



RE: Effect of ULC-500 on resiliency of Floor Coatings

Cordova, November 18, 2019

To whom it may concern:

The attached testing form was a test performed on small scale simulated concrete slabs for resiliency and the affects of adding a resilient layer of Stauf ULC 500 and epoxy coating. All 3 tests were performed independently and comparitively with the results being published in this report.

These tests were performed on like acclimated and assembled test slabs of like material and composition. All samples were approximately 6" x 6" slabs that measured approximatley 1.5" in thickness.

These tests were conducted to see the improved effects of adding the ULC 500 as a resilient coating in the application of the liquid applied floor covering materials. They were compared by evaluating resiliency before applied coatings vs after.

Sample 1 consisted of a plain simulated slab concrete sample.

Sample 2 consisted of a slab concrete sample with epoxy applied in a single coat application

Sample 3 consisted of a slab concrete sample with ULC 500 applied in a single coat and a single coat of Epoxy.

Improvements of sample 2 over 1 showed an 83% increase in resiliency and 3 over 1 were 112% increase in resiliency.

The attached lab results are the actual results from the testing. These tests are just an evaluation of the performance of the coatings only and are in no way representative of exactly what differences one may incur in different installation scenarios. Stauf makes no warranties or guarantees expressed or implied based upon these tests. These tests are evaluations of the Delta improvement over like slabs samples only.

Should you have any questions please feel free to contact Stauf Technical Services at 901-820-0007 at your convenience.

Sincerely

Stauf Technical Services.



TEST REPORT

FOR

Stauf USA LLC

835 Herbert Road
Cordova, TN 38018

Resiliency Testing of Small-Scale Simulated Concrete Slabs

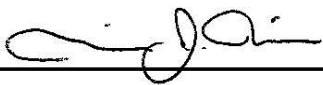
Test Report No: IRT-1901

Assignment No: J-172

Subject Material: Small-Scale Simulated Concrete Slabs – Uncoated and Coated

Test Date: October 8, 2019

Report Date: November 1, 2019

Prepared by:  _____

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Approved by:  _____

Robert J. Menchetti
Director, Laboratory Facilities and Testing Services

The results reported in this document apply to specific specimens submitted for measurement. No responsibility is assumed for the performance of any other specimen. The laboratory's test reports in no way constitutes or implies product certification, approval or endorsement by this laboratory. This report may not be reproduced, except in full, without the written approval of the laboratory.

Revision Summary

| DATE | SUMMARY |
|------------------|--|
| November 1, 2019 | Original issue date. Original NGCTS report IRT-1901. |
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Introduction

NGC Testing Services (NGCTS) was contracted by Stauf USA LLC (Stauf) to compare the impact “resiliency” of three different small-scale, simulated concrete slab samples – (1) uncoated and (2) coated.

The small-scale, simulated concrete slab samples were received by NGCTS personnel directly from the client. Upon receipt, the samples were placed in a conditioned environment ($73.4 \pm 5^{\circ}\text{F}$ and $50 \pm 5\%$ relative humidity), where they remained until tested. The resiliency testing was conducted by the engineering staff of NGCTS on October 8, 2019.

Test Samples

Duplicate samples for each different type of small-scale, simulated concrete slabs were provided for testing by Stauf. The uncoated samples were identified by the client as “Sample 1”, while the two sets of coated samples were identified by the client as “Sample 2” and “Sample 3”, respectively. The coating on the sets of samples for both Sample 2 and Sample 3 was gray-colored and had a smooth, glossy finish. All of the submitted concrete slab samples all measured nominally 6 in. x 6 in. x 1.5 in. in size with nominal densities ranging from 137 to 146 lbs/ft³.

Test Procedure

The test procedure utilized for the impact resiliency testing was as follows:

Two samples of each small-scale simulated concrete slab type were tested for impact resiliency. For the testing, a 5/8” diameter steel ball, weighing nominally 16.3 grams, was dropped from a height of 2 ft. onto the concrete slab sample. The steel ball was dropped onto the concrete slab sample’s approximate center from a platform positioned directly above the sample. The height of the resulting rebound of the steel ball off the sample was measured and recorded. Three drops onto each simulated concrete slab sample was performed and the resulting heights were averaged to determine the impact “resiliency” of the sample.

Test Results

Resiliency testing of the small-scale, simulated concrete slab samples was performed in accordance with the previously outlined test procedure. The results of the impact resiliency tests for the two uncoated (Sample 1) and four coated (Samples 2 & 3) samples were as follows:

| Sample ID | Rebound Height (in.) | | | |
|------------------------------------|----------------------|--------|--------|-------------|
| | Drop 1 | Drop 2 | Drop 3 | Avg. |
| Uncoated Concrete: Sample 1A | 1.75 | 2.13 | 2.25 | 2.04 |
| Uncoated Concrete: Sample 1B | 2.75 | 2.50 | 3.13 | 2.79 |
| Uncoated Concrete: Sample 1 | - | - | - | 2.42 |
| Coated Concrete: Sample 2A | 4.50 | 4.38 | 4.50 | 4.46 |
| Coated Concrete: Sample 2B | 4.25 | 3.88 | 4.63 | 4.25 |
| Coated Concrete: Sample 2 | - | - | - | 4.36 |
| Coated Concrete: Sample 3A | 5.50 | 5.19 | 4.88 | 5.20 |
| Coated Concrete: Sample 3B | 5.13 | 4.63 | 5.50 | 5.08 |
| Coated Concrete: Sample 3 | - | - | - | 5.14 |

Table 1 – Resiliency Test Results

Conclusion

Based on the above test results, the coating(s) applied to the small-scale simulated concrete slab samples (Sample 2 and Sample 3) significantly increased the slabs' impact "resiliency" as compared to the uncoated concrete slab samples (Sample 1). Compared to the Sample 1 uncoated concrete slab samples, the recorded rebound heights of the dropped steel ball increased by 80% for the Sample 2 coated concrete slab samples, while the increase was 112% for the Sample 3 coated concrete slab samples.