

# Firestone LiquiGard™ Adhesive Application Guide

## 1.0 GENERAL

This section of Firestone's Technical Manual provides instructions for the installation of Firestone's Modified Bitumen LiquiGard Adhesive. Reference to the Design Guide, Technical Information Sheets (T.I.S.), and other sections of Firestone's Technical Specifications is necessary to ensure that the finished roof system is installed in compliance with Firestone requirements.

Extended warranties may require special considerations with regards to fasteners, insulations, and flashing, coating, and attachment requirements. Refer to the System Design Guide of this Technical Manual for specific requirements.

*NOTE: IF A PROPOSED APPLICATION FALLS OUTSIDE OF THIS SPECIFICATION, CONTACT FIRESTONE ROOF SOLUTIONS FOR ADDITIONAL INFORMATION.*

## 1.1 JOB SITE CONSIDERATIONS (CAUTION AND WARNINGS)

- A. Keep all adhesives, sealants and cleaning materials away from all ignition sources (i.e., flames, fire, sparks, etc.). Do not smoke while using these materials.
- B. Consult container labels, Material Safety Data Sheets and Technical Information Sheets for specific safety instructions for all products used on the project.
- C. Care must be used when installing fasteners to avoid contact with conduits and other piping concealed in and beneath the deck.
- D. Store Firestone Modified Bitumen rolls on end to protect them from becoming damaged. Do not stack rolls on top of each other.
- E. Insulation must be properly stored and protected from ignition sources, moisture and damage.
- F. Cold weather:
  - 1. When the outside temperature is below 40 °F (4.4 °C), certain combinations of temperature and humidity may cause condensation on the surface of solvent-based adhesives and primers. If this condition occurs, discontinue the application until the ambient temperature reaches 45 °F (7.2 °C) and rising, and condensation no longer occurs.
  - 2. The consistency of sealants, adhesives and primers will thicken as the ambient temperature drops. Membranes stiffen as they cool. To minimize this phenomenon the following procedures are recommended:
    - a. Start work with sealants, adhesives, primers and SBS roll goods that have been stored between 60 °F (15.5 °C) and 80 °F (26.7 °C). Insulated, heated boxes can provide the required minimum storage temperature.
    - b. Complete test areas to determine if conditions will cause problems such as condensation with the application of the material.
    - c. Stop the operation or change to another warm container when material becomes too thick or stiff to mix and apply properly.
  - 3. Do not use heat guns or open flames to dry or cure adhesives and primers. LiquiGard is a chemically curing material that requires no heat to cure.
- G. Follow all OSHA and NRCA provisions for fire protection.

## 2.0 LIQUIGARD ADHESIVE APPLICATION INFORMATION

### 2.1 GENERAL

- A. PRECAUTIONS. Avoid contamination with water or moisture. Keep all pails, cans and jugs tightly closed until ready to use. All equipment, and application substrates must be ABSOLUTELY DRY. Do not apply LiquiGard adhesive in wet weather or when rain is imminent. Do not apply if UltraFlash Adhesive or the substrate to which it will be applied may become wet within four (4) hours of application.
- B. TEMPERATURE. LiquiGard adhesive should be at least 60 °F when mixed and applied. The material may be preheated to facilitate application at low temperatures, but working time will be reduced.
- C. Use LiquiGard adhesive in well ventilated areas. Do not store or use near open flame, sparks or hot surfaces. Keep containers tightly closed. Avoid contact with moisture or water. Keep out of reach of children.
- D. CAUTION. LiquiGard adhesive contains amine compounds and or other chemical ingredients. Adequate health and safety precautions should be observed during storage, handling, application and curing. Refer to Material Safety Data Sheets for specific details regarding the safe use and handling of UltraFlash.

### 2.2 SURFACE PREPARATION

- A. Substrates must be clean and dry with no oils, grease, moisture or loose debris. Some surfaces may require adhesion tests. Contact Firestone Roofing Solutions for details.
- B. Concrete must be minimum 3,000psi compressive strength, and free of release agents and curing compounds.
- C. Steel must have a minimum 3 mil profile.
- D. Wood substrates must be clean, dry and free of paint, and surface contamination.

### 2.3 MIXING - APPLICATION.

- A. Begin mixing each pail with 4 gallon (15.1 L) of LiquiGard Part A using a power mixer with the following characteristics: *½' drill, at least 5 amp and 400-900 rpm.* **Caution**, high speed drill motors can burn out. LiquiGard requires a low speed, high torque motor for proper mixing.
- B. DO NOT THIN. DO NOT HAND MIX. Begin mixing each pail using the power mixer with mud blade. While mixing slowly add in one jug of activator. The two components are pre-measured. DO NOT ESTIMATE PROPORTIONS. After 3 minutes of mixing the mixing blade can be removed and the adhesive is ready to apply.
- C. POT LIFE. Pot life is about 45 minutes. Working time depends on temperature and method of application. LiquiGard cure time will be reduced in colder temperatures, and accelerated in warmer temperatures.

Working time in minutes as a function of temperature

Temp °F	50	60	70	80	90	100
Minutes	55	50	45	40	35	30

The mixing of LiquiGard pails should be timed so that one container of freshly mixed material is ready when the application crew finishes with the preceding pail. DO NOT stockpile mixed material as it will cure to an unworkable viscosity before the application crew can use it.

- D. APPLICATION. LiquiGard adhesive can be installed with a notched squeegee. The proper application rate is 60ft<sup>2</sup> per gallon. Porous substrates may result in a lower coverage per gallon.
- E. INSULATION. LiquiGard can be used as an adhesive for approved Firestone Insulation products. LiquiGard should be applied to fully cover the area between the insulation and the substrate. The

coverage rate in this application is 60 ft<sup>2</sup> per gallon depending upon the substrate. Contact Firestone Roofing Solutions for additional information.

## 2.4 COLD WEATHER APPLICATION

Substrates should be at least 45 °F (7.2 °C) and must be 5 °F (-15 °C) above the dew point. LiquiGard should be at least 60 °F (15 °C) when mixed and applied. These temperatures are recommended to consistent with published cure times, pot life, viscosity, surface preparation and application procedures.

- A. The surface must be dry. Condensation at lower temperatures happens more readily, particularly at temperatures approaching 32 °F (0 °C) and with wide temperature swings over the course of the day. Frost within the substrate must be avoided at substrate temperatures below 32°F (0 °C).
- B. LiquiGard Part A and Part B activator should be kept at a temperature 1°F above 60 °F (15.5 °C) for every degree that the substrate will be below 45 °F (7.2 °C). Do not heat above 100 °F (37.8 °C). As fluid temperatures rise, working time is shortened.
- C. All material cure times are much slower at lower temperatures. Normally LiquiGard products cure within several hours at 70 °F (21 °C) however; it will take up to a week to reach the same level of cure at 20 °F (-6 °C).
- D. Slower cure times limit the amount of material that can be applied on a vertical surface because LiquiGard will continue to flow for an extended period of time. Vertical surfaces can only be coated with 20 to 25 mil of material at a time. If the material is applied in a thicker layer significant sags and runs will occur.
- E. In cooler weather the viscosity of the material will increase as it approaches the substrate temperature. The increased viscosity results in material that can be difficult to apply. Work at low temperatures should be carried out as if the working time was considerably shorter than at 60 °F (15.5 °C).

(Continued on pages 4 & 5 w/ images)

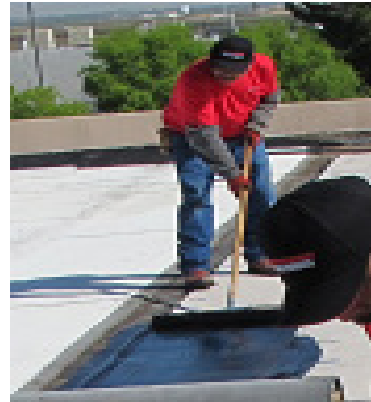
## Applying a Base Sheet in LiquiGard



Mix Part B with Part A for three minutes. Add Part B slowly to part A



Pour Adhesive on to the substrate



Squeegee apply Adhesive at 60 square feet per gallon



Lay Base Sheet in adhesive



Squeegee apply adhesive for the next course

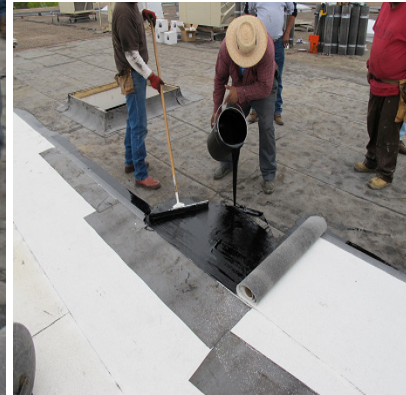
## Applying a Cap Sheet in LiquiGuard



Mix Part B with Part A for three minutes. Add Part B slowly to part A



Pour Adhesive on to the substrate



Squeegee apply Adhesive at 60 square feet per gallon



Lay Cap Sheet in adhesive



Squeegee apply adhesive for the next course including coverage of the lap of the adjacent sheet



Lay Cap Sheet in adhesive



Apply granules to the area Where adhesive has bled-out of the side lap



1/4 inch notched squeegee