

# Super-Krete® Products

## Chemical Resistant Guide

### **INTRODUCTION**

This Chemical Resistance Guide is intended to serve as a guideline only, since actual in-service conditions usually vary from the laboratory conditions where the test data was developed. The variations are due to differing conditions therefore, Arizona Polymer Flooring cannot assume liability for use or guarantee performance. Resistance to chemicals or concentrations appears on the Chemical Resistance Chart, which represent only a fraction of the known chemicals or combinations of chemicals.

Site conditions vary because of changes in concentration (water evaporation), combinations, temperature, duration of exposure, contaminants, housekeeping and cleaning technique, etc., therefore, it is recommended that "actual testing" be performed with each of the specific reagents, as well as the specific method of cleaning. Prior to final selection of a chemical resistant system, it is recommended by Arizona Polymer Flooring that testing be performed under actual conditions, since the complexity of many end use environmental circumstances and potential cross contaminants can influence actual performance.

When seeking assistance in the selection of the proper product(s) or system(s) from Arizona Polymer Flooring, we may require samples of the actual reagents, environmental use and exposure conditions, cleaning, biocides or bio-stats, disinfectants, cleaning equipment, SDS, etc., as well as any other relevant information that might influence the performance of the chemical resistant system, including:

1. Commercial name of all reagents under consideration for use in the area
2. Concentration of each reagent
3. In use ambient temperature and substrate surface temperature
4. Temperature of reagent as it contacts the surface
5. Combination of chemicals that will react with each other on the surface

6. Frequency of spills and elapsed time between spillage until clean up and neutralization occur

**Note:** *Arizona Polymer Flooring reserves the right to refuse to test chemicals it deems harmful.*

### **UNDERSTANDING CHEMICAL RESISTANCE**

Generally, chemical resistance is considered a functional concern, rather than an aesthetic concern. The ASTM tests and Arizona Polymer Flooring's in-house proprietary tests are designed to evaluate the functional effect of exposure, which do not include an aesthetic evaluation of resistance to staining or discoloration.

Functional chemical resistance is determined by the materials ability to resist chemical attack, which is normally measured by weight gain or loss and by volume gain or loss, and by gain or loss of hardness.

### **PIGMENTED SYSTEMS**

Unpigmented resin and hardener systems generally have superior chemical resistance to pigmented systems, since pigments normally have less chemical resistance than the neat (unpigmented and unfilled) liquids. When considering a pigment system to enhance chemical resistance of the selected system, Arizona Polymer Flooring usually recommends that the system is top-coated with one or more chemical resistant clear coatings.

### **TEMPERATURE**

Chemical resistant testing, unless otherwise indicated, is performed under Laboratory conditions at 75°F +/- 2°F (24°C +/- 1°C). Temperature has a significant effect on chemical reactivity and the aggressiveness of the chemical. Changes in temperature, evaporation rate and humidity can affect the performance of a chemical resistant system. As a rule of thumb, chemical reactivity doubles or halves with a temperature increase or decrease of 18°F (10°C), which is known as the Arrhenius Curve.



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Typically, there is a correlation between the temperature of a chemical reagent and its reactivity. The higher the temperature the greater the chemical reactivity and the more aggressive the chemical. Correspondingly, most chemical resistant coating and flooring surfaces will begin to soften as the temperature is increased and they will lose their chemical resistances, as well as a significant reduction in their mechanical and physical properties.

### **LONG TERM PERFORMANCE**

Arizona Polymer Flooring's chemical resistant systems are formulated to protect substrates from a variety of specific corrosive reagents and environmental combinations. For long-term successful performance of a chemical resistant system, the following information should be implemented:

### **FREQUENCY OF MAINTENANCE**

Frequency of housekeeping-maintenance may vary depending on chemical, concentration, combination, etc. Good housekeeping is always required, including the removal of deleterious chemicals, which normally requires neutralization. Caution should be exercised not to allow the system to be exposed to chemical attack for excessive durations or combinations of chemicals or physical abuse that exceeds the ratings contained in the Arizona Polymer Flooring's Chemical Resistance Guideline and Chemical Resistance Chart.

Failure to maintain proper housekeeping can result in chemical changes in the reagent, such as; acid concentrations will increase when the water carrier or other diluants evaporate. Generally, the higher the acidic concentration the more aggressive the acid, thus proper housekeeping is required to remove the potentially problematic chemical.

### **DISCOLORATION**

Discoloration, such as dye, blemish, loss of gloss, spotting, staining, tarnishing, etc. may occur. Discoloration and its variation may not affect functional performance. However, it may affect appearance. Use of unpigmented products/systems may minimize discoloration. Use of certain colored pigments products or systems may mask discolorations.

### **CLEANING, SANITIZING CLEANING & DISINFECTING PROCEDURES**

Cleaning and sanitizing techniques, solutions, disinfecting compounds and other chemicals used, such as biocides, can affect the color, gloss, texture and performance of a chemical resistant product. As a precautionary step, Arizona Polymer Flooring recommends that the end-user test their cleaning, disinfecting, etc., compounds on a sample or small finished area to determine if they will affect the performance or appearance of chemical resistant product/system. This test should be performed utilizing the intended cleaning technique and equipment prior to cleaning the entire surface area. As an example, some cleaning agents intended for use on adjacent surfaces, such as stainless steel, might be harmful to organic surfaces. Care must be taken to avoid contact.

The mechanical cleaning equipment and techniques need to be evaluated for compatibility with the chemical resistant product/system prior to use and must be used in accordance with the end user's written instructions.

If no deleterious affect are observed during the test, the procedure can be continued. If the cleaning and disinfecting compounds or cleaning techniques damage the product/system, modification of the cleaning materials and/or techniques will be required. Contact Arizona Polymer Flooring technical service representative for additional information.



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### **STEAM CLEANING**

In most cases, steam cleaning at 212°F (100°C) may be used, provided that the wand and hoses are insulated and the direct contact temperature does not exceed 180°F (82°C) for a prolonged period of time, keeping the wand and the hoses moving in constant motion across the surface during the course of cleaning.

### **CLEANING EQUIPMENT**

Floor scrubber and buffing equipment with non-destructive and non-abrasive brushes and pads may be used to remove accumulation of dirt on the chemical resistant system. Micro-scratching from cleaning equipment and techniques may reduce gloss. Check with the Manufacturer for a sealer or polish recommendation to restore the lost luster.

### **SLOPE TO DRAIN & TRENCHES**

Sloping to properly functioning drains or trenches is critical and must be maintained at all times. Puddling or standing chemicals should be avoided to elude premature degradation of the system.

### **PERFORMANCE REVIEW**

Methodical and judicious review of the entire area will detect potential integrity loss from unusual spillage or abusive damage, which could result in serious problems if not detected in their incipient stage.

If repairs are required, the end-user shall notify the installing Contractor and Arizona Polymer Flooring immediately to prevent further damage to the product/system and/or the substrate. Regardless of the origin of the problem, remedial repairs should be executed without delay by the contractor. The installing contractor must be given free and unencumbered access to the area in need of repair.

### **CHANGE IN USE**

Change in the usage, chemical exposure or method of maintenance might have a negative effect. Arizona Polymer Flooring and the installation Contractor should be advised and asked to assess the ability of the product/system to resist the new exposure conditions.

### **RATING DESCRIPTION**

- R** Recommended for Secondary Containment (72 Hour Exposure) with Proper Clean Up.
- S** Recommended for Intermittent Contact Splash and Small Spillage, without puddling or covering, with proper cleanup. Not Recommended for Immersion or Fumes, proper housekeeping required to clean up spills.
- N** Not Recommended
- I** Immersion - Contact Arizona Polymer Flooring

### **TESTING**

Additional testing may be required; consult with Arizona Polymer Flooring prior to specification, installation or exposure. Staining and Chemical Resistance Testing required. Consult Arizona Polymer Flooring prior to specification, installation or exposure. Test for use by the Specifier or end-user requires uncured (liquid and powder) or cured samples for testing at their facility or designated laboratory to determine chemical resistance, stain resistance, etc. of specific chemicals. Contact Arizona Polymer Flooring and make arrangements for "specific test specimen".

### **TESTED ITEMS & PROCEDURES**

Normally, only the polymer product is tested rather than the system it is used in. This is done because many products are used in several systems, which would make the chart longer and more complicated than necessary.



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## **NOTIFICATION**

Immediately upon notice (within five working (5) days) of a defective products/systems or workmanship or end user abuse, the owner or their representative shall notify Arizona Polymer Flooring about the problem in writing, before it expands and becomes more costly to repair.

## **DISCLAIMER:**

Arizona Polymer Flooring Technical Bulletins are developed in good faith for the sole purpose of assisting others with products, systems and industry standards. The information published herein is gathered from different sources that are thought to be reliable, but the reader should not assume that the information absolves the reader from validating information from other sources, such as listed below, before making a decision. Since information from others can change without notice, Arizona Polymer Flooring cannot be held at fault if any of the information conveyed in good faith is deemed in error. Listed below is a number of trade association organization that can provide additional assistance to the reader.



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Phoenix, AZ 85043  
623-435-2277  
[www.apfepoxy.com](http://www.apfepoxy.com)

## **AMERICAN SOCIETY FOR TESTING OF MATERIALS**

ASTM D1308 Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes

ASTM International  
(American Society for Testing of Materials)  
100 Barr Harbor Dr.  
West Cohshohocken, PA 19428  
[www.astm.org](http://www.astm.org)



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<b>Chemical Reagents</b>	<b>SK-E100</b>	<b>SK-E400</b>	<b>SK-E600</b>	<b>SK-P100</b>	<b>SK-P250</b>	<b>SK-P500</b>	<b>SK-P501</b>	<b>SK-P5000</b>	<b>SK-P5001</b>	<b>SK-P5100</b>	<b>SK-P7500</b>	<b>CEM-SEAL*</b>	<b>SK-8000*</b>	<b>SK-8350*</b>	<b>SK-8400*</b>	<b>SK-8500*</b>	<b>SK-8600*</b>
Acetic Acid 10%	5	5	5	5	5	5	5	5	5	5	5	3	1	4	4	3	1
Ammonium Hydroxide 10%	5	5	5	5	5	5	5	5	5	5	5	4	3	5	5	3	4
Black Ink	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Blood	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Brake Fluid	4	4	5	5	5	5	5	5	5	5	5	4	2	5	5	2	1
Coffee	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Diesel Fuel	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	3	3
Gasoline	5	5	5	5	5	5	5	5	5	5	5	4	3	3	3	2	2
Hydrochloric Acid 10%	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	4	4
MEK	1	1	2	3	1	1	3	3	3	3	3	1	1	1	1	1	1
Mineral Spirits	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Motor Oil	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Mustard	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Sodium Hydroxide 50%	3	5	5	5	5	5	5	5	5	5	5	4	3	5	5	3	3
Sodium Hypochlorite 3%	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Sulfuric Acid 10%	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Transmission Fluid	4	4	5	5	5	5	5	5	5	5	5	4	3	4	4	3	3
Urine	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Vegetable Oil	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Whiskey	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Xylene	4	4	5	5	5	5	5	5	5	5	5	2	2	4	4	2	2

**Test Protocol:** ASTM D 1308 Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes. 7 day ambient cure, 24 hour exposure, covered.

\*7 day ambient cure, 8 hour exposure, covered

**Key:**

- 5. No Effect
- 4. Slight softening/blistering
- 3. Moderate softening/blistering
- 2. Severe softening/blistering
- 1. Film Destroyed

