

Private Hangar

Hangar
Martin State Airport
Baltimore, MD 21220

Baltimore, MD

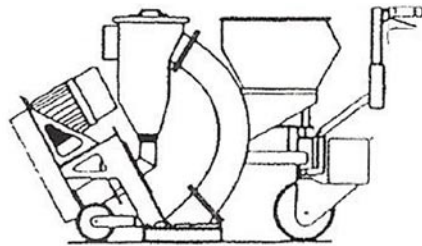
Hangar Floor
Case History

PRIVATE HANGAR



Hangar Floor Project started/ Shot Blasting started

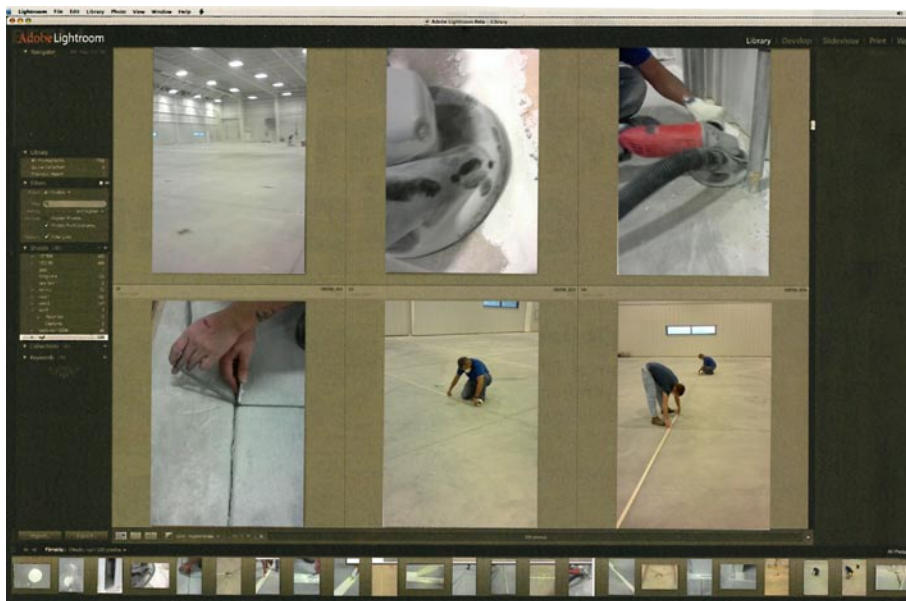
The case history below displays work at a private hangar in Baltimore, MD (where the company has asked us not to reference their name for security and confidentiality of aircraft ownership). Reading this, if you are an aviation professional and would like to contact the company and talk with them direct, please call 800.749.5827. We will ask them for permission to release contact information, or put you in contact with BASCON (the general contractor).



Shot Blast Equipment



BASCON INC. is a design and construction company with more than 20 years of experience in aviation, industrial and commercial industries. At home and abroad, BASCON transforms the toughest construction challenges into practical models of innovative design and engineering. It is simply what they do best.



These photographs show the concrete restoration (hand grinding hangar side walls and the taping/placing of backer rod).

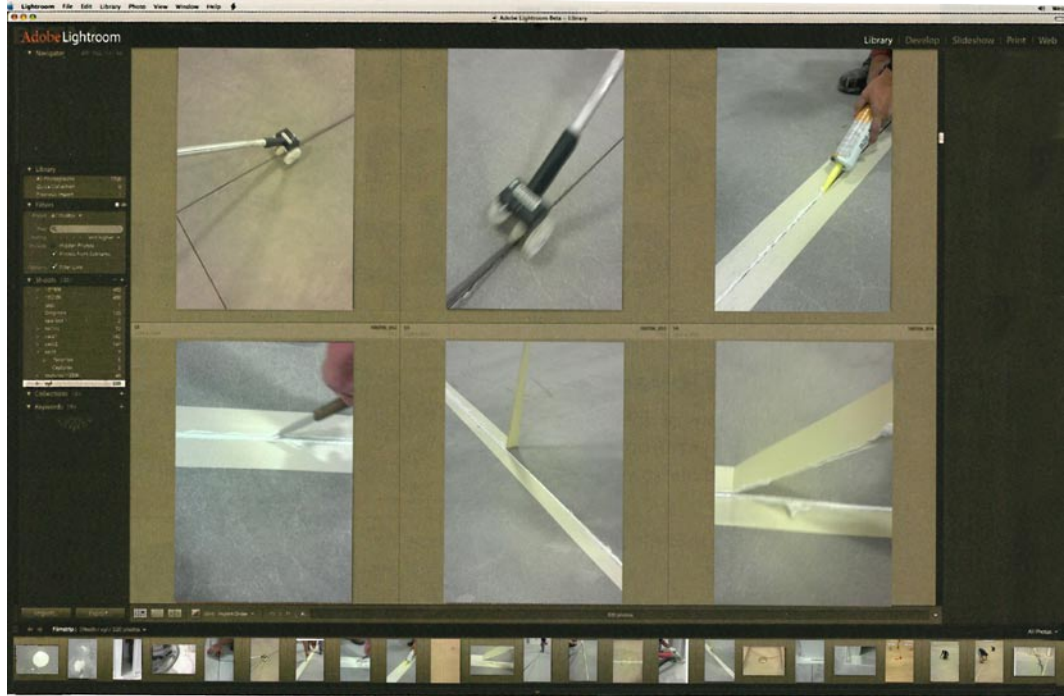
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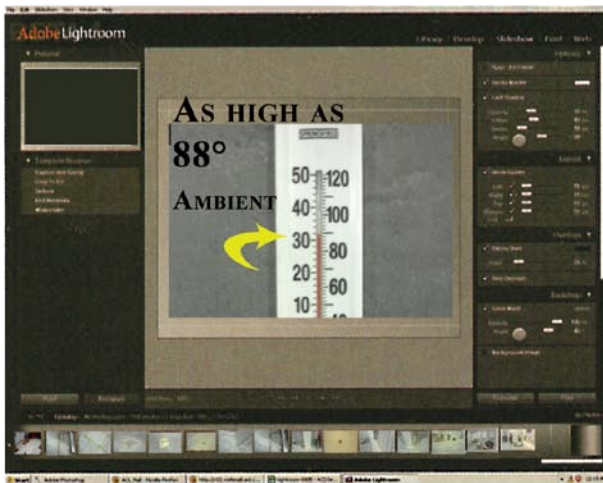
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On completion of the shot blasting, the control joints were caulked with a low durometer elastomeric single component urethane (after diamond recutting, cleaning and placing of backer rod).

GENERAL CONDITIONS



With new radiant heat working well, hangar temperatures were good!

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Were there any unique problems? Yes. The original concrete sub-contractor defaulted and the concrete was spalled, broken out, uneven, and required considerable concrete restoration (mainly around the three walls and footings).



These photographs show the pouring of E31-1202 (100% Solids Epoxy in an effort to fill the low, spalled, cracked and uneven areas).

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E31-1202-64 Epoxy Primer Started/Applied



E31-1202 being squeegeed and back rolled (100% Solids Epoxy Overlayment).

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Preparation (power sanding, vacuuming and solvent wiping) prior to the 2nd Application of E32-1202



REDFORD Corporation **Epoxy Coating E31-1202**

1075 Kingwood Drive • Kingwood, Texas 77339 • (281) 358-4100

HANDLING	
Mix ratio	2:1 (A:B) parts by volume
Mixed viscosity	700 cps
Potlife (no sand)	20 minutes (200 grams @ 25 °C)
Color	Clear, grey, beige, and white
Coverage	Variable - approximately 50 sq. ft. @ 1/8"

TECHNICAL INFORMATION	
Ultimate tensile strength (psi)	8700
Tensile elongation (%)	3.1
Ultimate flexural strength (psi)	16,300
Compressive yield strength (psi)	13,800
Hardness (Shore D)	88

DESCRIPTION
E31-1202 is a low viscosity, water-clear, or pigmented, 100% solids epoxy specifically designed as a high performance color coating for areas where no residual moisture exists. Outstanding features include:

- ✓ excellent ultraviolet light resistance compared to most formulated epoxies
- ✓ corrosion
- ✓ excellent chemical resistance
- ✓ overnight set-up reducing down-time during application
- ✓ good color development
- ✓ high abrasion resistance
- ✓ excellent adhesion

AVAILABILITY
Packaged in three gallon units, six gallon units, 15 gallon units, and drum units. For more information, including prices, call REDFORD Corporation (281) 358-4100.

APPLICATION
If needed, special technical bulletins customized to your application will be prepared, including Preparation of concrete specifications for application of epoxies and Using epoxies for overlays.

CAUTIONARY INFORMATION
Prohibit fresh air ventilation is necessary. In confined areas, use fresh air supplied hood. It will oxidize in open areas, use a chemical container from manufacturer or seal them in accordance with OSHA standards for the specific organic and other components. Prohibit fire and open flame during and overnight. Avoid prolonged breathing of vapors and mist. Keep away from heat, sparks, and open flame. Wash hands thoroughly after using and before eating or drinking. If handled as instructed, it is non-toxic, do not induce vomiting. Drink 1 to 2 glasses of water and call physician or poison control center immediately.

Start of the 2nd Application of E31-1202



REDFORD Corporation **Epoxy Coating E31-1202**

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Applying 100% solids epoxy coatings

Surface preparation
The surface to be coated should be clean, free of old coating, acid etched, sanded, or portable vacuum blasted. Request specific information or a site inspection report if you have any questions regarding surface preparation.

Mixing the epoxy
Pour the contents of the Part B Hardener container into the Part A Resin container (2 parts A to 1 part B). It is extremely important that these two parts are thoroughly mixed to ensure proper chemical cross-linking of the coating. When mixing, be sure the material does not just "swirl in a circle". Mixing beads on electric drills are helpful. Scraping the sides of the can is also recommended. Mix a minimum of two minutes, timed by a clock.

Induction time
E31-1202, particularly formulations with color, should stand for a few minutes after mixing to improve their various characteristics. This is called an induction time. Check with REDFORD Corporation regarding any particular material.

Application of the epoxy
Most REDFORD Corporation 100% solids epoxies are rolled. Occasionally spraying techniques are used, but thinning should be limited to 5%. Squeegees and trowels can be useful, particularly when using clear materials. Please note four points of caution:

1. Most epoxies should not be applied to surfaces below 50-9°F. Cold temperatures slow down the epoxy chemical reactions.
2. Be sure the surface is dry unless you are using a moisture-tolerant epoxy which can cure in the presence of moisture. Also watch for moisture that can settle on the epoxy as it is curing. This is particularly important on outside applications.
3. "Potlife" is the time you have to work with the epoxy. Temperature effects the length of potlife. Materials stored in warm closets or allowed to stand in the sun will react faster than materials stored in cooler locations.
4. Many epoxy coatings, when exposed to moisture while curing, will produce a "blush". This is a thin waxy coating that is produced on the cured surface of the epoxy coating. This effect is often mistaken for an uncured epoxy because the surface still feels tacky. This waxy substance is actually a harmless material called an amine carbonates. It is produced from a combination of the amine in the hardener and moisture and carbon dioxide in the air. Amine carbonates are easily removed with the use of soap and water. Removing the amine carbonates is necessary if recoating is to be done.

Cleanup
Epoxy thinners such as xylene are not effective. Other solvents such as toluene, MEK, or acetone may be used. If the epoxy has hardened, an epoxy stripper must be used.

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Two U31-1201 High Performance Urethane topcoats applied - Hangar is Ready for Heavy Aircraft.

REDFORD Corporation U31-1201 Linear (Aliphatic) Urethane
8077 Kingswood Drive • Kingswood, Texas 77339 • (281) 358-4300

Recommended for:
Asphalt hangars, industrial concrete floors

Scale by weight:
Clear (mixed) 64% V-2
Clear (mixed) 67% V-2

VOC:
Part A clear 3.43 lb/gal
Part A solvent 1.41 lb/gal
Part B 2.2 lb/ gal

Theoretical coverage per mixed gallon:
300 to 500 square feet per mixed gallon

Colors:
Clear, light gray, dark gray, red, green, blue, brown, and special colors

Finish:
High gloss clear
High gloss color

Recommended film thickness:
3 to 5 mils wet

Mix ratio:
2:1 by volume

Shelf life:
One year

Packaging information:
1 gallon set 2 gal Part A & 1 gal Part B
Part A clear 8.25 lb. per gal.
Part A solvent 3.4 lb. per gal.
Part B 8.8 lb. per gal.
Weights are approximate, mix volume with color.

Chemical resistance:

	Immersion	Spill/soak
Weak acid	excellent	excellent
Strong acid	very good	excellent
Alkal	excellent	excellent
Aromatic solvents	excellent	excellent
Chlorinated solvents	excellent	excellent
Aliphatic solvents	excellent	excellent
Mineral spirits	very good	excellent
Gasoline	excellent	excellent
Brake fluid	excellent	excellent
Hydrofluoric acid	not recommended	excellent

Alcohols Resistance:
Isobutyl Alcohol CS-11 White 100% (ind. 500 cycles long term) 24 mg

Impact Resistance:
Gardner Impact (in. lb.) A, Reverse: 160
B, Direct: 160

Hardness:
Shore D:64

Flexibility:
No cracks on 18" mandrel

Cure Schedule:
Tack free 1 to 5 hours
Recoat 6 to 10 hours
Light traffic 24 hours
Full cure 3 to 5 days
Observe cure times for temperature above 70 °F.

Put Life:
1 to 2 hours, longer at lower temperatures.



REDFORD Corporation U31-1201 Linear Urethane
8077 Kingswood Drive • Kingswood, Texas 77339 • (281) 358-4300

Description:
REDFORD Corporation U31-1201 Linear (aliphatic) urethane is a 2 part, self-healing performance coating on several large concrete floors. Once successful and now ready to receive concrete refinishing or to be performed at least height of all commonly available coating types.

Features and Benefits:

- Available
- Excellent areas, abrasion, and chemical resistance
- Film thick, long term gloss retention
- Maximum light reflection
- Easy to clean
- Excellent odor retention
- Fast cure times to traffic
- Meets VOC regulations of 440 g/liter

Preparation:
The floor must be clean, sound substrate. Dust, oil or other coating will be difficult to cure and may cause delamination. It is often helpful to get a rough profile on the concrete to ensure a good mechanical bond. After blasting with light steel (break blast), use brooming or acid etching to achieve the desired effect. Surface should be washed, degreased and vacuumed.

Application:
Apply with machine mix roller, brush, or spray. If necessary, reduce mix thickness for a single coat application. Mechanical mixing per section 1, use mixing 50/50/50 within 15 minutes of coating application.

Maintenance:
The long term floor preservation and care, we recommend REDFORD Corporation's Seal Coat 1100. Frequency of cleaning will not harm the seal, but do not use abrasives. Wash floor with mild soap, or ammonia. If you use a floor machine, we recommend using brush brushes, especially if you opt for the slip resistant wearing system. Mechanical scrubbers will damage the floor for one hour, by using.

Performance:
Provide best in class performance. In most cases, we test our products in accordance with ASTM standards. Some water penetration resistance, by design and some epoxy resin based, water and stain tests. When tested thoroughly after curing and before being applied to concrete or other substrates, please consult our technical literature.

Typical Properties

Type	High performance polyurethane
Scale by wt	sets
Coverage	350 to 500 sq. ft. per gallon depending on porosity of substrate
Put life	4 to 5 hours at 70°F, longer at lower temperatures
Cure schedule	Tack free 1 to 5 hours Recoat 6 to 10 hours Light traffic 24 hours Full cure 3 to 5 days (Observe cure schedule time for temperature above 70 °F)
Film thickness	Recommended 3 to 5 mils wet
Mix ratio	2:1 by volume
Shelf life	1 year
Gloss	Stainless, High gloss
Colors	Clear, light gray, dark gray, red, green, blue, brown, black, white, etc. Also old color's such as safety yellow

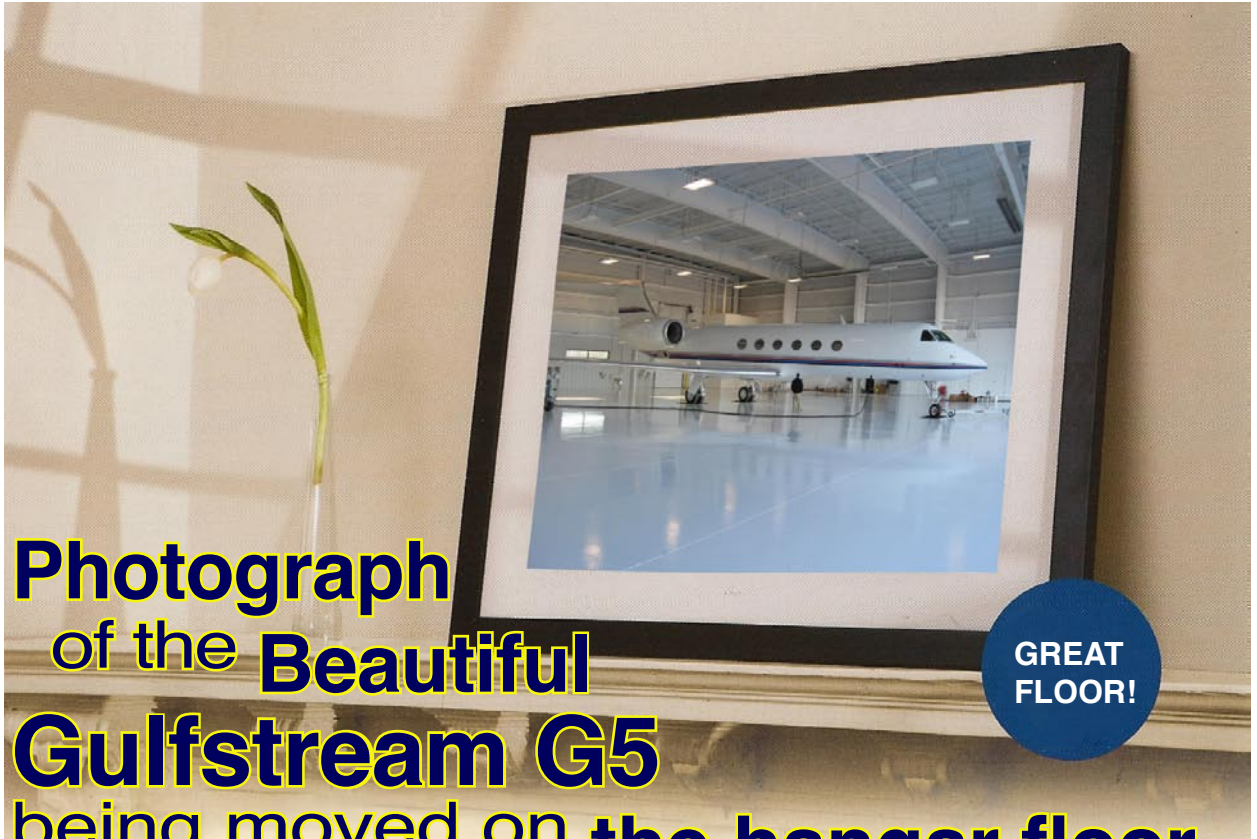
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Photograph of the Beautiful Gulfstream G5 being moved on the hangar floor for the first time(December 2008)!

GREAT FLOOR!

Floor Features and Benefits

- Resistance to Chemical Attack
- Impervious to Oil and Aviation Fuels
- Skydrol Resistance
- Excellent Abrasion Properties
- Stands up Under Impact
- Long Term Gloss and Color Retention
- 300% Increase in Reflectance
- Improved Lighting
- VOC Compliant in all States
- Low Cost - Easy Maintenance
- Attractive Appearance
- Professional Work Environment



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This was the first hangar floor completed for the client in 1993 at the Glen L. Martin State Airport, Baltimore, MD.