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GACO WESTERN

Spray Guide:

SG-SILICONE
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GACOSIL S-10/S-20 SPRAY GUIDE

This guide covers handling and airless spray application of **GacoSil Silicone** single component elastomeric silicone coatings. GacoSil Silicone polymerizes through chemical reaction with air borne moisture yielding tough, waterproof, weather-resistant elastomeric films. 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, Material Safety Data Sheet and General Instructions GW-3-1 and GW-3-2 for product information. Refer to manufacturer's instructions for spray equipment operation, maintenance and safety.

1. SAFETY EQUIPMENT AND VENTILATION

GacoSil S-10 contains flammable solvent and should be handled differently from a flammability standpoint when compared to S-20. Spray application creates finely atomized particles and vapors which dictate specific procedures to minimize health and safety risks.

A. Protective Equipment

1. Atmospheric levels should be maintained below the exposure guidelines as stated on the MSDS. When respiratory protection is required use an approved air-purifying or positive pressure supplied air respirator.
2. Fabric coveralls
3. Impervious gloves

B. Indoor Spraying Precautions

1. Isolate the area to be sprayed from the rest of structure.
2. GacoSil may 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.
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 65°F (18°C).
3. Open containers should be blanketed with dry nitrogen or place a small amount of T-5135 thinner on top before resealing to prevent product from skinning.

B. 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 T-5135 thinner on top of mixed material to prevent formation of "skin."

C. Thinning

1. Thinning GacoSil S-10 or S-20 is not required when proper application conditions exist and adequate equipment is used.
2. T-5135 Thinner is recommended to clean equipment. 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 weather resistance or potential damage to spray equipment.

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 5,950 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). Airless spray rigs that produce less than 5,600 psi can be used in the right conditions. These may include high outside temperatures, shorter hose lengths or additional thinning of the silicone coatings.

Listed below are the individual components necessary for ordering a complete silicone airless spray rig set up from Graco. It includes the Graco Xtreme airless motor, 180cc lower, hoses, spray gun and spray tips. This is the airless spray rig configuration that Gaco Western recommends and uses.

Graco 70:1 High-pressure air-powered airless sprayer:	**Quanity**
o **XN6DH4 Xtreme spray pump with cart (lower not included)**	**1**
o **L180C3 Xtreme Lower, 180cc without filter**	**1**
o **¾" X 50' spray hose, 6500psi rating**	**5**
o **H75050 ½" X 50' spray hose**	**1**
o **H75010 ½" X 10' whip hose**	**1**
o **XTR704 Spray Gun**	**1**
o **XHD531 Spray Tip**	**1**
o **XHD629 Spray Tip**	**1**
o **XHD527 Spray Tip**	**1**

Optional Equipment

- **Graco 248825 5:1 Monarch Pump Kit w/10' hose & regulator**

When spraying out of totes

- **Tote Heat Blanket – to order call BriskHeat 800-848-7673, part# TOTE481-ADJ**
- **IBC Spill Pallet w/drain – to order call Northern Safety 800-571-4646, part# 195-25194**

The preceding information can be used as a reference and 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 (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 in some cases 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.

NOTE: To help prevent hose plugging problems, use only moisture resistant hose when spraying GacoSil S-10 or S-20.

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. Maximum hose length can be as long as 250 feet (76.20 meters). Hose will consist of 150 feet 3/4 inch hose (45.72 m of 1.90 cm hose) and 100 feet of 1/2 inch hose (30.48 m of 1.27cm hose).
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. In some conditions the whip hose may cause unsatisfactory spray patterns. Conditions that may cause this are colder temperatures or to long a spray hose.
4. Best performance can be achieved if any fittings that could restrict flow in the suction pipe, pump or spray hose are replaced. For example less then 1 ½ inch (3.81 cm) diameter suction pipe or the inline filter.

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. Larger the orifice the lower the pressure output which could result in unsatisfactory spray pattern. The fan width of a spray tip determines the pattern size. The higher the temp of the product combined with a shorter hose and more pressure at the rig could all allow for a bigger spray tip and more output.

Tip Sizes and Flow Rates

	Orifice Size							
Fan Width	(in.)	(mm)	.027	.029	.031	.033	.035	.039
	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. Filters

1. Filters are not normally used in the gun or lowers, if filters are used they should be 30 mesh or larger.

F. Spray application rate

1. **GacoSil S-20** is typically applied at 1.5 gallons per 100 square feet (5.68 L / 9.3 m^2) and can be applied in a single pass or 22 wet mils (0.56 mm) per coat. A single pass is recommended only on polyurethane foam with a texture classified as slight orange peel as per SPFA. In base coat / top coat applications .75 gallons per 100 square feet (2.84 L/ 9.3 m^2), or 11 wet mils (0.28 mm), for each coat is normal.
2. **GacoSil S-10** is typically applied at 1.1 gallons per 100 square feet (4.16 L / 9.3 m^2), or 17 wet mils, per coat. A base coat and top coat are typically required for a 22 dry mil spec.
   a. 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.
   b. 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.
   c. Manifold filter assembly may be used reduce tip plugging especially when using smaller size tips. Clean filter screen on a regular basis.

4. APPLICATION

A. Climatic conditions

1. Rain, fog, dew, frost, relative humidity above 90%, 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 65° F (18°C) store and maintain material temperature above 65° F (18°C) in the container. Spray application is not recommended when material temperatures are below 65°F (18°C). Application is possible when ambient temperature is below 65° F (18°C) by heating the GacoSil Silicone product and / or thinning with T-5135. How much heat and or thinner is dependent on hose length, maximum rig spray pressure and outside ambient air temperature.
3. At temperatures above 85°F (29°C) reduce the application rate on vertical or irregular surfaces to prevent sags or runs.

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. Too high of a pressure could cause excessive overspray.
3. Cure time of coating can vary greatly depending on ambient air temperature and humidity.

C. Clean-up

1. Clean airless spray equipment with GacoFlex T-5135 thinner. Recirculate thinner through pump supply, airless spray pump and spray hose to remove residual coating. When using 250 feet (76.20 meters) of hose it can typically take 10 to 15 gallons (37.9 to 56.8 L) of T-5135 for the initial flush of the equipment. Flush with cleanT-5135 thinner 15 minutes after initial flush.
2. Do not leave GacoSil S-10 / S-20 in airless spray system longer than two days. It is possible for these coatings to harden if left in the equipment too long. If coating is to be left in the lines, then circulating every two days is required to prevent clogging and hardening issues. Flushing the lines is preferable to leaving coating in the lines longer than one week (even if circulating every two days). If hoses are not dedicated to silicone coating do not leave silicone in the system when done for the day.
3. For long-term storage, a final flush with mineral spirits is required. After flushing spray lines should be capped with mineral spirits still in the lines. Do not blow lines clear with air, doing so will cause clogging issues.

4. Troubleshooting information presented here is specifically for GacoSil S-10/ S-20. 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 Low fluid pressure Cold material	Replace with new or smaller tip Increase pump pressure Warm to above 65°F (18°C).
Pulsating spray pattern	Too large or worn spray tip Inadequate material supply Spray pump ball check obstructed Inadequate compressed air	Replace with new or smaller tip Check suction hose/transfer pump Check and clear Provide more air or use smaller tip
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 pinholed coating	Wet substrate High humidity Rain/dew on uncured applied coat Too hot substrate--- above solvent boiling point	Wait for surface to dry Wait for acceptable conditions Wait for acceptable conditions Wait for acceptable conditions