



CONCRETE PREPARATION FOR APPLICATION OF GACOFLEX™ COATING SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

NOTE: GACOFLEX COATING SYSTEMS ARE RECOMMENDED ONLY WHEN THE FOLLOWING GUIDE SPECIFICATION PROVISIONS ARE FOLLOWED.

- A. Concrete surfaces to receive GacoFlex coating systems must be properly designed and constructed in order to assure effective installation and long-term performance. This document discusses proper practices relating to placement, curing and drying of structural and lightweight structural concrete. GacoFlex coating systems are engineered to withstand movement in structural concrete surfaces that are caused by deflection and expansion/contraction

NOTE: Lightweight insulating concrete **IS NOT A SUITABLE SUBSTRATE** for GacoFlex coating systems.

- B. In general, properly designed structures, where concrete is under compression, has adequate reinforcement and is properly cured, will have only hairline cracks. When the surface of the concrete slab is under tension, structural cracks can be expected. Controlling the location of cracks by placement of steel reinforcement, saw cuts and expansion/contraction joints allows for proper installation of a joint treatment and an elastomeric coating.
- C. Concrete surfaces designated to receive GacoFlex coating systems must be sloped to freely drain. Adequate drainage will reduce the accumulation of sediments that may cause discoloration, reduce thermal reflectivity or create a foot traffic hazard. Lack of adequate drainage will lead to leaks at low thresholds, puddles, and surface staining for which the manufacturer does not assume responsibility.

NOTE: GacoFlex coating systems cannot be the principal mechanism through which adequate slope for drainage is achieved.

- D. Most concrete surfaces contain a porosity capable of transmitting gases. Gas transmission can cause blisters in elastomeric coatings. The GacoFlex Sealer/Primer System (see GW-2-2, Section 2) functions to close off surface pores and allows for the installation of tight elastomeric films. The GacoFlex Sealer/Primer System (or GacoFlex E5691 Water-Reducible Epoxy Sealer/Primer when appropriate) is recommended for all concrete surfaces and considered essential on lightweight structural concrete as defined under Section 3.

PART 2 – STRUCTURAL CONCRETE

2.1 ACCEPTABLE CONSTRUCTION

- A. Most thin shell shapes are under compression and thus are acceptable. Since planar roofs, flat or sloping, usually include areas under tension, special attention to crack control should be given as described above. Pre-cast panels can impose special problems of differential vertical movement between panels and GacoFlex coating systems should not be specified without consulting with a Gaco Technical Representative. Pre-stressed or-post-tension panels are a suitable substrate.

2.2 VENTILATION

- A. Metal decking used as a concrete form shall be of a 'ventilation type' to relieve water vapor pressure underneath the concrete fill. Concrete slabs used as a ceiling should not be painted or sealed underneath until the slab is dry and accepted by the roofing contractor.

2.3 CONCRETE REQUIREMENTS

- A. **MIX:**
Design and controls, material mixing and placing should follow ASTM-C94. Water-cement ratios should be as low as practicable. An air-entraining admixture may be used to improve workability of the concrete and freeze/thaw resistance.
- B. **FINISHING:**
Finishing should be delayed until the concrete has hardened sufficiently to prevent excess fine material from working to the surface. A slightly sand-textured surface is desired. The end result should be neither slick nor burnished, (which impairs adhesion) nor rough with fins, sharp projections, voids or rock pockets.
- i. **SUGGESTED - FINISHING SPECIFICATIONS OF CONCRETE SECTION:**
Finish shall be steel troweled. The surface shall be uniform without being slick or burnished and shall have a slight sand texture or light broom finish. It shall be free from voids or sharp projections. Voids, rock pockets and excessively rough surfaces shall be finished with a grout or ground to match the unrepaired areas. The grout and bonding agent must be non-staining and the composition approved by the architect for the application. Dusting the surface with Portland Cement or a mixture of sand and cement will not be permitted.
- C. **CURING:**
Minimum of seven (7) day cure time with a maximum moisture content of 6.8 % is recommended to obtain maximum compressive strength. The water cure method is preferable. Since wax, oils, silicones and some resins prevent adhesion and may cause staining of the GacoFlex coating systems, the curing compound recommended for use should be of a vegetable oil type form release agent.
- D. **DRYING:**
The concrete should be completely dry before any stage of installation commences for any Gacoflex Coating Systems. If rain occurs after the drying period and prior to the application of the sealer, allow at least two (2) days of good drying weather before proceeding with installation.
- E. **JOINTS:**
The location and identification of expansion and contraction joints referred to in section 2.1.A. is the responsibility of the architect or engineer. Joints may be made by terminating pours to provide 'cold joints' or by sawing partially cured concrete. In addition to considering stresses expected in areas under tension, consideration should be given to the possibility of cracks at changes in plane or section, as well as over supporting walls or columns. Designed joints establish planes of weakness, which are specially treated with GacoFlex coating systems – refer to application instructions for the specific type of treatment required based on substrate type and compatible GacoFlex coating system selection. Do not use staining joint fillers of the asphaltic or polysulfide sealant type.

PART 3 – LIGHTWEIGHT STRUCTURAL CONCRETE

3.1 ACCEPTABLE CONSTRUCTION

- A. Refer to section 2.1.A.

3.2 VENTILATION

- A. Refer to section 2.2.A.

3.3 CONCRETE REQUIREMENTS

- A. **MIX:**
Refer to section 2.3.A.
- B. **FINISHING:**
Refer to section 2.3.B.
- C. **CURING:**
Refer to section 2.3.C.
- D. **DRYING:**
Lightweight structural concrete tends to absorb excess water that requires additional drying time. After curing, the deck should be allowed to dry four (4) to twelve (12) weeks before coating. If rain occurs after the drying period and prior to the application of the sealer, allow at least two (2) days of good drying weather.
- E. **JOINTS:**
Refer to section 2.3.E.

PART 4 – LIGHTWEIGHT INSULATING CONCRETE FILLS

NOTE: Lightweight insulating concrete utilizes vermiculite or perlite aggregate and therefore **IS NOT A SUITABLE SUBSTRATE** for GacoFlex Pedestrian or Auto Deck Systems.

4.1 ACCEPTABLE CONSTRUCTION

- A. Lightweight structural concrete of adequate thickness and strength, mesh reinforced and provided with expansion and contraction joints, makes an acceptable surface for roofing when placed over a corrugated metal deck, cast-in-place structural concrete or pre-cast concrete slabs. Lightweight structural concrete should be at least 2 in (51 mm) thick. Other substrates being considered should be checked with Gaco.

4.2 VENTILATION

- A. Whenever there is a possibility that decks under lightweight structural concrete will trap water, venting must be provided. GacoFlex coating systems are vapor barriers and can be blistered, as can conventional roofing, by vapor from trapped water. If the interior vapor pressure due to air conditioning or heating will build up against the under-side of the deck, surface venting to relieve the pressure must be considered.

4.3 REQUIREMENTS

A. PHYSICAL PROPERTIES:

Any lightweight structural concrete should have a minimum compressive strength of 1000 psi (6.9 MPa). Water content should be kept as minimal as possible.

B. FINISHING:

After screeding lightweight structural concrete, the finishing should be delayed until the surface is barely workable and then finished with the equivalent of a firm steel troweling. The surface should be smooth and free from voids without excess fine material at the surface.

C. CURING:

Moistening the surface with a water mist or fine spray, two (2) times a day for three (3) days for satisfactory curing in normal weather conditions. In hot, dry, or windy weather, three (3) times a day for three (3) days is recommended.

D. DRYING:

Refer to section 3.3.D.

NOTE: Lightweight structural concrete fills are more sensitive to drying conditions and re-absorption of water. These surfaces should be checked for conditions of excessive moisture content prior to the applications of elastomeric coatings.

E. JOINTS:

The location and identification of expansion and contraction joints referred to in section 2.1.A. is the responsibility of the architect or engineer. Joints may be made by terminating pours to provide 'cold joints' or by sawing partially cured concrete. In addition to considering stresses expected in areas under tension, consideration should be given to the possibility of cracks at changes in plane or section, as well as over supporting walls or columns. Designed joints establish planes of weakness, which are specially treated in the GacoFlex elastomeric liquid applied coating systems. Even though building expansion joints also helps to control cracking, staining joint fillers of the asphaltic and polysulfide sealant type should not be used.

In addition, a concrete fill over metal decks should include designed joints over the end joints of the deck units. There should also be joints at the perimeter of the decks and at other places that are necessary to divide the deck into rectangular sections no greater than 2000 ft² (186 m²) in area with no greater than 50 ft (15.2 m) in its largest linear dimension.