection product for windows for a wide class of risks related to blast generated glazing debris. LSC panels provide an effective means to strengthen glazing systems against blast.

5. Restrictions/Limitations

The applicability of the LSC-GenV panels for any particular protection are solely conditional on the appropriated selection of a panel for a particular site and the engineering design of an appropriate attachment and anchoring system for the panel to accommodate the strength and capacity demands engendered by the blast at a specific site.

No analysis was performed on the weathering characteristics or manufacturing capabilities of the product from Security Coating Systems.

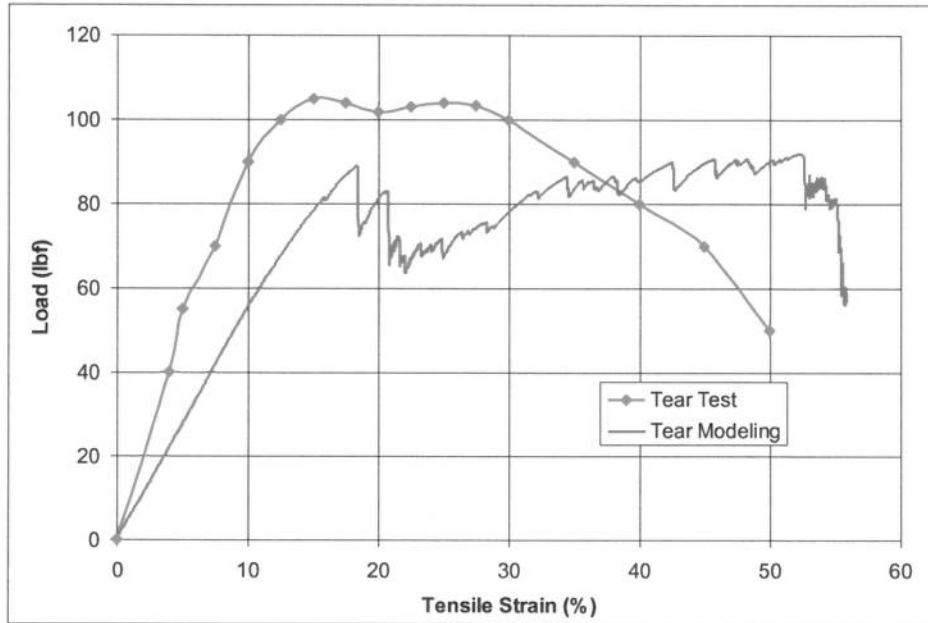
6. Summary

The Sherwin-Williams Life Shield Clear Generation V panel when used appropriately provides an outstanding means for enhancing blast protection from glazing debris.

Sincerely,



John E. Crawford
President
Karagozian & Case



(b) Results: Comparison between test and modeling results.

Figure 2. Simulation on Tear Test (Continued).

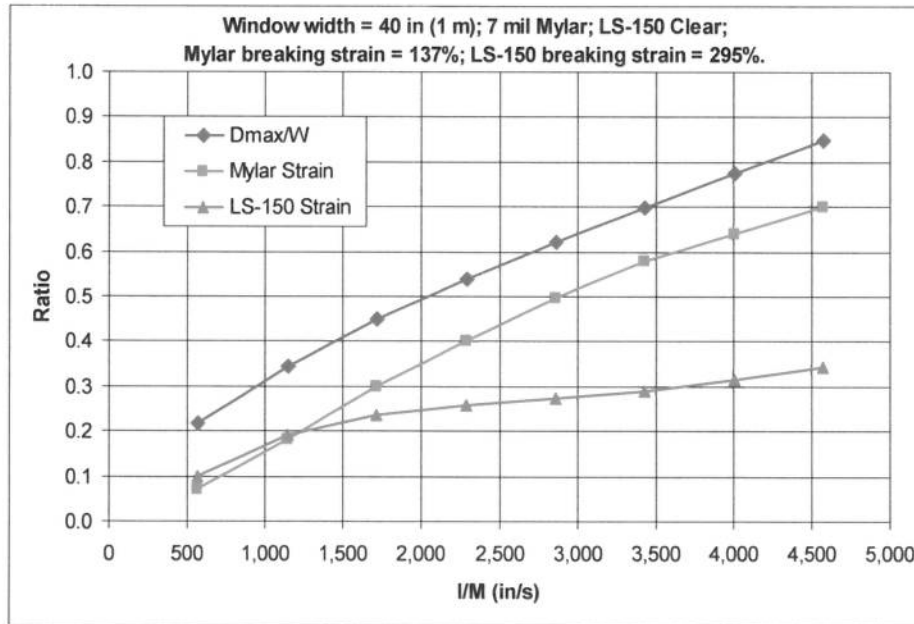


Figure 3. Design curves related to deflection and plastic strain limits for composite panels composed of LSC-150 and 7 mil Mylar.

- *Gen V has higher strength and larger breaking strain.*

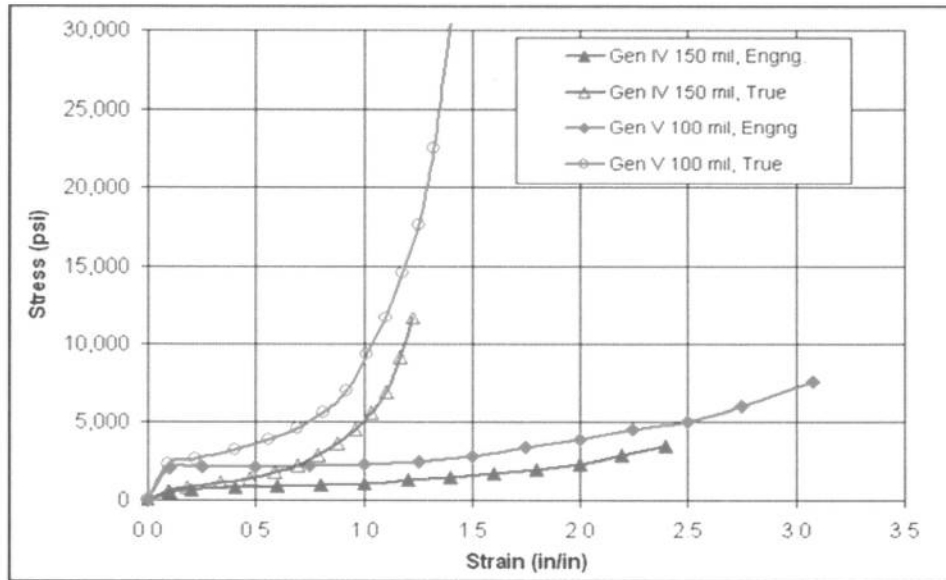
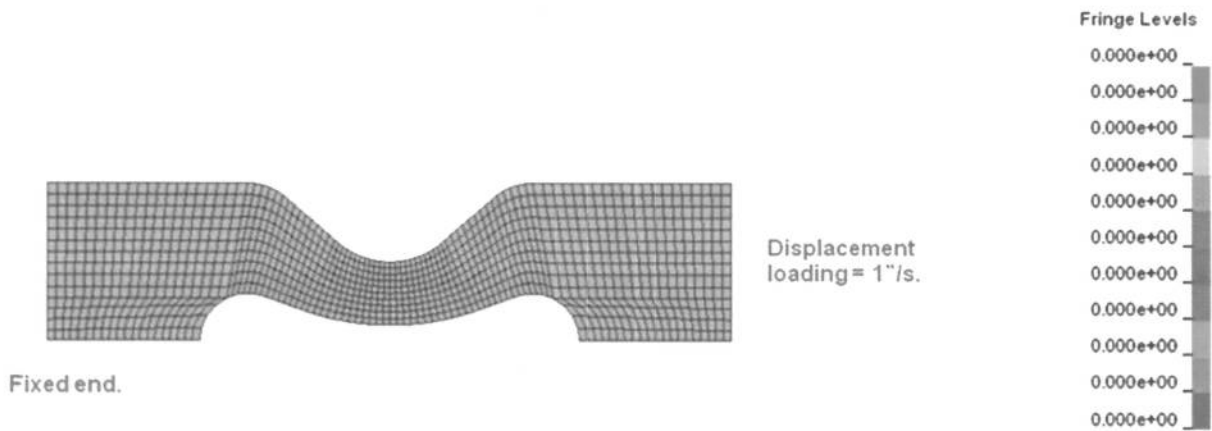


Figure 1. Material response data for composite panels composed of LSC(V)-100 and LSC(IV)-150.



(a) Model: Specimen ASTM D624 Die B (ISO/34 Configuration).

Figure 3. Simulation on Tear Test.