



Coating Gravel BUR Roofs

GENERAL

Gravel covered home roofs are popular in some areas. Customers have requested information to help guide them in converting these roofs to “cool roofs” using reflective coatings. Not all gravel roofs are suitable for conversion, so please read this bulletin carefully before proceeding.

GRAVEL ROOFS

Our experience is that most gravel roofs are 3-ply hot-mopped asphalt built-up, with a gravel finish applied. Pea gravel, crushed rock, and decorative rock (white quartz) are often dispersed into a flood coat of hot asphalt and applied over the top of the roof membrane. This acts as an adhesive when it cools.

(NOTE: Some commercial single-ply roofs are ballasted with gravel—this report does not apply to these.)

GRAVEL ROOF ADVANTAGES

Most gravel roofs are inexpensive to build, offer some protection to vulnerable asphalt against UV damage, and the stones are very durable.

GRAVEL ROOF DISADVANTAGES

On the other hand, gravel roofs are hot, energy inefficient, heavy, moisture-trapping, and unstable. They are typically more difficult to service, as the owner can't see problems developing and must clear the surface entirely to repair. Unprotected asphalt has very poor resistance to weathering.

Gravel becomes very hot in the sun and holds heat (poor emissivity) long after the sun sets. This keeps the roof hot and promotes the loss of the natural asphaltic

oils that are intended to keep the roof pliable. As a result, roof life is reduced.

Loose gravel is washed down the roof's slope during rainstorms, leaving some areas unprotected and subject to UV exposure.

Gravel collects along gravel stops (drip edges) causing more heat and moisture to be directed against the roof surface causing damage over time.

Gravel is heavy and concentrations of gravel can contribute to roof deck deflection (low areas).

As the roof ages, more gravel is released, increasing the displacement effect.

ADVANTAGES TO WHITE COATING

Coating the roof white reduces rooftop temperatures and prolongs roof life through lower temperatures and protective coating.

Cooling costs will decline and roof servicing is much easier.

The overall weight on the roof is reduced, and roof protection can be renewed repeatedly.

WHAT TO AVOID

- Do not apply coating directly over gravel; this is costly and guaranteed to fail.
- Do not apply fabric membrane to a gravel roof; this is costly and guaranteed to fail unless surface has been filled and smoothed.
- Do not apply coating to a badly worn or dried-out roof.
- Avoid applying coating to roofs that

need repairs (fix these first).

- Avoid applying coating to roofs with serious standing water problems.

STEPS

1. **Determine if the roof is a good candidate for coating.** Trying to save a bad roof is expensive and frustrating.
 - a. Is the roof under 10 years old? Older roofs may be too fragile to survive.
 - b. Is the ply sheet still flexible? Locate ply sheet edges at seams and around penetrations; bend side to side to determine flexibility. Roofers may choose to take a core sample. Don't coat roofs with dried out, inflexible ply material.
 - c. Consider the condition of the roof, drainage, cooler or AC leaks, and repairs that may be needed. **Avoid coating problem roofs.**
2. **Decide in advance how to dispose of the gravel removed.**
 - a. Can it be spread around the property or must it be hauled away?
 - b. What will disposal cost?
 - c. Where will gravel be taken off roof and what ground preparations need to be made (i.e., tarp, containers, truck bed)?
3. **Carefully remove all loose gravel without damaging the roof membrane.**
 - a. Use a push broom and coal shovel to remove free gravel.
 - b. Clots of asphalt and gravel are common. Remove as much these as possible without damaging the roof

MORE

ply. Clots can be coated over later.

- c. Gravel roofs will always have some pits and clots that are visible.

4. Pressure wash the roof membrane and repair any problems.

- a. Check all lap seams and repair as necessary. Use *E•las•tek #103 Crack & Joint Sealant* (not plastic roof cement) and fabric to reinforce as necessary.
- b. Caulk all roof penetrations with *Crack & Joint Sealant* (not plastic roof cement). Use fabric to reinforce as necessary.
- c. Replace gravel-stop drip edge with conventional material or gently flatten enough of the high-lip to promote good drainage.

5. Apply two (2) thick coats of asphalt emulsion and allow a week or more to cure.

- a. Emulsion is an inexpensive way to fill-in the many stone pits on the roof's surface while also resealing the membrane. It is cheaper to use than white elastomeric coating.
- b. Use a quality emulsion like *E•las•tek #500 Waterproof Emulsion*.
- c. Apply per emulsion manufacturer's instructions. This is best done in warm weather.

6. Apply at least two coats of appropriate *E•las•tek* coating.

- a. Use either *E•las•tek #100C Solar Mastic™* or *#120 Solar Tek Extreme™*

for durability and long life.

- b. Use *#120 Solar Tek Extreme™* as a first coat where drainage is marginal.
- c. Coat all asphalt surfaces, parapet flashing to above roof attachment or counter flashing, and penetrations to above the sealant line.
- d. Renew coating periodically.

WARRANTY COVERAGE

Due to the variables involved in converting a gravel roof to a reflective roof, only the *E•las•tek Defect in Manufacture Warranty* is available.