



## Urethane 520

This guide covers handling and airless spray application of AWS URETHANE 520 single component, moisture-cured polyurethane elastomeric coating. 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 this product should familiarize themselves with procedures for personal safety, workplace precautions, and equipment operation. Refer to Product Data Sheet and Material Safety Data Sheet whenever necessary. Refer to equipment manufacturer's instructions for spray equipment operation, maintenance and safety.

### SAFETY EQUIPMENT AND VENTILATION

AWS URETHANE 520 contains flammable solvent and toluene diisocyanate prepolymer [TDI]. Spray application creates finely atomized particles and vapors which dictate specific procedures to minimize health and safety risks.

#### Protective Equipment

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

#### Indoor Spraying Precautions

1. Isolate the area to be sprayed from the rest of the building.
2. AWS URETHANE 520 contains flammable solvents, which evaporate into the air during application and cure cycle.
3. Spray only on well ventilated area. Air exhausted from the spray area must be directed in a manner that prevents return through windows, doors or intake vents.
4. Keep spectators and other non-essential 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.

#### Outdoor Spraying Precautions

1. Rope off the area within 150 feet of spray area depending on wind and weather conditions.
2. Seal off ventilation intakes within the affected area.
3. Use windbreaks, where necessary to confine spray mist and avoid damage to nearby surfaces due to overspray or drift.
4. Keep spectators and other non-essential 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.



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### STORAGE AND HANDLING

#### 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 65°F (18°C).
3. Open containers should be blanketed with xylene before resealing, to prevent product from skinning.

#### Handling

1. The ISO component will freeze if exposed to temperatures below 40°F during shipping and storage. Graininess or cloudiness in the ISO indicates frozen material that must be thawed before use.
2. Mix poly component separately before use to suspend any settled pigment and assure uniform consistency.

#### Mixing

1. Settling or separation may occur from storage.
2. Mix material before using to assure uniform consistency. Use folding blade-type mixer for closed head drums.
3. Ground container and equipment to prevent accumulation of static charge.
4. Place a small amount of thinner (Xylene) on top of mixed material to prevent formation of "skin."

#### Thinning

1. Thinning AWS URETHANE 520 is not required or recommended when proper application conditions exist and adequate equipment is used.

Thinner (Xylene) is recommended to clean equipment. Be aware that some thinners may contain alcohol or other contaminants, which will adversely affect coating characteristics, resulting in decreased physical properties and weather resistance, or potential damage to spray equipment.

### 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.

#### Graco Gas Powered Airless Sprayers



**Urethane 520**

Part #	Name	Rated PSI	GPM
249617	GH 833	4,000	4
230975	GH733	3,500	3

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 supplied in 5 gallon pails.
2. **Suction supply** directly from pails or drums is sufficient when 1½-inch diameter or larger tube and hose in short lengths are used. Limit hose length to 8 feet 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 i.d. hose, compared to 3/8-inch i.d. hose.
2. 3/8-inch paint hose should be limited to 150 feet total length and ½-inch paint hose limited to 250 feet total length.
3. A whip hose, 3 feet or 6 feet in length, and gun swivel are recommended to control spray and reduce operator fatigue.
4. [AWS URETHANE 520](#) is a moisture cured material. American WeatherStar recommends dedicated hoses for all moisture cured material.

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**

Fan Width (in.)	.027	.029	.031	.033	.035	.039
<b>6-8</b>	327		331			
<b>8-10</b>	427	429		433	435	439
<b>10-12</b>	527	529	531	533	535	
<b>12-14</b>	627	629	631	633	635	



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<b>Flow rate (gpm)</b>	.77	.90	1.03	1.17	1.31	1.63
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### E. Filter Screen Size

1. Filter screen should be 30 mesh or larger.

### F. Spray application rate for AWS URETHANE 520 is typically from one to one and one half gallons per 100 square feet per coat, or 16 to 24 wet mils 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.

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. Manifold filter assembly may be used reduce tip plugging especially when using smaller size tips. Clean filter screen on a regular basis.

## APPLICATION

### Climatic Conditions

1. Rain, fog, dew, or frost will react adversely, affecting adhesion and physical properties of coating. 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. At temperatures below 60°F (16°C) store and maintain material temperature above 65°F in the container. Spray application is not recommended below 40°F.
3. At temperatures above 90°F reduce the application rate on vertical or irregular surfaces to prevent sags or runs. Do not apply at temperatures above 100°F.

### Spraying Technique

1. Hold the spray gun perpendicular to the surface at a distance of 18 to 24 inches. 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. Too high of a pressure could cause excessive overspray.
3. Allow a minimum of 12 hours cure time between coats for cure and solvent evaporation.



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### Clean-up

1. Clean airless spray equipment with Xylene. Recirculate thinner through pump supply, airless spray pump and spray hose to remove residual coating. Flush with clean mineral spirits.
2. Do not leave AWS URETHANE 520 in airless spray system overnight. Under certain conditions it is possible for these coatings to jell or harden inside the equipment.
3. For long-term storage, a final flush with mineral spirits is recommended. Troubleshooting information presented here is specifically for AWS URETHANE 520. Product Data sheets and equipment manufacturer's operation manual should be referred to for additional information.

### Troubleshooting

Condition	Areas to Check	Corrective Action
Poor spray pattern	<ul style="list-style-type: none"> <li>• Too large or worn spray tip</li> <li>• Low fluid pressure</li> <li>• Cold material</li> </ul>	<ul style="list-style-type: none"> <li>• Replace with new or smaller tip</li> <li>• Increase pump pressure</li> <li>• Warm to above 65°F (18°C)</li> </ul>
Pulsating spray pattern	<ul style="list-style-type: none"> <li>• Too large or worn spray tip</li> <li>• Inadequate material supply</li> <li>• Spray pump ball check obstructed</li> <li>• Inadequate compressed air</li> </ul>	<ul style="list-style-type: none"> <li>• Replace with new or smaller tip</li> <li>• Check suction hose/transfer pump</li> <li>• Check and clear</li> <li>• Provide more air or use smaller tip</li> </ul>
Sags/runs on vertical	Too much material per coat	Reduce application rate per coat (more coats may be required)
Runs off high on spray foam	Material or substrate too warm	Reduce application rate or wait for cooler conditions
Foamy or pin-holed coating	<ul style="list-style-type: none"> <li>• Wet substrate</li> <li>• High humidity</li> <li>• Rain/dew on uncured applied coat</li> <li>• Too hot substrate-above solvent boiling point</li> <li>• Applied too much 520 in one pass. Coverage rate max = 1.5 gallons per 100 sq. ft.</li> </ul>	<ul style="list-style-type: none"> <li>• Wait for surface to dry</li> <li>• Wait for acceptable conditions</li> <li>□ “</li> <li>□ “</li> <li>• Back Roll top coats of 520 until pin holes are filled in</li> </ul>