

Approvals and conformities

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PRATT & WHITNEY

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Chemglaze® M331/M201 elastomeric coating is a two-component polyurethane coating designed to produce a tough, flexible film for use in protecting the leading edges of fixed and rotary wing aircraft. This coating accommodates thermal expansion and contraction, and functions exceptionally well to protect the underlying substrates from abrasion, erosion and minor impact damage.

Features & Benefits

- **Durable:** provides outstanding resistance to abrasion, erosion and impact; conforms to ASTM D-16 Type IV classification. Easy to apply: can be applied by pressure pot, HVLP spray or MMD equipment; builds thick films easily with one application of multiple coats.
- **Versatile:** can be used to coat a wide variety of substrates such as metals, concrete, thermoset plastics and foams. Primer and topcoat compatible: provide excellent adhesive properties when used in conjunction with Aeroglaze® epoxy or wash primers, and Aeroglaze and Chemglaze aliphatic moisture-cure or two-component polyurethane coatings.

Chemglaze M331/M201 is supplied in the following configurations:

- 1 Quart Kit – Short filled quart of Chemglaze M331 (24 oz)/ ½ Pint (8 oz) Chemglaze M201
- 1-Gallon Kit- Short filled gallon of Chemglaze M331 (¾ gal)/ 1 Quart Chemglaze M201
- 4 Gallon Pail Kit- Short filled pail of Chemglaze M331 (3 gals)/ 1 Gallon Chemglaze M201

USES

Coating designed to protect underlying substrates on the leading edges of fixed and rotary wing aircraft from abrasion, erosion and minor impact damage. Can also be used as a protective coating in the highly abrasive environments of the railroad and mining industries.

DIRECTIONS FOR USE

Surface Preparation

Thoroughly clean surfaces to remove all dust, oil and grease. For most substrates, apply a primer to ensure proper adhesion and performance of the coating.

Mixing

The mix ratio of the coating is 3 parts Chemglaze M331 (Part A) component to 1 part Chemglaze M201 (Part B) component by volume. Thoroughly stir Chemglaze M331 component, making certain to incorporate any material that may have settled at bottom of container. Once the Chemglaze M331 coating is mixed, continue stirring while adding Chemglaze M201. Thoroughly mix the two components until uniform in consistency.

Note: Both Chemglaze M331 and M201 components are sensitive to atmospheric moisture. Chemglaze M201 is more moisture sensitive. Do not open Chemglaze M201 until ready to mix with Chemglaze M331.

Typical properties of the mixed coating

Mix ratio of Chemglaze M331 to Chemglaze M201 component by volume: 3:1

- Mixed Appearance: Black
- Solids Content, %: 56 (by weight), 52 (by volume)
- Volatile Organic Content (VOC): 420 g/L (3.5 lbs/gal)
- Working Life, hrs. @ 25°C (77°F): 50% RH: 2

Application Parameters

Apply coating at ambient substrate surface temperature of at least 10°C (50°F), with substrate temperatures at 3°C (5°F) above the dew point.

Chemglaze M331/M201 coating is recommended for medium to high build applications, ranging from a minimum of 356 micron (14 mil) to 762 microns (30 mil) applied in multiple coats. A second coat of Chemglaze M331/M201 coating or a topcoat may be applied after the first application has cured a minimum of 4 hours at 15.6°C (60°F). For maximum intercoat adhesion, recoat within 24 hours. Chemglaze M331/M201 coating cannot be applied directly to metals. Metals require the use of a wash primer and/or an epoxy primer to promote adhesion of Chemglaze M331/M201 coating to the substrate. In many cases, Chemglaze M331/M201 coating will adhere directly to properly prepared composites, plastics, foams and other non-metallic substrates. However, a test patch may be required to determine if a primer is required.

Curing

Cure begins immediately once Chemglaze M331 and M201 components are mixed. Chemglaze M331/M201 coating cures by reacting with moisture in the air. Cure rate is dependent on the temperature, relative humidity and amount of air circulation needed to remove the solvent. The applied coating must be cured above 10°C (50°F) and 60% relative humidity. If the percent relative humidity drops between 30-40%, moisture should be supplied by steam or water to the curing environment. Under the acceptable curing conditions, the coating will set to touch in 15-30 minutes, surface dry in 1-2 hours, and dry hard in 4-6 hours. Lower temperatures and humidity will retard cure.

Typical cured properties

- Hardness (Shore A): 95
- Tensile Strength (ASTM D 882-83, Method A), MPa (psi): 34.5 (5000)
- Elongation at Break % (ASTM D 882-83, Method A): 500

Application Equipment

Spray application is the most efficient method for applying Chemglaze M331. The type of spray equipment used will vary depending on the application. The most common spray equipment types used are airless, air assisted airless, conventional spray or HVLP spray guns. They are used on 1K (pre-mix and spray) or 2K MMD (meter mix dispensing) delivery systems. Selecting the most appropriate spray equipment for the job requires consideration of variables that include the viscosity of the coating, film build required, desired surface finish, part size and complexity, transfer efficiency, and production rate. Provided below is an overview of the more common spray systems and operational set.

1K Single Component Spray Equipment

Airless Equipment

Airless equipment is well suited for high production rates. It pumps coating directly from the supply vessel and can apply a lot of coating in a short time. This makes an airless sprayer particularly well suited for large coating jobs such as hopper cars or industrial tanks. These types of applications require a high film build where thinning Chemglaze M331 is not required or recommended.

Typical 1K Airless Spray System

- Graco Pump 30:1 – 2- GPM
- Tip 10-13-inch fan
- Inline pressure 85 - 100 PSI
- Tip Pressure 2,550 - 3,000 Psi
- Percent thinning not recommended

Air Assisted Airless

An air assisted airless system is like airless spray in that it can apply a lot of coating in a short period time. However, air is used to assist the atomization. The air assist helps to provide a smoother finish especially when thinned with Chemglaze M331. Thinning Chemglaze M331 will decrease the viscosity. This will reduce the wet film build per and time between coats. This is necessary to prevent runs and sags. The air atomization will result in increased overspray compared to airless spray.

Typical 1K Air Assisted Airless Spray System

- Binks AG-363 or equivalent
- Tip 2-18 in fan depending on application
- Tip Pressure 2,550 - 3,000 Psi
- Percent thinning - up to 30%

Conventional

Conventional spray offers the greatest versatility for application of Chemglaze M331. Conventional spray systems use high pressure to apply the coating. The benefit is that regardless of how thick the coating is it can be atomized by increasing the pressure. The drawback of conventional systems is the higher pressure causes increased overspray and lower transfer efficiency. In many places their use is restricted unless supplemented with pollution capture systems to address the increased overspray.

Typical 1K Conventional Air Spray System

- Gun DeVilbis MBC 510 or equivalent
- Fine finishing E-tip and needle
- Nozzle 704
- Fluid pressure 10 - 20 PSI
- Atomization Pressure 60-65- PSI
- Percent thinning – up to 30%

HVLP

HVLP sprayers are unlike traditional coating sprayers. HVPL sprayers use higher volume and lower air pressure to atomize and propel coating at the substrate. The benefit is a soft spray that reduces overspray, increases transfer efficiency which reduces coating waste. Compared to other spray systems, HVLP systems also help to reduce air pollution. In many places where conventional spray systems are banned or restricted, HVLP systems are used as a replacement. HVLP works well with Chemglaze M331. However, thinning is required to obtain smooth surface finishes.

Typical 1K HVLP Air Spray System

- Gun – Gravity feed or pressure pot
- 1.2-1.4 mm -tip and needle
- Fluid pressure 20 PSI
- Atomization Pressure 35-40 PSI
- Percent thinning – up to 35%

2K Meter Mix Dispensing Spray Equipment

Meter Mix Dispensing (MMD) 2K Component Spray equipment comes in variety of configurations, complexities, and delivery systems. One of the key benefits is that the base and the curative are pumped from separate tanks and mixed just before the spray gun. This makes it easy to use materials that have a relatively short pot life and minizines clean up between applications and shutdown and startup.

Meter Mix Dispensing (MMD) 2K Component Spray equipment systems are ideal for use in applications that have long runs and require a constant output of coating. In most cases identifying the best MMD system for the application requires consultation with the equipment supplier and Socomore. The table below lists system components and operating parameters required for a robust spray system. The ideal system can be constructed of system components in the Preferred/ Recommended and Satisfactory categories. Using equipment in the Not Recommended category will result in spray systems that are problematic and unable to consistently provide a quality application.

	Preferred/ Recommended	Satisfactory	Not recommended
Gun type	HVLP	Conventional	Bell
Tip Size (mm)	1.4	1.2	< 1.1 or > 1.6
Fan Width (inches)	3-6 inches	-6-8	>8
Metering and Delivery System	Metering ear pumps	Fixed proportional pumps	Gravity or suction feed
Metering Tolerance %	3<	<5	>8
Fluid seal	Teflon		Rubber, leather or felt

Delivery Rate (cc/min)	85-120	50-120	
Atomization Pressure (PSI)	35-45	45-55	<45
System seal	6-8 inches		
Percent thinning by volume	Up to 35%	Up to 35%	>40%
Inline mixing	Dynamic mixer	Static mixer	Ported mixing block
Supply vessel	Sealed nitrogen capped	Sealed dry air capped	Open top

Any of the above systems can be used with automated or manual spray systems. Coating large or low volume products where fixturing might not be cost effective, manual spray would be the best option. In these case, an operator’s skill can be used to adjust the spray gun and positioning to produce the desired finish.

The largest benefits of automated systems are reproducibility and speed. Automated systems work best for high volume runs of parts that require a high-level consistency and where aesthetics is vital to the end use of the part. Automated systems apply a consistent amount of coating where and when it is required. They can be more effective in controlling waste, lowering VOC emissions and reducing filter changes.

Equipment Cleaning

Use Chemglaze 9951 to remove any liquid or residual coating from equipment. Once material has cured, use an approved chemical paint removal system to strip cured Chemglaze M331 from parts and equipment.

TECHNICAL CHARACTERISTICS

Appearance	M331 (Part A): Black Liquid
Appearance	M201 (Part B): Light Yellow to Deep Burgundy Liquid
Viscosity	M331 (Part A): 6800 -11,000 cps, Brookfield LVT, spindle 4, 30 rpm @ 25°C (77°F)
Viscosity	M201 (Part B): water thin, Brookfield LVT, spindle 4, 30 rpm @ 25°C (77°F)
Specific gravity	M331 (Part A): 0.98 -1.03 kg/L (8.2 - 8.6 lbs/gal)
Specific gravity	M201 (Part B): 0.83 - 0.90 kg/L (6.9 -7.53 lbs/gal)
Percent solids by weight	M331 (Part A): 71 -75%
Percent solids by weight	M201 (Part B): 24.3%
Percent solids by volume	M331 (Part A): 67%
Percent solids by volume	M201 (Part B): 21.1%
Flash point	M331 (Part A): 33°C (93°F), Seta
Flash point	M201 (Part B): 43°C (110°F), Seta
VOC (US regulation)	M331 (Part A): 294 g/L (2.45 lbs/gal)
VOC (US regulation)	M201 (Part B): 636 g/L (5.31 lbs/gal)

PRECAUTIONS FOR USE AND STORAGE

Shelf life of each component is six months from date of shipment when stored in a dry environment at 16-24°C (60-70°F) in original, unopened container. If the storage temperature drops below 10°C (50°F), Chemglaze M201 component may crystallize. Allow material to return to recommended storage temperature for two days to dissolve crystals before using. Do not mix or use material until crystallization is gone.

Before using this product or any SOCOMORE product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

This technical data sheet replaces and cancels the previous one.

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