

Scorpion X-O2

TECHNICAL DATA SHEET

Effective June 1, 2007

Product Description

In exact coating terms, Scorpion X-O2 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), and 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 X-O2 stands alone in this class.

Scorpion X-O2 can be batch mixed in any quantity and yields excellent abrasion resistance, high tensile strength, and superior elongation and tear properties. Scorpion X-O2 performs exceptionally well in virtually all production, weather and chemical environments. In addition, X-O2 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 unequalled performance, makes Scorpion X-O2 one of the most desirable coating products in the world.

Physical Properties (Note 1)

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

Freezing Temperature	N/A	None Determined
Heat - Change in Properties @ 180°F.	No Effect	Atkins 33034-F
Tear, Die C	351.7 psi	ASTM D624
Flexibility B Mandrel Bend	Excellent (10-no cracking)	GM9503P
Water absorption	Volume change = 0.0%	ASTM D471
	Change in mass = 0.9%	ASTM D471
Freeze Affect to -40C	Remains Flexible	TA-DSC 2920
Tensile Strength	2,300 psi pounds	ASTM D-638
Elongation	453 %	ASTM D-638
Specific gravity	0.966	

Hardness

Hardness (Shore A)	88	ASTM 2240
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Water Absorption

Water Absorption	Change in Mass = 0.9%	ASTM D471
	Volume Change = 0.0%	ASTM D471

Resistance to Bleach

Immersion/Spot Test 15% NaClO No visible damage ASTM D543 A

Abrasion Resistance (Note 1)

Loss of Mass	0.0013	Excellent	ASTM D3389
	0.0012	Excellent	ASTM D3389

Weather Resistance (Note 2)

Cracking/Craze	1,500 hours	10	Excellent	ASTM D 660/661
Weathering	2,500 hours	1.54 (CIE)	Excellent	QUV 340 lamps
Color Stability	2,500 hours	-0,45 (Hunter)	Excellent	SAE J 1960

Flammability – Automobile Interior (Note 1)

Burn Rate 1.1 in/min. Exceeds DOT Std. No. 302 of 4 in/min.

Flammability – Aircraft Interior (XO2/FR) under FAR 29.853. (Note 6)

Burn Length - 0.1 inch Self Extinguish – 0.0 sec. Drippings Self Extinguish - 0.0 sec.

Vertical 12 second burn at 1,200 degrees F with open flame. Average self extinguish time may not exceed 15 seconds. Average burn length may not exceed 8 inches. Average dripping may not exceed 5 seconds to self extinguish after falling.

Electrical Properties – Static Discharge (Note 1)

Static Decay 0.08 sec. @ 10k 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.

Toxicity at Use (Note 3)

Stoddard solvent, n-butyl acetate, HMDI, HDI, TDI, VM&P, naphtha, kerosene, PGMEA.

NIOSH 1550, 1450 and OSHA 42/47

All exposure levels were less than one-half of OSHA-PEL, ACGIH-TLV and NIOSH-REL levels.

Toxicity – Aircraft Interior Burn (XO2/FR) under FAR 29.853. (Note 7)

HCN, CO, NO + NO2, SO2, HF and HCL. All levels were less than one-tenth of established exposure limits. Reference: BSS 7239, ATS 1000/ABD0031.

Resistance to Common Substances/Chemicals (Note 1)

ASTM D543, Practice A

Tap Water	No Change
Deionized Water	No change
PEAK All weather windshield washer	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 Speedway Diesel Fuel	Very slight Swelling-small blisters
87 Octane Unleaded Gas	Slight swelling in all directions
Battery Acid	Very, very slight Lightening of Color/Some Spotting
Ammonium Nitrate	No Change
Hydraulic Fluid (Aircraft Grade)	No Change
Hydraulic Fluid (Automobile Grade)	No Change
Hydraulic Fluid (Heavy Equipment Grade)	No Change
Hydrofluoric Acid – 50 %	Swelling/Blisters/Loss of Surface
Rock Salt Solution	No Change
Hydrochloric Acid – 37%	Swelling/Loss of Gloss/Blisters
Hydrochloric Acid – 20%	No Change

Coefficient of Friction (Slip Resistance)

0.67	Wet surface average	ASTM F1679-04 (Note 8)
0.85	Dry surface average	ASTM F1679-04 (Note 8)
0.74	low average when wet	ASM 725 slip meter
0.83	low average when dry	ASM 725 slip meter

Industry standard calls for a minimum 0.5 for a normal walking surface, or, for a minimum 0.6 to 0.7 for a wet/working surface. ASM 725 slip meter is used by the insurance industry for onsite verification of slip resistance for flooring surfaces.

Fungal and Bacterial Resistance (ZBG) (Note 5)

Fungal Resistance	No visible growth - Material did not support growth	ASTM G21
Bacterial Growth	No visible growth - Material did not support growth	ASTM G22

Bonding Substrates (Note 4)

Scorpion X-O2 has proven to be an excellent protective coating when applied to:

Steel Aluminum Wood Fiberglass Concrete Ceramic Tile

One of the remarkable properties of Scorpion X-O2 is its ability to bond to a variety of surfaces. Some substrates require preparation, while others will require minimal preparation. A good example is untreated wood. Most standard urethane coatings cannot 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 (Note 4)

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 1 Gallon = 20 sq. ft. at 1/16" or 62.5 mils (Note 4)

Note 1: Testing conducted by Polymer Diagnostics, Inc., 33587 Walker Road, Avon Lake, OH 44012. Visit them on the web at www.polymerdiagnostics.com.

Note 2: Testing conducted by Q-Lab Weathering Research Service, 1005 SW 18th Avenue, P.O. Box 349490, Homestead, FL 33034. Visit them on the web at www.q-panel.com.

Note 3: Testing conducted by Micro Air, Inc., 6320 La Pas Trail, Indianapolis, IN 46268. Visit them on the web at www.microair.com.

Note 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.

Note 5: Testing conducted by HML Laboratory, 912 West McGalliard, Muncie, IN 47303. Visit them on the web at www.hml.com.

Note 6: Testing conducted by Flame-Out, Inc., FAA Approved Test Center, 113 North 2nd, P.O. Box 96, Pleasant Dale, NE 68423. Phone: (402) 795-5335.

Note 7: Testing conducted by Herb Curry, Inc., Flammability Technology Services, FAA-DER, 1701 Leonard Rd., P.O. Box 753, Mount Vernon, IN 47620. Phone: (812) 838-6703.

Note 8: Testing by ESIS Laboratory, 100 Sebeth Drive, Suite A5, Cromwell, CT 06416. Phone: 860-635-6475.