

# SCORPION PROTECTIVE COATINGS

## TECHNICAL DATA



800-483-9087

[www.scorpioncoatings.com](http://www.scorpioncoatings.com)

## Scorpion Products

When Scorpion brings a product to market, it must be unequalled in performance and, in addition, be:

- Environmentally responsible
- Safe for those who apply it
- User friendly
- Cost effective



*The following technical data reports are the first of their kind in the industry. Scorpion provides not only hard test data with specific industry-wide reference standards but also a concise explanation of these tests, so you can make informed spray-coating decisions.*

## Product Description

In exact coating terms, Scorpion XO-2 is an acrylic-reinforced aliphatic aromatic polyurethane. In simpler terms, it is a chemically engineered product that uses the best characteristics of polyurethane—aliphatic aromatic blend polyurethane has incredible strength—which when combined with our patented acrylics blend, adds ease of application and UV stability. Until the Scorpion breakthrough in the mid-1990's, successfully combining an oil-based and a water-based coating had never been accomplished. Scorpion XO-2 stands alone in this class.

Scorpion XO-2 can be batch mixed in any quantity and yields excellent abrasion resistance, high tensile strength, and superior elongation and tear properties. Scorpion XO-2 performs exceptionally well in virtually all production, weather and chemical environments. In addition, XO-2 is applied with simple, inexpensive spray equipment that simply never malfunctions and will cleanup in less than five minutes. Low equipment and coating cost, along with unequaled performance, make Scorpion XO-2 one of the most desirable coating products in the world.

## Physical Properties<sup>1</sup>

### Test Results on un-pigmented Scorpion Truck Bed Lining Material:

Heat - Change in Properties @180°F.	No Effect	Atkins 33034-F
Tear, Die C	351.7 psi	ASTM D624-98
Flexibility – Mandrel Bend	Excellent (no cracking)	GM9503P
Tear, split (initiated)	100 pli	ASTM D470
Freeze Affect to -40C	Remains Flexible	TA-DSC 2920
Tensile Strength	2,300 psi pounds	ASTM D-638-00
Elongation	453 %	ASTM D-638-00
Specific gravity	0.966	ASTM D792-00



*The tear tests are made using a sample with a specific shape to determine the ease of tearing with and without an existing tear. The tensile strength measures the amount of pressure required to cause failure of the sample by pulling the sample at a specified rate of speed. The elongation test measures how far the sample stretches (as a percentage of the original length) when it breaks. These tests are a testament to the incredible strength and resiliency of the Scorpion XO-2 product.*

## Hardness

Hardness (Shore A)	88	ASTM 2240-75
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*This test was performed by Polymer Diagnostics using a durometer. This test equipment measure's the amount of force needed to penetrate the material with a pin. X-O2 is well above the midrange in this category. The Shore A of 88 is engineered into the X-O2 product to provide the desired degree of hardness, flexibility and durability.*

## Coefficient of Friction<sup>1</sup>

.68 (Very Safe)	ASTM C12028-89
.89 (Dry)	ASM 725
.74 (Wet)	ASM 725

*The combination of toughness and surface tension provides X-O2 with its excellent non-skid qualities. Even with a wet X-O2 surface, you will be able to squeak your tennis shoes.*

## Water Absorption

Change in mass = 0.9%	ASTM D471-99
Volume Change = 0.0%	ASTM D471-99

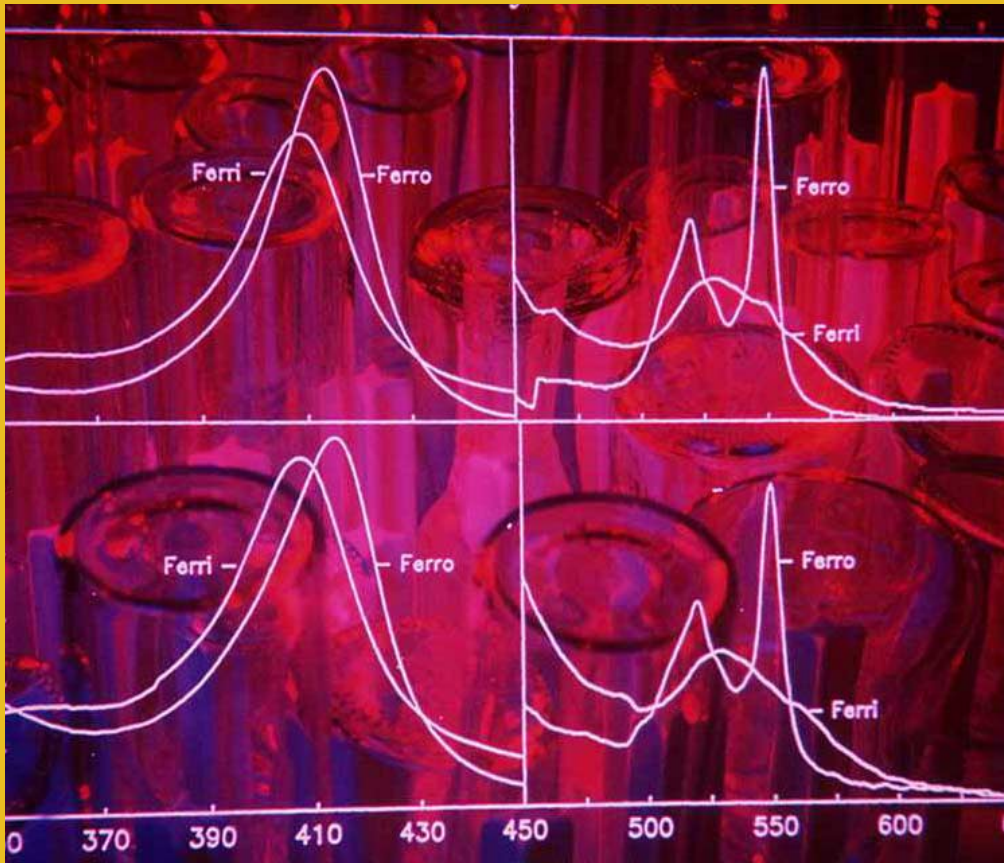
*An excellent result which means very little water is absorbed after immersion as tested over an extended period of time.*

## Resistance to Bleach

Immersion Test	15% NaClO	No visible damage	No ASTM
Spot Test	15% NaClO	No visible damage	No ASTM

*Both of these tests were conducted with a strong bleaching agent over a 72 hour period. NO visible damage was reported in either trial. The spot test, in which an eye dropper full of 15% bleach was placed on the solution for 72 hours. The bleach evaporated leaving a white spot (presumably a chlorine salt) which when wiped with water disappeared leaving no trace of the bleach and showing no damage.*





**Abrasion Resistance<sup>1</sup>**

Loss of Mass	0.0013	Excellent	ASTM D3389-94
	0.0012	Excellent	ASTM D3389-94

*The Standard requires the application of an abrasive wheel to the test sample at a specific pressure. The extremely low values here demonstrate the particularly high strength of X-O2. Strength is distinguished from hardness here and shows another unique property of Scorpion X-O2: the ability to be strong without being excessively hard or brittle.*

**Weather Resistance<sup>2</sup>**

Weathering	2,500 hours	1.54 (CIE)	Excellent	QUV 340 lamps
Color Stability	2,500 hours	-0,45 (Hunter)	Excellent	SAE J 1960

*2,500 hours under a xenon arc lamp is the equivalent to years of direct sunlight. As shown in the test results, Scorpion X-O2 has excellent color stability and resistance to Ultra Violet light. Further, unlike other urethane's, Scorpion X-O2 weathers with a color shift to blue/green, not to yellow as is so common in other products claiming similar characteristics. This means that the Scorpion colors will keep their bright rich hues much longer than other urethane-based coatings.*

**Accelerated Corrosion<sup>2</sup>**

This test is commonly referred to as the "salt spray" test.

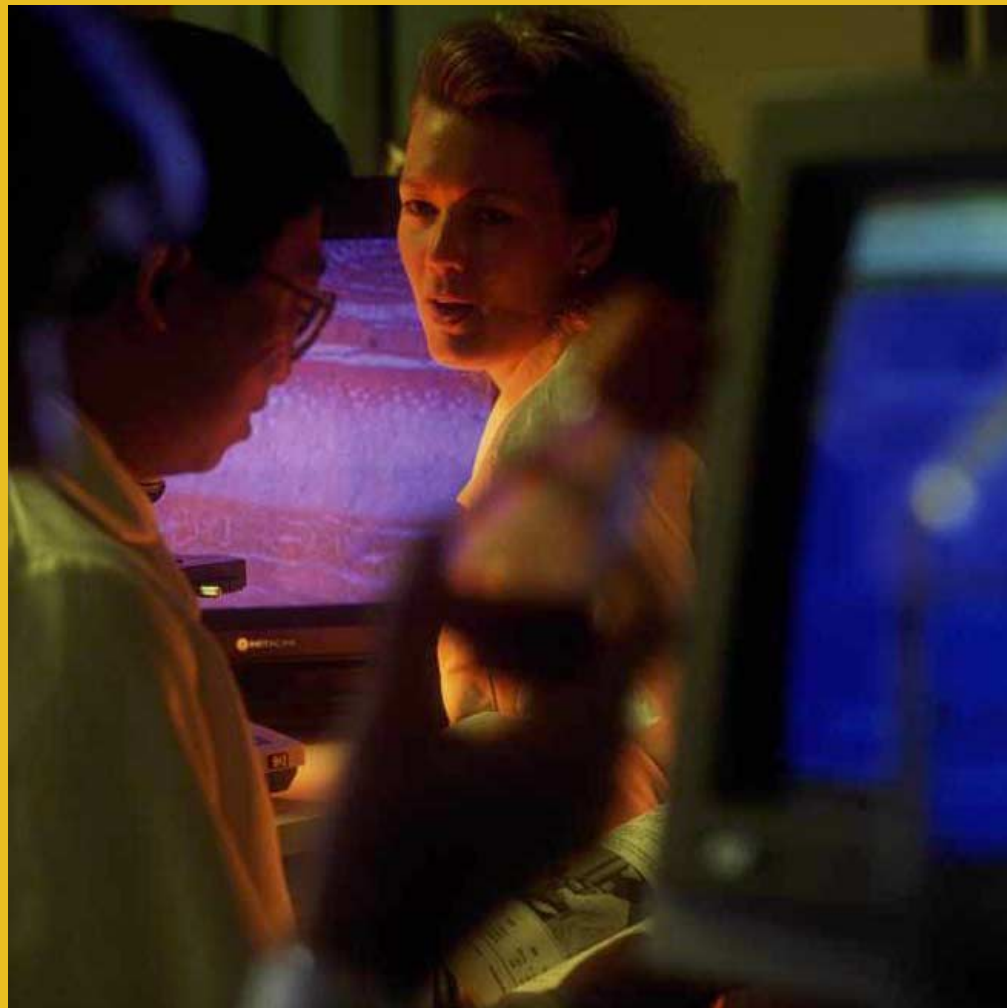
Warping/Cracking	500 hours:	10-Excellent/No Change	ASTM D661
Blistering/Deterioration	1,500 hours:	10-Excellent/No Change	ASTM D661

*Product was tested over a period of 500 to 1,500 hours under accelerated testing conditions. Demonstrates durability of the product for sunlight, UV and salt spray exposure. As shown in this test, and elsewhere herein, the Scorpion product has superior weathering characteristics under adverse conditions.*

## Flammability<sup>1</sup>

Burn Rate                      1.1 in/min.                      Exceeds DOT Std. No. 302

*The DOT Standard 302, 49 CFR V, 751.302 (10-19-97 edition) is the established standard for flammability of materials used in vehicles. This is the American standard which is the highest in the automotive industry worldwide. Scorpion X-O2 exceeds this burn rate, and by a considerable margin. This shows that our product has an inherent safety factor which allows manufacturers and installers to build-in safety and fire protection.*



## Electrical Properties<sup>1</sup>

Static Decay                      0.76 sec. @± 5k v.  
Excellent                      Electro-Tech Sys. Md. 406C

*A static decay time of less than one second means that static electricity will not accumulate to dangerous levels on surfaces coated with Scorpion X-O2. This provides an extra margin of safety for vehicles that transport volatile chemicals, oxygen, combustible gases, fuels, solvents, etc. Never underestimate the danger of static electricity... remember the Hindenburg.*

## Toxicity at Use<sup>3</sup>

All exposure levels were less than one-half of OSHA-PEL levels. NIOSH 1150, 1450 and OSHA 42/47

*Scorpion achieves these unusually low levels for two reasons: First, Scorpion X-O2 has a remarkably low level of Volatile Organic Compounds (VOC's). This means that the solvents used in our product are both relatively safe and exist in relatively small quantities. Secondly, Scorpion X-O2 is sprayed at very low pressure (about 15 psi). By doing so, the product is never atomized and the atmosphere of the spray environment stays clear of airborne particles.*

## Resistance to Common Substances<sup>1</sup> ASTM D543, Practice A

Tap Water	No Change	
Deionized Water	No Change	A
PEAK Windshield Cleaner	No Change	
Dermassage Dishwashing Liquid	No Change	
STP Brake Fluid	Color Change/Loss of Gloss	
Zerex Antifreeze Coolant	No Change	
Exxon 5W-30 Motor Oil	No Change	
#2 Diesel Fuel	Very Slight Swelling	
87 Octane Unleaded Gas	Slight Swelling in All Directions	
Hydrochloric Acid	Very, Very Slight Lightening	
Road Salt-100% Solution	No Change	
Ammonium Nitrate	No Change	
Hydrofluoric Acid-50% Solution	Color Change/Wrinkling of Surface	

*As shown here, Scorpion X-O2 demonstrates extraordinary resistance to most common chemicals and solvents.*

## Bonding Substrates<sup>4</sup>

Scorpion X-O2 has proven to be an excellent protective coating when applied to: Steel, Aluminum, Wood, Fiberglass, and Concrete.

*One of the remarkable properties of Scorpion X-O2 is its ability to bond to almost surface. Some substrates require preparation, most do not require any. A good example is untreated wood. Most standard urethane coatings can not be applied directly to a wood surface, and the moisture in the wood reacts with the chemicals in the urethane and will cause a bubble or delamination. Scorpion X-O2 is unaffected by moisture and can be sprayed directly to the wood surface.*

## Cure Time<sup>4</sup>

Dry Time to tack free:	40 minutes
Cure Time:	50% in 4 hours
	80% in 24 hours
	95% in 3 days

*The cure time has been engineered to allow a spray application that the end-user can work with for a short time if needed. You can use this time to clean edges, remove over-spray or touch-up minor defects before the material starts to harden. Scorpion X-O2 is dry to the touch in about 40 minutes.*

## Coverage<sup>4</sup>

1 Gallon = 22 sq. ft. at 1/16"





PROTECTIVE COATINGS, INC.

**SCORPION**

"To Serve and Protect"



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#### NOTES

1: Testing conducted by Polymer Diagnostics, Inc., 33587 Walker Road, Avon Lake, Ohio 44012. Visit them on the web at [www.polymerdiagnostics.com](http://www.polymerdiagnostics.com).

2: Testing conducted by Q-Lab Weathering Research Service, 1005 SW 18th Avenue, P.O. Box 349490, Homestead, Florida 33034. Visit them on the web at [www.q-panel.com](http://www.q-panel.com).

3: Testing conducted by Micro Air, Inc., 6320 La Pas Trail, Indianapolis, Indiana 46268. Visit them on the web at [www.microair.com](http://www.microair.com).

4: Testing conducted in-house over several years of shop, field and actual application testing for literally thousands of spray-coating applications conducted since the mid-1990's. Visit us on the web at [www.scorpioncoatings.com](http://www.scorpioncoatings.com).