

Approvals and conformities

DEPT OF NAVY	MIL-PRF-85322
MESA AIRLINES	EO 45-2019-125
PRATT & WHITNEY	PWA36510

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 meter mix dispense 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 Compatibility:** provides 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 gal)/1 gallon Chemglaze M201

USES

Chemglaze M331/M201 is designed to protect the underlying substrates on the leading edges of fixed and rotary wing aircraft from abrasion, erosion, and minor impact damage. It 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. Chemglaze M331/M201 coating cannot be applied directly to metals. Metals require the use of a wash primer and/or epoxy primer to promote adhesion of Chemglaze M331/M201 to the substrate. In some cases, Chemglaze M331/M201 will adhere directly to properly prepared composites, plastics, foams, and other non-metallic substrates. However, a test patch may be necessary to determine if a primer is required. Contact your Socomore representative for an appropriate recommendation.

Mixing

Thoroughly stir Chemglaze M331 prior to combining with Chemglaze M201 to incorporate any material that may have settled. Once the Chemglaze M331 is mixed, continue stirring while adding Chemglaze M201. The mix ratio is 3 parts Chemglaze M331 (part A) to 1 part Chemglaze M201 (part B) by volume. Thoroughly mix the two components until uniform in consistency. For most types of spray systems, thinning with Chemglaze 9951 is necessary. Refer to the application equipment section below.

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

Application

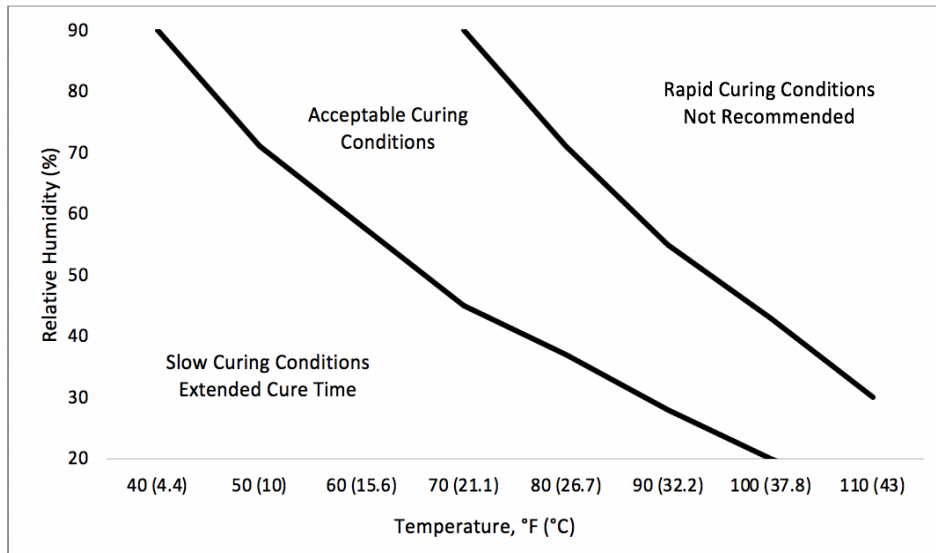
Chemglaze M331/M201 is best applied at a minimum ambient substrate surface temperature of 10°C (50°F), with substrate temperatures at least 3°C (5°F) above the dew point.

Chemglaze M331/M201 coating is recommended for medium to high build applications, ranging from dry film thicknesses 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.

Curing

Cure begins immediately once Chemglaze M331 and M201 components are mixed. Chemglaze M331/M201 coating cures by reacting with moisture in the air. The cure rate is dependent on the temperature, relative humidity, and amount of air circulation needed to remove the solvent.

Chemglaze M331/M201 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 slow the cure rate. Refer to the psychrometric chart below for appropriate cure conditions.



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. For application equipment types that require an air supply, ensure that the air supply contains less than 500 ppm moisture.

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 large amount 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: 2550-3000 psi
- Thinning not recommended

Air-Assisted Airless

An air-assisted airless system is like airless spray in that it can apply a large amount of coating in a short period of time. However, air is used to assist the atomization. The air assist helps to provide a smoother finish especially when thinned with Chemglaze 9951. Thinning Chemglaze M331 will decrease the viscosity, which will reduce the wet film build per coat and the 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-inch fan depending on application
- Tip pressure: 2550-3000 psi
- Thin up to 30% by volume with Chemglaze 9951

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 that 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 DeVilbiss MBC 510 or equivalent
- Fine finishing E-tip and needle
- Nozzle 704
- Fluid pressure: 10-20 psi
- Atomization pressure: 60-65 psi
- Thin up to 30% by volume with Chemglaze 9951

HVLP

HVLP sprayers are unlike traditional coating sprayers because it uses higher volume and lower air pressure to atomize and propel coating onto the substrate. The benefit is a soft spray that reduces overspray, increases transfer efficiency, and 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. Thinning is required to obtain a smooth surface finish.

Typical 1K HVLP Air Spray System

- Spray gun- gravity feed or pressure pot
- 1.2-1.4 mm spray tip and needle
- Fluid pressure: 20 psi
- Atomization pressure: 35-40 psi
- Thin up to 35% by volume with Chemglaze 9951

2K Meter Mix Dispensing Spray Equipment

Meter Mix Dispensing (MMD) 2K Component Spray equipment comes in a 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 minimizes clean up between applications, 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. When coating large or low volume products where fixturing might not be cost effective, manual spray would be the best option. In these cases, 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 of consistency and where aesthetics are 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.

Clean-Up

Use Chemglaze 9951 to flush any liquid or residual coating from spray equipment immediately after application. Circulate Chemglaze 9951 through the hoses for at least 15 minutes. If the material has cured, use an approved chemical paint removal system to strip cured Chemglaze M331 from parts and equipment.

TECHNICAL CHARACTERISTICS

Typical Properties*

	Chemglaze M331	Chemglaze M201	Mixed
Appearance	Black Liquid	Light Yellow to Deep Burgundy Liquid	Black
Viscosity, cps Brookfield LVT, 25°C (77°F) Spindle 4, 30 rpm	6800-11000	Water-thin	4000 maximum

Density, kg/L (lb/gal) ASTM D1475-85	0.98-1.03 (8.2-8.6)	0.83-0.90 (6.9-7.5)	0.94-0.998 (7.8-8.3)
Solids Content by Weight, % ASTM D2369-87 modified	71-75	24.3	56
Solids Content by Volume, %	67	21.1	52
Flash Point (Seta), °C (°F) ASTM D3278-82, Closed Cup	33 (93)	43 (110)	-
Volatile Organic Content (VOC), g/L (lb/gal) ASTM D3960-89	294 (2.45)	636 (5.31)	420 (3.5)
Working Life, hr	-	-	2
Shelf Life**	Six months	Six months	-

*Data is typical and not to be used for specification purposes.

**From date of shipment, unopened container, storage between 16-24°C (60-70°F).

Typical Cured Properties*

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

*Data is typical and not to be used for specification purposes.

PRECAUTIONS FOR USE AND STORAGE

The shelf life of each component is six months from date of shipment when stored in a dry, well-ventilated area at temperatures between 16-24°C (60-70°F) in the original, unopened container. If the storage temperature drops below 10°C (50°F), Chemglaze M201 may crystallize. Before using, allow the material to return to the recommended storage temperature for two days to dissolve crystallization. Do not mix or use the material until it is no longer crystallized.

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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