

Chemglaze®

Chemglaze® A-Line Polyurethane Coatings

Description

Chemglaze® A-Line coatings are moisture curing, single-package, aliphatic polyurethanes. Chemglaze A-Line coatings are designed for product finishing applications on many metal and rigid or semi-rigid plastic substrates. These ASTM D-16 Type II oil-free products are available in clear, black, and white colors.

Features and Benefits

Chemical Resistance - provides a hard, colorfast surface that is resistant to attack by many acids, alkalis, detergents, lubricating oils, solvents and chemicals.

Abrasion Resistance - exhibits low Taber weight loss values.

Versatile - performs well in many metal and plastic product finishing applications. Durable, high gloss finish can be adjusted to semigloss or lusterless by adding Chemglaze A170 flattening concentrate.

Gloss and Color Retention - provides excellent gloss and color retention.

Table 1: Typical Properties* of Chemglaze A-Line coatings

	A074	A246	A382	A170**
Color	Clear gloss	White gloss	Black gloss	Flattening concentrate
Percent Solids by weight	36.5	56.0	45.4	26.6
by volume	30.8	40.9	39.0	20.6
Density kg/liter	0.94	1.15	0.98	0.97
lb/gal	7.8	9.6	8.2	8.1
Viscosity N·s/m ²	0.08	0.25	0.25	0.42
cP	75	250	250	425
Flash Point °C (°F)	27 (80)	19 (67)	27 (81)	31 (88)
Volatile Organic Content (VOC) g/ltr	601	510	536	720
lb/gal	5.01	4.25	4.48	6.01
Theoretical Coverage m ² /ltr/ 25.4 µm	12.1	16.0	15.3	NA
ft ² /gal/mil	493	654	624	NA

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

**Chemglaze A170 flattening concentrate must be mixed with Chemglaze A074, A246, or A382 before use.

Test Methods

Weight Solids: ASTM D 2369 (modified)

Flash Point: ASTM D3278, Seta Flash, Closed Cup

Density: ASTM D 1475

VOC: ASTM D 3960

Viscosity: ASTM D 2196, Brookfield LVT, Spindle #2 @ 30 rpm

product information

Surface Preparation

Remove all contaminants from surfaces. Test apply on plastic substrates to determine if adhesion is adequate, or if scuff sanding or a primer will be required. For use on metals, use the guidelines in the Steel Structures Painting Council (SSPC) Painting Manual, Volume 2, Systems and Specifications. Contact your Chemglaze representative for assistance in selecting a primer.

Mixing

Scrape the container bottoms of Chemglaze A246, A382, and A170 to loosen and remove settled pigments. Mechanically stir or agitate the containers until uniform in consistency.

Thinners

For most applications, Chemglaze A-Line coatings can be thinned 5 - 20% with Chemglaze 9951 or 9954 thinners. For application by airless spray equipment, add up to 10% Chemglaze 9956 thinner. Do not use alcohol or glycol ether containing solvents.

Catalyst Addition

With adequate relative humidity, Chemglaze A-Line coatings will cure at room temperature without adding catalyst. For faster tack free time, without harming pot life, add 1% - 2% Chemglaze 9986 catalyst for room temperature cure, or 1% - 3% Chemglaze 9988 catalyst when baking above 93°C (200°F). In low relative humidity conditions, or for faster cure at room temperature or when baking, add 1% - 5% Chemglaze 9995 co-reactant catalyst. When Chemglaze 9995 co-reactant catalyst is added, pot life will be a maximum of 8 hours.

Gloss Adjustment

Chemglaze A074, A246, and A382 will dry to a high gloss finish without coating modification. The gloss can be adjusted to a semigloss or lusterless finish by adding Chemglaze A170 flattening concentrate. To adjust the gloss to semigloss, add 30 - 50 parts Chemglaze A170, by volume, to 100 parts high gloss coating. To adjust the gloss to lusterless, add equal parts, by volume, Chemglaze A170 to high gloss coating.

The resulting gloss appearance is affected by application method, drying conditions, and the amount of Chemglaze A170 used. Do not exceed 100 parts Chemglaze A170 to 100 parts high gloss coating, as coating performance will be impaired.

When Chemglaze A170 is added to the high gloss coating, the flattening concentrate must be catalyzed for proper cure. Select one of the catalysts listed under "Catalyst Addition" to best match the cure needed.

Thoroughly stir Chemglaze A170 before use and mechanically mix after adding to the high gloss coating. Failure to thoroughly mix will result in non-uniform gloss or film whitening.

Application

Spray – Chemglaze A-Line coatings can be applied by siphon or pressure pot spray by adding 5% to 20% Chemglaze 9951 thinner. Airless spray applications require addition of up to 10% of Chemglaze 9956 thinner. The vapors and spray mist are hazardous. Painters must use protective equipment when spraying. It is important to read the paint can label and Material Safety Data Sheet carefully before using.

Other Methods – For improved flow and air release in brush, roller, and dipcoat applications, add Chemglaze 9974 roller additive to one gallon Chemglaze A074 clear and A246 white as listed below.

Chemglaze A074:	15 - 30 ml (0.5 - 1.0 fl. oz.)
Chemglaze A246:	44 - 60 ml (1.5 - 2.0 fl. oz.)

Do not add Chemglaze 9974 roller additive to Chemglaze A382 as it is already contained in it.

Thoroughly shake Chemglaze 9974 roller additive before use, and mix well after adding to the Chemglaze A-Line coating.

Estimated Coverage

27.9-37.2 square meters (300-400 square feet) per gallon for 38.1-50.8 dry μm (1.5-2.0 mils) or 101.6-127 wet μm (4-5 mils), depending on porosity roughness of surface and product color. Film thicknesses above 127 wet μm (5 mils) can cause bubbling and sagging.

Chemical Resistance - The data in Table 2 illustrates the chemical and solvent resistance of Chemglaze A-Line coatings. Chemicals that will attack urethanes are strong oxidizers such as nitric and chromic acids, and concentrations of organic acids above 5%.

		Exposure Time (Days)		
		1	7	30
Table 2: Chemical Resistance				
Acids, Inorganic				
	10% Hydrochloric Acid	6	6	5
	35% Hydrochloric Acid	3	3	1
	10% Sulfuric Acid	6	6	6
	35% Sulfuric Acid	6	6	6
	50% Phosphoric Acid	6	6	6
	2% Chromic Acid	5	4	1
Acids, Organic				
	10% Acetic Acid	6	6	1
Alkalies				
	10% Ammonium Hydroxide	6	6	2
	50% Sodium Hydroxide	6	6	6
Solvents				
	Xylene	6	6	6
	Ethanol	6	6	6
	Ethylene Glycol	6	6	6
	MEK (Methyl Ethyl Ketone)	6	6	6
	Hexane	6	6	6
Fuels and Fluids				
	Aviation Gas	6	6	6
	JP04 Jet Fuel	6	6	6
	Gasoline	6	5	5
	Skydrol 500 B-4	6	3	3
	Brake Fluid	6	6	6

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 or wrinkles
 2 >3 - blisters
 1 film failure

Abrasion Resistance - Urethanes have the best abrasion resistance of all coating types. Table 3 illustrates the abrasion resistance of Chemglaze A-Line coatings.

Table 3: Typical Abrasion Resistance for

Chemglaze A-Line Coatings	
Product	Wear Index
Chemglaze A074 Clear	12
Chemglaze A246 White	32
Chemglaze A382 Black	15

ASTM C501-66, CS-17 Taber Abrader Wheel s- 1000 g. load; weight loss in milligrams per 1000 revolutions.

Curing

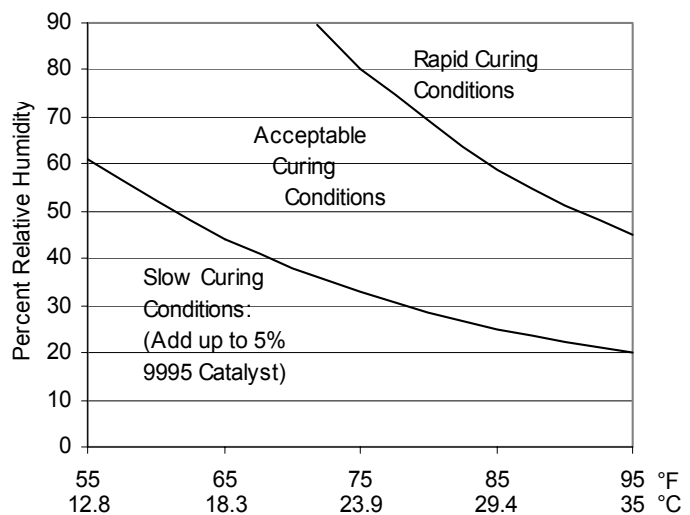
Chemglaze A-Line coatings are best applied between 13°C (55°F) and 35°C (95°F). The substrate temperature must be at least 2.8°C (5°F) above the dew point. Chemglaze A-Line coatings cure by reacting with moisture in the air. The speed of cure is dependent on the temperature, relative humidity and amount of air circulation needed to remove the solvent.

Under the acceptable curing conditions of the Temperature/Relative Humidity Graph, Chemglaze A-Line coatings will develop their ultimate properties in about 14 days. Lower temperatures and relative humidities retard cure, while higher temperatures and relative humidities can cause bubbling.

Outdoor Weathering - Chemglaze A-Line coatings are based on aliphatic isocyanates. This product line maintains its gloss after three years exposure in Florida.

Minimum recoat time is 4 - 6 hours at room temperature (25°C, 77°F) and 50% relative humidity with good air circulation. For maximum intercoat adhesion, recoat within 24 hours. Higher temperature and humidity promotes faster cure and a shorter recoat time. Lower temperature and humidity will require a longer recoat time. If the maximum recoat time is exceeded, scuff sand with No. 80 grit screen pads or sandpaper between coats.

Temperature/Relative Humidity Graph



Impact Resistance & Flexibility - Flexibility and toughness allow Chemglaze A-Line coatings to absorb impact without chipping or cracking. Table 4 lists impact and flexibility test results for Chemglaze A-Line coatings.

Table 4: Impact and Flexibility

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 Chemglaze A074		6179 psi
Chemglaze A246		4348 psi
% Elongation Chemglaze A074		98%
Chemglaze A246		82%

Clean Up

Use Chemglaze 9951 thinner, xylene, methyl ethyl ketone (MEK) or methyl Isobutyl Ketone (MIBK) to clean equipment before coating dries.

Packaging

Chemglaze A074 clear and Chemglaze A382 black:

- 1 Gallon Container (3.8 Liter)
- 5 Gallon Pail (19 Liter)
- 55 Gallon Drum (208 Liter)

Chemglaze A170 flattening concentrate and Chemglaze A246 white:

- 1 Gallon Container (3.8 Liter)

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.

Information provided herein is based upon tests believed to be reliable. Inasmuch as Lord Corporation has no control over the manner in which others may use this information, it does not guarantee the results to be obtained. In addition, Lord Corporation does not guarantee the performance of the product or the results obtained from the use of the product or this information where the product has been repackaged by any third party including but not limited to any product end user. Nor does the company make any express or implied warranty of merchantability, or fitness for a particular purpose concerning the effects or results of such use.

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Storage

Chemglaze A-Line coatings have a 1 year shelf life from date of shipment when stored in the original, unopened container. Store inside away from heat, sparks and open flame at temperatures between 10°C (50°F) and 32.2°C (90°F).

Limitations – For industrial/Commercial Use Only

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

Do not use lacquer thinners, water or solvents containing alcohol as thinners. Not for immersion service.

Do not apply to wet or damp substrates.

Contains aliphatic isocyanate monomer. Apply only in properly ventilated areas with acceptable respiratory protection.

For most substrates, primers are required to ensure proper adhesion and performance. Consult your Lord representative for the recommendation on the proper surface preparation and Chemglaze primer required for your application.

Chemglaze primers and coatings contain strong solvent and isocyanate or epoxy resins. Avoid breathing of vapors and spray mists. Good ventilation is extremely important while using these products. Workers must be protected from inhalation of vapors/mists by using an air-supplied or chemical cartridge respirator or other engineering controls.

Cautionary Information

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

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For additional information, contact Lord Corporation at: 814/868-3611 ext. 3277, FAX: 814/864-3452 or write: Lord Corporation, 2000 West Grandview Blvd., P.O. Box 10038, Erie, PA 16514-0038.

