

Chemglaze®

Chemglaze® M331 Elastomeric Polyurethane

Description

Chemglaze® M331 is a two package, ASTM D-16 Type IV elastomeric polyurethane coating. Cured films produced from this coating are tough, flexible, and resistant to erosion, abrasion, and impact. These films provide excellent tensile and elongation properties, and prevent corrosion of metal substrates in aggressive environments.

Basic Uses

Chemglaze elastomeric polyurethane coatings function especially well in abrasive environments. With their inherent flexibility, corrosion resistance and energy absorptive properties, these coatings are used in the railroad and mining industries to protect metallic substrates. Chemglaze elastomeric coatings accommodate thermal expansion and contraction as well as structural motion. These elastic properties make them useful in protecting spray applied polyurethane foam insulation on storage tanks and reactor vessel walls.

These coating qualify under military rain erosion coating specification MIL-C-85322.

Limitations - For industrial/commercial use only.

Must be applied by trained personnel only. Not to be used in residential applications. Not for consumer use. Not for immersion service. Do not apply at temperatures below 13°C (55°F).

Coverage

Chemglaze M331 elastomeric coating is designed for high build applications. Typically, the minimum film thickness applied is 30 mils dry (762 µm) per coat applied with multiple passes. See Table 3.

Mixing Procedures

Chemglaze M331, Part A, should be mixed well before adding Chemglaze M201, Part B. Add Chemglaze M201, Part B, in increments and mix well after each addition. This mixing procedure is for all kit sizes and is necessary to obtain a uniformly cured film with optimum properties. Once mixed, DO NOT stir, agitate or add freshly mixed coating to the mixed

coating because the coating forms a skin on the surface. If the skin is disturbed, it will clog filter screens and guns. For example, when mixing a 1 gallon kit, mix Chemglaze M331, Part A, well with a power stirrer. Then, add one 6 quart of Chemglaze M201, Part B, and mix well. Use a flat stick to remove the thick Chemglaze M331, Part A, from the side and bottom of drum. Continue stirring for a minimum of 15 minutes while moving stirrer around in the drum in an up and down motion.

Color

Black

Packaging

One gallon kit:

Chemglaze M331, Part A:
3 quarts in a 1 gallon can
Chemglaze M201, Part B:
1 quart can

Features and Benefits

- **Outstanding Resistance to:**
 - Abrasion
 - Erosion
 - Impact Resistance
- **Easy Application**
 - Airless Spray Equipment
 - Conventional Spray Equipment
- **Wide Substrate Selection**
 - Metals
 - Concrete
 - Plastics
 - Foams
- **Excellent Topcoat and Primer Compatibility**
 - Chemglaze aliphatic moisture cure urethanes
 - Chemglaze aliphatic two package urethanes
 - Chemglaze epoxy, urethane, or urethane primers

Application Methods

Chemglaze M331, Part A, contains a moisture sensitive urethane polymer. Consequently, Chemglaze M331, Part A, should be kept dry and store away from areas subject to water exposure to prevent premature curing.

Should Chemglaze M331, Part A, be exposed to temperature below 10°C (50°F), it is necessary to warm the product to 15.6°C (60°F) before use. Chemglaze M331, Part A, is thick and has a gel-like appearance; it must be mixed well (10-15 minutes with a power stirrer) before adding Chemglaze M201, Part B.

Chemglaze M201, Part B curative, is quickly degraded by atmospheric moisture. Keep Chemglaze M201, Part B, containers closed until their contents are ready to be added to the well-mixed Chemglaze M331, Part A.

Personnel applying Chemglaze M331 should be outfitted with the proper safety gear and have the spray equipment ready to operate before mixing part A & B.

*See Cautionary Information section for details.

Spray Applications

Apply the mixed coating to primed, dry and clean substrates. Both the ambient and substrate surface temperature should be at least 10°C (50°F) and the surface temperature should be 3°C (5°F) above the dew point before the coating is applied.

Chemglaze M331 elastomeric coating will adhere to Lord's Chemglaze epoxy primers, wash primers and urethane primers. Consult individual primer datasheets for details.

Spray Equipment

Chemglaze high build elastomeric coatings are best applied by airless or electric airless equipment. See Table 5.

Usable Pot Life

The pot life of mixed Chemglaze M331 elastomeric coating is 2 hours. The pot life will be shorter on hot, high humidity days.

Storage

Store containers in a dry area protected from all forms of moisture. An ideal storage temperature would be 15.6°C (60°F). However, if the storage

temperature drops below 10°C (50°F), a portion of Part A will crystallize. Should this happen, the containers should be stored at 15.6°C (60°F) for two days before using. The mixed coating must be kept at 15.6°C (60°F) minimum until applied. Do not mix or use coating which is frozen.

Curing Conditions

Once Chemglaze M331/M201 elastomeric polyurethane, Parts A and B, are mixed, the curing process begins. Atmospheric moisture (humidity) reacts with Part B unblocking it. Then Part B reacts with Part A. At the same time, solvents evaporate from the film. Elevated temperatures and high velocity warm air speeds the removal of solvents.

The elastomeric coatings must be cured above 10°C (50°F) and 60% relative humidity. If the percent relative humidity drops between 30%-40%, moisture should be applied by steam or water to the cured area. Refer to Figure 1.

The applied elastomeric film must be kept at 10°C (50°F) for 24 hours before being exposed to lower temperatures. The elastomeric film cures slowly and solvents evaporate slowly at lower temperatures.

Typical Gardner time ranges are:

Chemglaze	Set to Touch	Surface Dry	Dry Hard
M331	15 - 30 min.	1 - 2 hours	4 - 6 hours
M431	15 - 30 min.	1 - 2 hours	4 - 6 hours

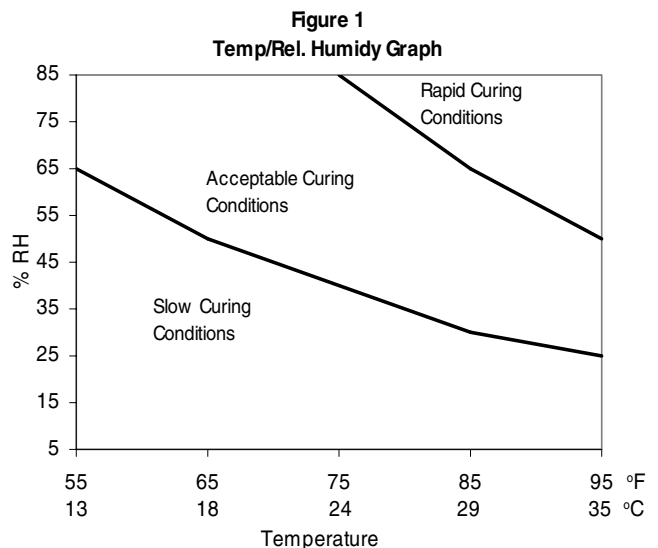


Table 1: Typical Physical Properties of Chemglaze Elastomer Coatings

	Part A M331	Part B M201	Mixed A & B 3:1, by volume
Color	Black	Yellow to Dark Amber	Black
Percent Solids			
weight	73	9.0	56.0
volume	67	7.5	52
Weight			
kg/liter	1.00	0.84	NA
lb/gallon	8.4	7.0	NA
Viscosity, Brookfield LVT, No. 4 @ 30 rpm 25°C (77°F)			
N•sm ²	8.5	Water thin	NA
cP	8500	Water thin	NA
Flashpoint, Setaflash °C (°F)	33.9 (93)	43.3 (110)	NA
Shelf Life, from date of shipment, 24°C (75°F), unopened container	6 months	6 months	NA
VOC			
g/liter	NA	NA	420
lb/gallon			3.5
Working Pot Life @ 25°C (77°F), 50% R.H.	NA	NA	2 hours
Tack Free Time	NA	NA	30 minutes

Table 2: Typical Physical Properties of Chemglaze M331 & M201 Cured Films

Tensile Strength, t_b ASTM D 882-83 Method A	5000 psi 34.5 MPa
Percent Elongation, E_b ASTM D 882-83 Method A	500%
Ware Index ASTM D-4060 CS17 1000 g/1000 cycles H18 1000 g/1000 cycles	No loss 60
Durometer (Shore A)	95

Table 3: Chemglaze M331 Elastomeric Polyurethane Coverage (Theoretical)

Wet Film		Dry Film		Coverage		
Mils	µm	Mils	µm	Mils	µm	m ² /gal
1.9	49	1	26.4	832	20.4	77.3
19.2	488	10	254	83.2	2.0	7.7
38.5	977	20	508	41.6	1.0	3.9
57.6	1,465	30	762	27.7	0.7	2.6

Table 4: Moisture Vapor Permeability

Using ASTM D1653 dry cup method, Water Vapor Transmission (WVT), and Permeability Coefficient (P) were determined for a 10 and 30 dry mils of Chemglaze M331/M201 and 10 mils topcoated with an aliphatic white polyurethane Chemglaze A276. The results follow:

	Water Vapor Transmission (WVT) Metric = grams/m ³ /24 hr U.S. = grains/ft ² /1hr	Permeance (WVT) Metric = grams/m ³ /24 hr/mm/Hg U.S. = grains/ft ² /hr/inch Hg	Permeability Coefficient (P) Metric = grams/m ³ /24 hr/mm/Hg/cm U.S. = grains/ft ² /hr/inch Hg/mil
M331/M201 10 mils			
Metric	51.2	51	0.18
U.S.	3.1	7.8	104.6
M331/M201 30 mils			
Metric	32.9	3.3	0.25
U.S.	1.9	4.9	146.6
M331/M201 1.2 mils			
Metric	11.0	1.1	0.04
U.S.	0.7	1.7	24.9

Table 5: Suggested Spray Equipment

	Binks	DeVillbiss	Graco	SCM/Glidden
Gun	No. 700	JGB-510 or JGN-502	205 or 208-663	EZ 300 or G-Gun
Tip	9-1508 (13" fan .015")	Tip 0815 (8" fan .015")	163-616 (12" fan .016")	415 (10" fan .015")
Pump	Model 98-901 Falcon 3A, 30:1 or Model 98-903 Hawk 4B 30:1	Model QFA 32:1	28:1, 30:1 President or 30:1 Bulldog	Formula One Electric Airless
Air Pressure	85-100 psi 586-689 kPa	85-100 psi 586-689 kPa	85-100 psi 586-689 kPa	

Recoat Time

A second coat of Chemglaze elastomeric coating or a topcoat of another Chemglaze coating may be applied after the first coat has cured a minimum of 4 hours at 15.6°C (60°F). Chemglaze M331 (black) can be coated after 5 days **if parts are kept clean**. In most instances, the elastomeric films are topcoated after 4 to 24 hours.

Thinners

Chemglaze elastomeric coatings are best sprayed with airless equipment and do not require thinning. Thinning is not recommended for high build applications.

For application with siphon gun and conventional pressure pot spray equipment, Chemglaze 9951 thinner may be used to thin these. Refer to datasheet DS3061.

Clean Up

Spray equipment must be cleaned immediately after spraying since the coating will cure inside guns, filter screens and hoses. Once the elastomeric coating cures, it is almost impossible to remove. Circulate solvent through the hoses for at least 15 minutes to help flush and clean the hoses. Chemglaze thinners help flush and clean the hoses. Chemglaze thinners 9951 and 9958 may be used for cleaning equipment.

Values stated in this bulletin represent typical values as not all tests are run on each lot of material produced. For formalized product specifications for specific product end uses, contact the Customer Service Department.

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Stripping Agents

Suggested stripping agents for clean up of equipment and removing elastomeric films are:

Pen-Strip	Penetone Corporation 74 Hudson Avenue Tenafly, NY 07670
Stay and Strip	Shelly Andrews Company 3540 N. Southport Chicago, IL 60657 312-871-5100

Cautionary Information

Before using this or any other Lord product refer to the Material Safety Data Sheet (MSDS) and label for safe use and handling.

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

For additional information, contact Lord Corporation at: 814/868-3611 extension 3211, FAX: 814/864-3452 or write: Lord Corporation, Chemical Products, 2000 West Grandview Blvd., P.O. Box 10038, Erie, PA 16514-0038

The logo for Lord Corporation, featuring the word "LORD" in a bold, black, sans-serif font. The letter "O" is stylized with a white circle inside it.