

## **GACOFLEX TWO COMPONENT LIQUID POLYURETHANE SPRAY GUIDE** **UA-60, U-64, UB-64, UA-7090, U-66**

This guide covers handling and airless spray application of the Gaco Western two component 1:1 ratio liquid applied polyurethane elastomeric coating series **UA-60, U-64, UB-64, UA-7090 and U-66**. This class of GacoFlex products polymerizes (cures) through chemical reaction of the mixed components yielding tough, waterproof, weather-resistant elastomeric membranes. Airless spray is an effective method of application particularly on large areas and irregular or vertical surfaces. Air-atomized application is not recommended.

Personnel using these products should familiarize themselves with procedures for personal safety, workplace precautions, and equipment operation. Refer to Product Data Sheet, Material Safety Data Sheet and General Instructions GW-3-1 and GW-3-3 for product information. Refer to manufacturer's instructions for spray equipment operation, maintenance and safety.

### **1. SAFETY EQUIPMENT AND VENTILATION**

This class of GacoFlex products is characterized by two component batch mix formulation using an ISO component and a POLYOL component. Both ISO and POLYOL components contain flammable solvent. The ISO component may contain up to 3% toluene diisocyanate prepolymer. Spray application creates finely atomized particles and vapors, which dictates specific procedures to minimize both health and safety risks.

#### **A. Protective Equipment**

1. Use supplied air-breathing apparatus with full-face mask or hood during any spray application unless monitoring demonstrates TDI, MDI, or Aliphatic Isocyanate exposure below OSHA permissible limits.
2. Fabric coveralls
3. Impervious gloves

#### **B. Indoor Spraying Precautions**

1. Isolate the area to be sprayed from the rest of structure.
2. GacoFlex UA-60, UB-64, U-64, UA-7090, and U-66 coatings contain flammable solvents, which evaporate into the air during application and cure cycle. Follow Gaco Western Fire and Explosion Prevention instructions found in GW-3-1.
3. Spray only in well ventilated areas. Explosion-proof equipment, capable of keeping vapor concentration below the LEL, must be used. The environment must be monitored to assure compliance. Air from spray area must be exhausted outdoors in a manner that prevents return through windows, doors or intake vents.
4. Keep spectators and other personnel away from spray area.
5. Be sure to take proper precautions to not spray over unprotected energized lighting or electrical outlets. Doing so could be a fire hazard. Electrical wiring and conduit can be sprayed on as long as open energized circuits are protected.

#### **C. Outdoor Spraying Precautions**

1. Rope off the area within 150 feet (45.72 meters) of spray area.
2. Seal off ventilation intakes within the affected area.

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Gaco Western has you Covered with Innovative Solutions.*

3. Use windbreaks, where necessary to confine spray mist and avoid damage to nearby surfaces due to overspray or drift.
4. Keep spectators and personnel away from spray area.
5. Be sure to take proper precautions to not spray over unprotected energized lighting or electrical outlets. Doing so could be a fire hazard. Electrical wiring and conduit can be sprayed on as long as open energized circuits are protected.

## 2. STORAGE AND HANDLING

### A. Storage

1. Keep containers closed. Store in a dry, cool place away from heat, sparks, open flame and moisture.
2. For cold weather application, keep material stored above 60°F (15°C).
3. Hot weather application will result in shortened pot life. Store materials out of sun and below 80°F (26°C).

### B. Handling

1. Each GacoFlex polyurethane elastomer product is unique. Components of various products cannot be intermixed. Separate products at the jobsite to avoid mixing errors.
2. Part B components (ISO) can freeze if exposed to temperatures below 40°F (5°C) during shipping and storage. Graininess or cloudiness in Part B indicates frozen material which must be thawed before use. Refer to Product Data Sheet for instructions.

### C. Mixing

1. Mix each Part A component separately before using to suspend any settled pigment and assure uniform consistency. Ground container and equipment to prevent accumulation of static charge.
2. UB-64 Part B and U-64 Part B contain minor amounts of black pigment. Mix before using. A folding blade-type mixer must be used for closed head drums. Ground container and equipment to prevent accumulation of static charge.
3. Combine equal volumes of Part A and Part B and mix as directed in Product Data Sheet and General Instructions GW-3-3.
4. Mix materials in quantities which can be spray applied within pot life limitations. Pot life is decreased when large quantities are mixed and as material temperature increases. Refer to Product Data Sheet for specific information.

### D. Thinning

1. Thinning for spray application is not required when proper application conditions exist and adequate equipment is used.
2. Thinning may be desirable to extend pot life or modify film build properties. Up to 15 % thinning is allowable to compensate for increasing viscosity which will occur at the end of pot life. GacoFlex T-5116 Thinner is recommended spray thinner.
3. Use only thinner supplied by Gaco Western. Other thinners may contain alcohol or other contaminants which will adversely affect coating characteristics resulting in decreased physical properties and performance.

## 3. SPRAY EQUIPMENT

Airless spray equipment generates very high fluid pressure. Spray equipment must be properly maintained and operated. Any misuse of spray equipment or accessories (such as over-pressurizing, modified parts, or worn or damaged parts) can result in serious bodily injury, fire, explosion, or property damage. Read and follow the equipment manufacturer's instructions and recommendations.

- A. **Airless spray pump** must have minimum 3,000 psi output pressure rating and adequate delivery volume to support the spray tip orifice gallons per minute (gpm) rating. High-pressure airless sprayers with a higher maximum pressure capability will allow spray application in cold weather or using spray hose lengths greater than 250 feet (76.20 meters).

**Graco High Pressure Air Powered Airless Xtreme NXT Sprayers:**

| Part # | Ratio   | Rated PSI | GPM |
|--------|---------|-----------|-----|
| X30DH3 | 30 to 1 | 3,000     | 3.4 |
| X45DH3 | 45 to 1 | 4550      | 4.6 |
| X70DH3 | 70 to 1 | 7250      | 2.9 |

**Graco Gas Powered Airless Sprayers Convertible:**

| Part # | Name         | Rated PSI | GPM |
|--------|--------------|-----------|-----|
| 248692 | GMAX II 5900 | 3300      | 1.6 |

**Graco Electric Airless Sprayers:**

| Part # | Name                 | Rated PSI | GPM  |
|--------|----------------------|-----------|------|
| 249659 | Ultra Max II<br>1595 | 3300      | 1.25 |

Airless sprayers not listed have not been evaluated. The preceding information can be used as a reference for assembling an alternative equipment system.

**B. Sprayer supply** must be direct immersed pump, large diameter suction tube and hose, or drum transfer pump.

1. Direct immersion is practical for limited quantities in 5 gallon (18.92 L) pails.
2. Suction supply directly from pails or drums is sufficient when 1½-inch (3.81 cm) diameter or larger tube and hose in short lengths are used. Limit hose length to 8 feet (2.44 meters) or less.
3. Transfer pump is preferred to assure positive supply of coating to the airless pump. A 2:1 or 5:1 fluid to air ratio transfer pump of divorced design will supply coating from drums without cavitation and resulting premature pump packing wear. Limit feed pressure to 400 psi.

**C. Airless spray hose** must be grounded nylon tube paint hose, rated for use at maximum pressure produced by the spray pump. Use only electrically grounded hose designed for paint and solvent. Never exceed maximum working pressure of hose or fittings.

1. The larger the hose diameter, the less pressure drop will occur between the airless pump and spray gun. There is 2.5 times less pressure drop with ½-inch (1.27 cm) i.d. hose, compared to 3/8-inch (0.95 cm) i.d. hose.
2. 3/8-inch (.95 cm) paint hose should be limited to 150 feet (45.72 meters) total length and ½-inch (1.27) paint hose limited to 250 feet (76.20 meters) total length.
3. A whip hose, 3 feet (0.91 meters), or 6 feet (1.82 meters) in length, and gun swivel are recommended to control spray and reduce operator fatigue.

**D. Spray tip selection** is based upon the material delivery volume and spray pattern desired. The orifice size of a spray tip determines material delivery volume. The fan width of a spray tip determines the pattern size.

### Tip Sizes and Flow Rates

|                    |       | Orifice Size |      |      |      |      |      |      |      |
|--------------------|-------|--------------|------|------|------|------|------|------|------|
|                    |       | (in.)        | (mm) | .027 | .029 | .031 | .033 | .035 | .039 |
| Fan Width          | 6-8   | (152-203)    | 327  |      | 331  |      |      |      |      |
|                    | 8-10  | (203-254)    | 427  | 429  |      | 433  | 435  | 439  |      |
|                    | 10-12 | (254-305)    | 527  | 529  | 531  | 533  | 535  |      |      |
|                    | 12-14 | (305-356)    | 627  | 629  | 631  | 633  | 635  |      |      |
| Flow rate (gpm)    |       |              | .77  | .90  | 1.03 | 1.17 | 1.31 | 1.63 |      |
| Flow rate (l/min.) |       |              | 2.96 | 3.42 | 3.90 | 4.42 | 4.98 | 6.18 |      |

#### E. Filter Screen Size

1. Filter screen should be 30 mesh or larger.

**F. Spray application rate** is typically from one to one and one half gallons per 100 square feet per coat (3.78 to 5.68 L per 9.3 m<sup>2</sup>), or 16 to 24 wet mils (.41 to .61 mm) per coat. A .031-inch to .039-inch orifice tip with a 40-degree fan width is recommended. This will provide for good production rates and optimum control. See individual product specification for more detail.

1. Select a spray tip that is within the performance capacity of the airless spray pump. The larger the spray tip, the greater the pressure drop. Long hose length and cold material will decrease material delivery volume and fluid pressure at the spray tip.
2. If the spray pattern has fingers or pulsates, change spray tips to reduce the size of the spray orifice. This will decrease material delivery volume and increase pressure.
3. A manifold filter assembly may be used to reduce tip plugging. Clean filter screen on a regular basis.

### 4. APPLICATION

#### A. Climatic conditions

1. Rain, fog, dew, frost, relative humidity above 90%, will adversely affect adhesion and physical properties of these coatings. Do not apply if any of these conditions exist or will exist within five hours of application. The substrate must be dry at the time of application.
2. Do not apply by airless spray when air temperature is within 5°F (3°C) of the dew point.
3. At temperatures below 50° F (10°C) store and maintain material temperature above 60° F (16°C) in the container. Spray application is not recommended below 40°F (4°C).

#### B. Spraying Technique

1. Hold the spray gun perpendicular to the surface at a distance of 18 to 24 inches (45.72 to 60.96 centimeters). While triggering the spray gun, move it at a rate to produce the desired coating wet mil thickness without thin spots or "holidays". Spray technique should include a "half lap" technique where each spray pass is overlapped 50% for uniform coverage. Check applied film thickness using a wet mil gauge.
2. Use the lowest fluid pressure which will provide a uniform spray pattern without fingering. When greater material coverage is desired, use a larger spray tip orifice size instead of increasing pressure. Pressure that is too high could cause excessive overspray.
3. Spraying must be organized to maintain constant material flow through airless spray hoses. Coating viscosity will increase rapidly in airless spray hoses if the hoses are exposed to direct sun or high temperatures.
4. Plan the application sequence to provide for best production and limited down time. Rotate spray mechanics as needed to allow for continuous production. Material must be flushed from equipment when down time exceeds pot life.
5. Allow 4 to 8 hours between coats for cure and solvent evaporation. Refer to Product Data Sheet for specific information on each product under particular conditions.

**C. Clean-up**

1. Clean airless spray equipment with GacoFlex T-5130 thinner. Recirculate thinner through pump supply, airless spray pump and spray hose to remove residual coating. Flush with clean T-5130 thinner.
2. **Do not leave GacoFlex two component coatings in spray equipment unless actively spraying.** Leaving product in hoses for even short periods of time could cause equipment problems depending on pot life or product. Waiting too long could cause product to gel or become too thick to spray. Pot life is dependant on product, temperature of product and ambient air temperature. Flush sprayer and airless spray hoses for any shut down period.
3. For long-term storage, a final flush with mineral spirits is recommended.
4. Troubleshooting information presented here applies to all GacoFlex two component products. Product Data sheets and equipment manufacturer’s operation manual should be referred to for additional information.

| Condition                  | Areas to Check  | Corrective Action   |
|----------------------------|---|---|
| Poor spray pattern         | Too large or worn spray tip<br>Low fluid pressure<br>Cold material<br>High viscosity material                                     | Replace with new or smaller tip<br>Increase pump pressure<br>Warm to above 60°F (16°C)<br>Thin 3% to 5% with T-5116           |
| Pulsating spray pattern    | Too large or worn spray tip<br>Inadequate material supply<br>Spray pump ball check obstructed<br>Inadequate compressed air        | Replace with new or smaller tip<br>Check suction hose/transfer pump<br>Check and clear<br>Provide more air or use smaller tip |
| Sags/runs on vertical      | Too much material per coat  | Reduce application rate per coat<br>(more coats may be required)  |
| Foamy or pin holed coating | Wet substrate<br>High humidity near dew point<br>Rain/dew on uncured coating<br>Too hot substrate-above boiling point of solvents | Wait for surface to dry<br>Wait for acceptable conditions<br>Wait for acceptable conditions<br>Wait for acceptable conditions |