

Chemglaze Z451 is a single component, aromatic, moisture curing polyurethane coating recommended for interior applications. Chemglaze Z451 is an ASTM D-16 Type II oil-free product.

Chemglaze Z451 is used to protect metal substrates and prevent corrosion. The hard, glossy surface is resistant to most mineral acids, alkalis, detergents, lubricants, and chemicals. Chemglaze Z451 protects substrates in warehouses, industrial plants, chemical facilities, and laboratories.

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. Contact your Socomore representative for an appropriate recommendation.

Mixing

Before opening, thoroughly mix Chemglaze Z451 for 5 minutes on a paint shaker. Open the lid carefully as the container may be under slight pressure. Stir the coating with a clean paint stick to check for any settled material and to ensure that the coating is homogenous. If settling is still apparent, return the closed container to the paint shaker and mix for an additional 5 minutes or until all settling has been reincorporated. The working life of Chemglaze Z451 is 8 hours.

Application

Chemglaze Z451 is best applied at 13-35°C (55-95°F) with substrate temperatures at least 2.8°C (5°F) above the dew point. Chemglaze Z451 may be applied by airless, conventional, or HVLP spray. For all application equipment types, ensure that the air supply contains less than 500 ppm moisture.

For HVLP or conventional application equipment, dilute 5-15% by volume with Chemglaze 9951 thinner. Airless spray requires the addition of Chemglaze 9951 thinner up to 10% by volume. Thoroughly mix again after adding the appropriate amount of thinner. During application, hold the spray gun at right angles to the surface approximately 20.3-30.5 cm (8-12 in) away and apply with a 50% overlap between passes.

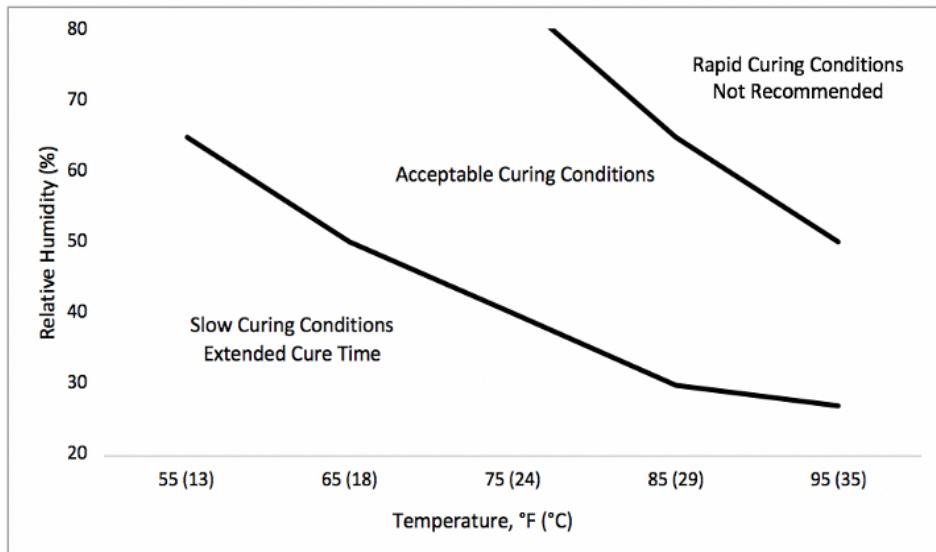
The optimum dry film thickness of Chemglaze Z451 is 38-51 micron (1.5-2 mil). Apply a maximum of 100 micron (4 mil) wet film thickness per coat as excessively thick coats can cause bubbling and sagging. The coverage rate is approximately 7.6-10.1 m²/L (310-412 ft²/gal).

Curing

Chemglaze Z451 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.

Under the acceptable curing conditions, the coating will develop its ultimate properties in approximately 7 days. Refer to the psychrometric chart below. Lower temperatures and humidities

decrease the rate of cure, while higher temperatures and humidities increase the rate of cure. Higher cure rates may cause bubbling. Chemglaze 9995 catalyst may be used in low humidity conditions to accelerate the rate of cure.



Chemglaze Z451 coating cures to a tack-free surface in 2-3 hours at 25°C (77°F) and 50% relative humidity. Room temperature cure times of 12 hours permit handling.

Chemglaze Z451 coating may be recoated after the first application within 3 hours minimum and 24 hours maximum. The recoat time is dependent on temperature and humidity. High temperatures and humidities promote fast cure, while low temperatures and humidities slow down the cure. In high temperature and humidity conditions, recoat within 8 hours to prevent intercoat adhesion failure. If the maximum recoat time is exceeded, the surface must be roughened by sanding with fine sandpaper prior to application of an additional coat.

Clean-Up

Use Chemglaze 9951 thinner to clean equipment. Do not use lacquer thinners, water, or solvents containing alcohols.

TECHNICAL CHARACTERISTICS

Typical Properties*

Property	Value
Appearance	Gray Liquid
Viscosity, cps @ 25°C (77°F), ASTM D 2196-86 Brookfield LVT, spindle 2, 30 RPM	180
Density, kg/L (lb/gal) ASTM D 1475-85	1.6 (9.55)
Solids Content by Weight, % ASTM D 2369-87 modified	54.7
Flash Point (Seta), °C (°F) ASTM D 3278-82, Closed Cup	14.4 (58)
Volatile Organic Content (VOC), g/L (lb/gal) ASTM D 3960-87	520 (4.3)

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

Exterior Weathering

Chemglaze Z451 coating is based on aromatic polyurethane chemistry. This type of polymer tends to chalk, lose gloss, and yellow on exposure to sunlight. The table below shows the performance with accelerated weathering compared to epoxy and aliphatic urethane chemistries.

Weatherometer Exposure Table

Product	Initial Gloss 60	Gloss after 1000 hours of exposure
Chemglaze Z451	99	9
Epoxy primer	66	17
Aliphatic urethane	93	69

Abrasion Resistance

Urethanes have the best abrasion resistance of all coating types. They protect substrates from wearing away. The typical abrasion resistance for Chemglaze Z451 coating is 32 as tested according to ASTM C 501-66 Taber Abraser Wheel Weight loss in mg per 1000 revolutions with 1000g load.

Chemical Resistance

Strong oxidizing acids, ketones, and hydraulic fluids will attack Chemglaze Z451. These products are not suitable for long term chemical immersion service. The following table shows the chemical resistance of Chemglaze Z451.

Chemical Resistance Table

Chemical	Exposure time in days		
Acids, Inorganic			
10% Hydrochloric Acid	5	4	4
35% Hydrochloric Acid	4	4	1
10% Sulfuric Acid	6	5	5
35% Sulfuric Acid	6	4	4
50% Phosphoric Acid			
Chromic Acid	4	4	1
Acids Organic			
10% Acetic Acid	5	4	4
Alkalies			
10% Ammonium Hydroxide	5	4	4
50% Sodium Hydroxide	6	4	4
Solvents			
Xylene	6	4	4
Ethanol	6	4	4
Ethylene Glycol	6	5	5
MEK (Methyl Ethyl Ketone)	5	1	1
Hexane	6	6	6
Fuels and Fluids			
Aviation Gas	6	6	6
JP-4 Jet Fuel	6	6	6
Gasoline	6	6	6

Skydrol 500 B-4	6	3	3
Brake Fluid	6	5	5

Key:

- 6: Unaffected
- 5: Slightly affected - slight color change or stain; temporary gloss reduction
- 4: >5 - stain or color change; permanent gloss reduction
- 3: >4 - slight blisters
- 2: >3 - blisters

Impact and Flexibility

Chemglaze Z451 is designed to have outstanding impact resistance and flexibility. As these properties are inherent in the basic urethane polymers, the films are not subject to change with age. Impact tests are performed by striking the direct (coated) side and the reverse (uncoated) side of the test panel and observing the blisters formed or cracking or crazing.

Impact and Flexibility Table

Test	Substrate	Result
Gardner Labs ASTM D2794-84	Steel	Pass 160 in-lb. Direct & reverse
General Electric	Aluminum	Pass 60% elongation Direct & Reverse
Conical Mandrel Flexibility (ASTM D522-85)	Steel	Passes highest rating 1/8"
Tensile Strength PSI		4819
% Elongation		76%

PRECAUTIONS FOR USE AND STORAGE

The shelf life of Chemglaze Z451 is one year from date of shipment when stored in the original, unopened container at temperatures between 10-32°C (50-90°F). Store indoors away from heat, sparks, and open flames.

Before using this 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. Not to be used in household applications. Not for consumer use.

Manufactured for SOCOMORE by: LORD Corporation, Saegertown, PA.

This technical data sheet replaces and cancels the previous one.

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