

454 Aliphatic Polyurethane Coating

Components	2		
Curing mechanism	Solvent release and chemical reaction		
Volume solids (ASTM D2697 modified)	73% ± 3%		
Dry film thickness per coat	5 mils (125 microns)		
Coats	1		
Theoretical coverage	ft ² /gal		m ² /L
1 mil (25 microns)	1171		29
5 mils (125 microns)	234		5.7
VOC	lb/gal		g/L
mixed	2.2		264
mixed/thinned (1 pt/gal)	2.7		323
mixed/thinned/accelerated	3.01		360
mixed/accelerated	2.5		304
Temperature resistance (dry)	°F		°C
continuous	200		93
intermittent	250		121
Flash point (SETA)	°F		°C
cure	122		50
resin	110		43
mixed	115		46
Khemix 065	78		25
Khemix 012	2		-17

Qualifications

USDA – Incidental food contact
Tint and custom colors
NFPA – Class A

Typical Properties

Physical

Impact resistance (ASTM D2794) @ 5 mils

direct	140 in • lbs	15.8 N •m
reverse	50 in • lbs	5.6 N •m

Taber abrasion

1 kg load/1000 cycles	weight loss
CS-17 wheel	60.2 mg

Elongation (ASTM D522) >32%

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Chemical Resistance Guide

Environment	Splash and Spillage	Fumes and Weather
Acidic	E	E
Alkaline	E	E
Salt solutions		
Acidic	E	E
Neutral	E	E
Alkaline	E	E
Seawater	E	E
Fresh water	E	E
Solvents	G	E
Petroleum products	E	E

F-Fair G-Good E-Excellent NR-Not Recommended

*This table is only a guide to show typical resistance of **Khemix 454**. Contact your Alspec representative for your particular corrosion protection needs.*

Typical Systems

Substrate	Primer	Finish Coat
Steel	none, Khemix 400	Khemix 454
Galvanizing	none, Khemix 400	Khemix 454
Aluminum	none, Khemix 400	Khemix 454
Concrete	Khemix 400	Khemix 454
Masonry	none, Khemix 400	Khemix 454

Refer to specific primer's product data sheets and application instructions for detailed application and surface preparation information. Apply test patch to intact coating to confirm compatibility and adhesion.

*When **Khemix 400** is used as a primer for **Khemix 454** the maximum topcoat time is one month. Clean and roughen surface if topcoat time is exceeded.*

Environmental Conditions

Temperature air or surface	°F	°C
Khemix 454	40 to 120	4 to 49

Surface temperature must be at least 5°F (3°C) above dew point to prevent condensation.

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Application Data

Applied over	Prepared or primed steel, aluminum, galvanizing, masonry and primed concrete
Surface preparation	
steel	SSPC-SP 6 or 10
aluminum	Alodine®, Alumiprep® or light abrasive blast
galvanizing	Galvaprep® or light abrasive blast
concrete	See specific primer
masonry	ASTM D4261
previously coated surface	SSPC-SP1, 3 or 7

Appearance will vary depending on substrate and application method.

Environmental Conditions

Temperature-Air or surface	°F	°C
Khemix 454	40 to 120 -	4 to 49

Surface temperatures must be at least 5°F (3°C) above dew point to prevent condensation.

Drying time (ASTM D1640) (hours)	°F/°C			
	90/32	70/21	50/10	32/0
touch	1	2 1/2	4	-
through	5	10	72	-

Recoat time (hours)	°F/°C				
	90/32	80/26	70/21	50/10	32/0
minimum	4	5 1/2	8	48	-
maximum	12	24	168	168	-

Drying times are dependent on air and surface temperatures as well as film thickness, ventilation and relative humidity. Maximum recoating time is highly dependent upon actual surface temperatures - not simply ambient air temperatures. Surface temperatures should be monitored, especially with sun-exposed or otherwise heated surfaces. Higher surface temperatures shorten the maximum recoat window.

Thinner	Khemix 065
Equipment cleaner	Thinner or Khemix 012

Adhere to all application instructions, precautions, conditions and limitations to obtain the maximum performance. For conditions outside the requirements or limitations described, contact your Alspec representative.

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Surface Preparation

Coating performance is, in general, proportional to the degree of surface preparation. All surfaces must be clean, dry and free of oil, grease, dirt, salt deposits or other contamination.

Steel – Mill scale and rust must be removed. Abrasive blast hot-rolled steel to SSPC-SP6 and rusted and pitted steel to SSPC-SP10. Clean cold-rolled steel to SSPC-SP1 using vapor degreasing or solvent emulsion to remove all oil, grease and contamination. Solvent wipe is not satisfactory. Contact Alspec for compatible phosphate surface treatments.

Concrete – Clean concrete and masonry surfaces, abrasive blast (ASTM D4259) or acid etch (ASTM D4260). Fill concrete voids with Nu-Klad® 114A or 965. Fill masonry block with Khemix 400BF block filler.

Coated surface – Clean by low pressure water cleaning (1000 psi or greater) water blast, abrasive blast (SSPC-SP7), solvent emulsion cleaning (SSPC-SP1) or power tool cleaning (SSPCSP3). Surface must be clean, dry and free of oil, grease, dirt or other contamination. Apply test patch to confirm compatibility and adhesion.

Application Equipment

Power mixer – Jiffy mixer powered by an air or explosion proof electric motor.

Airless and electrostatic spray – Standard equipment Graco, DeVilbiss, Nordson-Bede, Speeflo or others having a 28:1 or higher pump ratio and a fluid tip with a 0.015- to 0.021-inch (0.38- to 0.53 mm) orifice.

Conventional, air-assisted airless and electrostatic spray – Devilbiss, Binks or Graco production spray equipment with moisture and oil trap in the main air supply line.

Brush – Natural bristle. Maintain a wet edge.

Roller – Solvent resistant. Level any air bubbles with a bristle brush. When brush or roller applied, multiple coats may be needed to achieve dry film thickness.

Application Procedures

1. Flush equipment with thinner or Khemix 012.
2. Stir resin thoroughly, add cure and mix until uniform. Do not mix more material than will be used within pot life time. Mixing ratio is 4 parts resin to 1 part cure by volume.

Pot life (hours)	°F/°C			
	90/32	70/21	50/10	32/0
Khemix 454	1 1/2	2 1/2	5	-

3. If thinning is necessary, add up to 1 pint **Khemix 065** per gallon of **Khemix 454** .
4. When applying by spray, adjust pressures for equipment configuration and environmental conditions to ensure proper atomization.
5. Apply a wet coat in even, parallel passes; overlap each pass 50 percent.

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through	5	10	72	-	

Recoat time (hours)	°F/°C				
	90/32	80/26	70/21	50/10	32/0
minimum	4	5 1/2	8	48	-
maximum	12	24	168	168	-

Note: When applying directly over organic zinc at full thickness, bubbling may occur. A mist coat/full coat technique may be required to prevent application bubbling.

6. For colors, application of 8-mil wet film thickness (thinned) will normally provide 5-mil dry film thickness, Clear coat at 5-mils WFT will normally provide 3-mil DFT.
7. Clean all equipment with thinner or Amercoat 12 immediately after use.

Note: Moisture sensitive – Keep cure container tightly closed. Repeated moisture exposure will cause gellation and gassing; handle bulged containers with caution, lids may eject forcibly.

Repair

Spot blast or power tool clean bare substrate to the requirements shown under surface preparation. Feather edges of intact coating. Remove dust, dirt and contamination before recoating.

Shipping Data

Packaging units	1 gal	5 gal
cure	0.20 gal in 1-qt can	1 gal in 1-gal can
resin	0.80 gal in 1-gal can	4 gal in 5-gal can

Shipping weight (approx)	lb	kg
1-gal unit		
cure	2.2	1.0
resin	11.0	5.0
5-gal unit		
cure	10.4	4.7
resin	55.0	25.0

Shelf life when stored indoors at 40 to 100°F (4 to 38°C)	
resin	1 year from shipment date
cure	1 year from manufacturer date

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Numerical values are subject to normal manufacturing tolerances, colors and testing variances. Appearance will vary depending on substrate and application method. Allow for application losses and surface irregularities. See application instructions for complete information and safety precautions.

This mixed product is nonphotochemically reactive as defined by the South Coast Air Quality Management District's Rule 102 or equivalent regulations.

Safety Precautions

Read each component's material safety data sheet before use. Mixed material has hazards of both components. Safety precautions must be strictly followed during storage, handling and use.

Limitation of Liability

Alsper's liability on any claim of any kind, including claims based upon Alsper's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim. **In no event shall Alsper be liable for consequential or incidental damages.**

Due to Alsper's policy of continuous product improvement, the information contained in this Product Data/Application Instructions sheet is subject to change without notice. It is the Buyer's responsibility to check that this issue is current prior to using the product.

Warranty

Alsper warrants its products to be free from defects in material and workmanship. Alsper's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at Alsper's option, to either replacement of products not conforming to this Warranty or credit to Buyer's account in the invoiced amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to Alsper in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify Alsper of such nonconformance as required herein shall bar Buyer from recovery under this Warranty.

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