

[World-Class Linings, Foams and Structural Composites]

# Elastomeric Lining & Foam Solutions





## **Rhino Linings® Elastomeric**

For more than 25 years, Rhino Linings® elastomeric polyurethanes; polyurea and hybrid linings; and polyurethane spray foam formulations have been providing maximum protection for commercial and industrial applications. These applications include, but are not limited to, construction, manufacturing, marine, military, mining, municipal, roofing, theme park and transportation industries.

With a network of more than 2000 independently owned businesses and applicators in almost 80 countries, Rhino Linings has proven it is a leader in coating solutions that provide a water-tight, monolithic seal with strong chemical resistance, color stability, adhesion to virtually any surface, and an excellent protection against abrasion, corrosion, impact, slipping and vibrations.

### **Choose Rhino**

While all Rhino® elastomeric products provide a durable, monolithic, protective barrier, each product has been specifically formulated with its unique physical properties and chemical advantages to meet the application requirements of virtually any application.

Rhino elastomeric linings, whether sprayed with a high or low pressure machine, or used in 1:1 or 2:1 formulations, are tack free in minutes, fully cured in 24 hours and are VOC free with 100% solids. Rhino spray polyurethane foams include systems that integrate rapidly renewable or pre-consumer recycled content and are 1:1 volumetric ratio and sprayed with a high pressure machine.

# Lining and Foam Solutions

## General Characteristics of Rhino® Elastomerics

- Build up to any thickness in single coat, multiple pass
- Available with RhinoPro™ Cartridge Gun for small, hard to reach jobs
- Offer high quality, consistent performance
- Can be sprayed in 2:1 and 1:1 ratios with high or low pressure machines
- Monolithically adhere to virtually any surface
- Will eliminate re-coat charges and reduce costly downtime
- Wide range of hardness rating

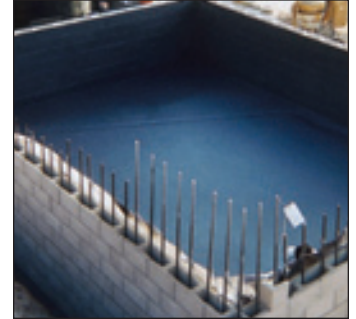
## Spray Foam Certifications:

- ICC Rated - ESR 1383 ..... BioBased 501w®
- ICC Rated - ESR 3556 ..... DuraTite™ 2.0
- ASTM E-84 Class I ..... Rhino SPF 0.5, BioBased 501w and DuraTite 2.0
- UL2818 GREENGUARD ..... DuraTite 2.0  
(low chemical emissions)
- UL2818 GREENGUARD Gold ..... DuraTite 2.0  
(low chemical emissions)
- Class A and B – UL Roofing Systems ..... DuraTite 2.5, 2.8 and 3.0
- Class A Combustible Deck – ..... DuraTite 2.5, 2.8 and 3.0  
UL Roofing Systems
- 2 Hour Class A – UL Design ..... DuraTite 2.5, 2.8 and 3.0
- 3 Hour Class A – UL Design ..... DuraTite 2.5, 2.8 and 3.0
- 2012 International Building Code (IBC) - Chapter 26 .... DuraTite 2.0 and BioBased 501w
- 2012 International Residential Code (IRC) ..... DuraTite 2.0 and BioBased 501w
- ASTM E-108 Class A/B Roof System ..... DuraTite 2.5, 2.8 and 3.0
- UL Class A/B Approval, Const. .... DuraTite 2.5, 2.8 and 3.0
- UL Class II : ..... DuraTite 2.5, 2.8 and 3.0  
California Fire Marshal Listing  
City of Los Angeles  
Miami-Dade County Product Control approved  
California Bureau of Home Furnishings
- ASTM E-96 Class II ..... DuraTite 2.5, 2.8, 3.0, BioSeal 3.0 and BioSeal 6.0



## Construction Applications

- Aboveground and buried pipes
- Aboveground storage tanks
- Acid treatment facility I-beams
- Agricultural livestock facilities
- Bathroom walls and floors
- Boiler/utility room floors
- Bulldozer buckets
- Cement mixer cab/chutes
- Cement pads and curbs
- Cinder blocks
- Commercial kitchen floors
- Concrete crack repairs
- Dog kennel compartments
- Encapsulated foam shapes
- Fiberglass pipe exteriors
- Floating marine docks
- Food processing facility floors/walls
- Fountain interiors
- Gas station pavement
- Liquid processing chamber interiors
- Oil/petroleum production facilities
- Non-skid, non-slip work surfaces
- Roofing: cement and metal
- Steel pipes
- Steel utility poles



## Lining Certifications:

- ACI 350.2R-04 ..... TuffGrip® and HardLine®  
(containment of hazardous materials)
- CAFO 40 – 412 ..... TuffGrip and HardLine  
(secondary containment)
- FAC 62-762.501 ..... Hi-Chem™ and Rhino Extreme™  
(Florida storage of hazardous waste)
- FDA 21 CFR 175.300 and 177.1680 ..... All  
(incidental food contact)
- NSF 61 ..... Hi-Chem PW and  
Rhino Extreme 11-70  
(potable water)
- SSPC 40 – CFR 112 & 264 ..... Hi-Chem and Rhino Extreme  
(oil pollution)
- SSPC-TU2/NACE 6G197 ..... Rhino Extreme

## Lining European Certifications

- BS EN ISO 9001:1994
- UL – FDNP Protective Barrier (drinking water system components)
- General Construction Inspection Test Certificate (for use in collecting trays)
- DIN EN 10 204 – 3.2 Certificate for Material Testing
- DIN EN 1672 (food industry)
- DIN 10503 (food hygiene)
- MPA NRW – DIN 4102-1 (restricted flammability for class B1 construction materials)
- TUV – XRP 8249/8200 (food and consumer goods)

## Physical Properties Comparison Chart – 2:1 Volumetric Ratio Products

Physical Properties	TuffGrip®	HardLine®	Hi-Chem™	Hi-Chem™ PW	Rhino Extreme™	Rhino Extreme FR	Rhino Hybrid™	SolarMax®
Hardness (Shore) - ASTM D-2240	85A +/- 5	55D +/- 5	70D +/- 3	65D +/- 5	55D +/- 5	45D +/- 5	55D +/- 5	50D +/- 5
Tensile Strength (psi) - ASTM D-412	1100 – 1300	2100 – 2200	3500 – 3700	2000 – 2200	2200 – 2500	1400 – 1600	2200 – 2400	1300 – 1700
Elongation (%) - ASTM D-412	200 – 250	50 – 80	10 – 15	60 – 80	300 – 350	250 – 300	90 – 100	140 – 200
Tear Resistance (pli) - ASTM D-624	250 – 300	200 – 250	350 – 400	190 – 210	330 – 400	330 – 400	300 – 330	170 – 230

Properties were checked on 1/8" (125 mils), (3.18 mm) thick stock.

## Polyurethane Lining

### TuffGrip®

TuffGrip lining provides improved toughness and color stability while retaining the non-skid grip that made Rhino® products legendary. TuffGrip lining can be applied with either low or high pressure equipment.

#### Product Benefits

Excellent – Slip resistance  
 Excellent – Abrasion and impact resistance  
 Excellent – Noise and vibration reduction

#### General Application

- Aggressive non-slip applications
- Explosion detonation chambers
- Sound deadening applications

### HardLine®

HardLine coating is a tough-as-nails lining that offers superior hardness and resistance characteristics for application such as pipes, containment structures and surfaces requiring maximum toughness protection. HardLine coating can be applied with low or high pressure equipment.

#### Product Benefits

Excellent - Tough surface and substrate protection  
 Excellent – Corrosion and weather resistance  
 Excellent – Noise and vibration reduction

#### General Application

- General purpose lining applications
- Truck beds for tough protection
- Any demanding tough surface

### Hi-Chem™

Hi-Chem 2:1 mix ratio lining has excellent stability for immersion applications and chemical resistance due to its highly molecular cross-linked structure. It provides superior rigid formulation with the highest amount of molecular cross-linking giving it excellent corrosion resistance that will not deteriorate from most chemical attacks. Hi-Chem lining can be applied with either low or high pressure equipment.

#### Product Benefits

Excellent – Corrosion and weather resistance  
 Excellent – Color and gloss stability  
 Imparts high impermeability

#### General Application

- High chemical protection applications
- Chemical processing equipment
- Wet wells, immersion service

### Hi-Chem™ 65D-PW

Hi-Chem 65D PW 2:1 mix ratio lining is specifically designed for potable water applications. It also carries the superior rigid formulation of Hi-Chem lining with the highest amount of molecular cross-linking. Hi-Chem 65D-PW lining can be applied with either low or high pressure equipment.

#### Product Benefits

Excellent – Corrosion and weather resistance  
 Excellent – Color and gloss stability  
 Excellent – Potable Water

#### General Application

- In NSF 61 applications
- Potable water containment or pipes
- Chemical protection applications



### Manufacturing Applications

- Ambulance body interiors
- Cargo bags and racks
- Cylinder nail-polishing machines
- Exhaust fan surfaces
- Gas tank exteriors
- Ingress chutes for cement mixers
- Jeep® body interiors
- Lawn mower decks
- Manufacturing facility structure
- Oil pan exteriors
- Refrigerator drip pans
- Splash well interiors



### Physical Properties Comparison Chart – 1:1 Volumetric Ratio Products

Physical Properties	TuffGrip®	HardLine®	Rhino Extreme™ 11-50	Rhino Extreme™ 11-70	Rhino Extreme FR	Rhino Hybrid™	SolarMax®	Rhino Eco-Coat®
Hardness (Shore) - ASTM D-2240	90A +/- 5	55D +/- 5	55D +/- 5	70D +/- 5	50D +/- 5	55D +/- 5	60D +/- 5	85A +/- 5
Tensile Strength (psi) - ASTM D-412	1400 – 1700	2100 – 2200	2800 – 3200	3100 – 3500	2200	2250	2000 – 2200	1700 – 1900
Elongation (%) - ASTM D-412	225 – 250	125 – 175	400 – 500	75 – 85	200	250	100 – 150	260 – 400
Tear Resistance (pli) - ASTM D-624	250 – 275	200 – 250	500 – 600	450	600	375	250 – 300	180 – 270

Properties were checked on 1/8" (125 mils), (3.18 mm) thick stock.



**Marine Applications**

- Aquarium tank interiors
- Boat docks
- Boat exterior, decks and hulls
- Boat fenders
- Boat trailer surfaces
- Buoys
- Cargo handling and storages
- Fish holding tanks
- Jet ski interiors
- Shrimp boats
- Pilings



**Military Applications**

- Ballistic shields
- Battle Jacket®
- Blast mitigation
- Body Armor
- Composite armor
- Explosive detonation chambers
- Fuel tanks
- Howitzer interiors
- Navy ramps
- Optically clear systems
- Vehicle interiors and exteriors

# Polyurea Lining

## Rhino Extreme™

Rhino Extreme lining is 100% polyurea chemistry and offers protection for extreme outdoor environments. It has the ability to be sprayed at low temperatures or in high humidity conditions providing high physical properties and a fast cure formulation. Rhino Extreme lining requires high pressure plural equipment such as RhinoPro™ Max or RhinoPro™ Classic.

**Product Benefits**

Excellent – Corrosion and weather resistance  
Excellent – Abrasion and impact resistance  
Excellent – Noise and vibration reduction

**General Application**

- Outdoor environment
- High humidity and low temperatures
- Strong physical property demands

## Rhino Extreme™ FR

Rhino Extreme FR coating is 100% (Zero VOCs) polyurea that offers a high fire retardant coating for a variety of applications. This coating can be applied over a broad spectrum of environmental conditions, including high humidity and low ambient temperature. The product cures to the touch within seconds to produce a dense, impact resistant plastic. Rhino Extreme FR requires high pressure plural equipment such as RhinoPro™ Max or RhinoPro™ Classic.

**Product Benefits**

Excellent – Fire retardancy  
Excellent – Abrasion and impact resistance  
Excellent – Low temperature impact protection

**General Application**

- Indoor and outdoor applications
- Industrial, mining and military
- Good balance of strength and flexibility

## Rhino Hybrid™

Rhino Hybrid lining is a polyurea/polyurethane formulation designed for fast setting, indoor applications. It uses the same isocyanate as HardLine coating and is an excellent cost-effective alternative. Rhino Hybrid lining requires high pressure plural equipment such as RhinoPro™ Max or RhinoPro™ Classic.

**Product Benefits**

Excellent – Corrosion and weather resistance  
Excellent – Indoor and high humidity, fast setting  
Excellent – Abrasion and impact resistance

**General Application**

- Cost-effective alternative to HardLine
- Fast-setting applications (less downtime)
- Indoor, high humidity environments

# Aliphatic Lining

## SolarMax®

SolarMax lining is an aliphatic elastomer that combines toughness with maximum color stability. Its formulation properties combine the durability of a tough elastomer with the color and gloss stability of a urethane top coat into one product. SolarMax lining can be applied with either low or high pressure equipment.

**Product Benefits**

Excellent – Color and gloss stability  
Excellent – Weather resistance  
Excellent – Noise and vibration reduction

**General Application**

- Safety and emergency lanes, hydrants
- Colorful, UV resistant for truck beds
- Color stable applications



## Rhino® Product Usage / Comparison Chart

Chart reflects 2:1 ratio formulations unless otherwise noted.

Chemicals	Corrosion	Abrasion	Slipping*	Fade	Vibration	Humidity	Cold	NSF 61
TuffGrip®	G	E	E	G	E	G	G	x
HardLine®	G	G	G	G	E	G	G	x
Hi-Chem™	E	G	G	G	G	G	G	x
Hi-Chem PW™	E	G	G	G	G	G	G	P
Rhino Extreme™ 11-70	E	E	E	G	E	E	E	P
Rhino Extreme™	E	E	E	G	E	E	E	x
Rhino Extreme™ FR	G	E	G	G	E	E	E	x
Rhino Hybrid™	G	VG	G	G	E	E	G	x
Solarmax®	G	VG	G	E	E	G	G	x

\*Slipping refers to slip resistance of non-wet surfaces

**E = Excellent** Resistance/Protection      G = Good Resistance/Protection

**VG = Very Good** Resistance/Protection      P = Pass

## Hardness Comparison Chart (ASTM D-2240)

The "Shore A" scale is used for 'softer' rubbers. The "Shore D" scale is used for 'harder' rubbers.

Chart reflects 2:1 ratio formulations.

				TuffGrip (85A)	Rhino Extreme Rhino Extreme FR (45D)	Rhino Hybrid HardLine (55D) SolarMax (50D)	Hi-Chem PW (65D)	Hi-Chem (70D)	
Shore A	50A	60A	70A	80A	90A	100A			
	Pencil eraser	Auto tire tread	Running shoes	Leather belt	Phone cord / tap washer	Rubber wheel casters			
					Text book cover	Golf ball	Telephone / office desktop	Telephone / wooden ruler	Computer casing
<b>Shore D</b>					<b>40D</b>	<b>50D</b>	<b>60D</b>	<b>70D</b>	<b>80D</b>



**Mining Applications**

- Aggregate chutes
- Coal mine showers
- Conveyor rollers and pulleys
- Flotation cells
- Geotextiles
- Granite desegregators
- Hopper interiors and exteriors
- Material chute interiors
- Mixing paddles
- Sand channels
- Sandblasting facility floors/walls
- Sand screws
- Shaker tables



# Spray Foam – Wall Insulation

## BioBased 501w®

BioBased 501w is an open cell, water-blown spray foam insulation system. The product integrates rapidly renewable ingredients as a replacement for a portion of the petroleum in the system. It has 3% bio-based content in the finished foam based on ASTM D6866. BioBased 501w is ICC rated and Class I fire rated. It can be used for wall, ceiling and roof deck insulation.

**Product Benefits**

ESR-1383  
Bio-based content  
High insulation value

**General Application**

- Sound dampening
- Wall and structure insulation
- Thermal and moisture protection

## DuraTite 2.0

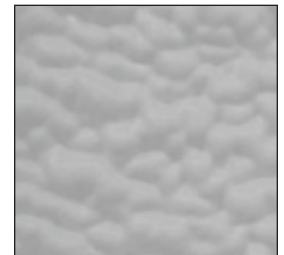
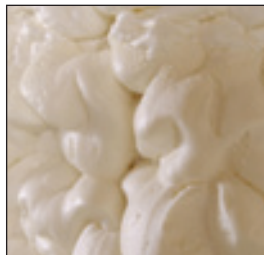
DuraTite 2.0 is a closed cell spray polyurethane foam insulation with a high R-value. It is GREENGUARD and GREENGUARD Gold certified for indoor air quality. DuraTite 2.0 uses a zero ozone depleting and low global warming potential blowing agent. It is a good insulation product to use when vapor drive is an issue or when you have limited space for insulation.

**Product Benefits**

ESR-3556  
GREENGUARD Certified  
GREENGUARD Gold Certified  
Formulated to be applied in extremely hot and cold climates

**General Application**

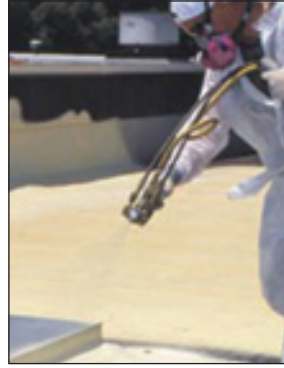
- Vapor retarder
- Wall and ceiling insulation
- Commercial walk in refrigerators



## Product Comparison Chart

	Density	Closed-Cell	Fire Rating	Roof Insulation	Wall Insulation	Sealant
<b>BioBased 501w</b>	0.5	3%	Class I		x	
<b>DuraTite 2.0</b>	2.0	>90%	Class I & II		x	
<b>BioSeal 3.0</b>	3.0	>90%				x
<b>BioSeal 6.0</b>	6.0	>90%				x
<b>DuraTite 2.5</b>	2.5	>90%	Class II	x		
<b>DuraTite 2.8</b>	2.8	>90%	Class II	x		
<b>DuraTite 3.0</b>	3.0	>90%	Class II	x		





## Roofing Solutions

### DuraTite™ Roofing

DuraTite 2.5, DuraTite 2.8 and DuraTite 3.0 density foams are HFC-blown, Zero Ozone-Depleting (Zero-ODP), closed-cell spray polyurethane foam systems. Each improves energy efficiency and offers both a low life cycle cost and environmental impact with almost no maintenance. DuraTite roof systems carry a UL Class II rating; a Compressive Strength of 40 – 65 and a Tensile Strength of 60 – 80.

#### Product Benefits

UL Class II Rated Foam  
Extremely lightweight  
Weather resistant  
Seamless, self-flashing

#### General Application

• Designed for an application rate of 1/2" minimum to 2" maximum. Once cooled, overall thickness of SPF can be increased by adding additional applications.

### Rhino Eco-Coat®

Rhino Eco-Coat coating is a fire retardant plural component aluminized hybrid polyurea spray applied lining for commercial and industrial roofing applications. This system contains UV stabilizers and leafing aluminum pigment for enhanced UV stability.

#### Product Benefits

Carries UL Class 790 Class A rating  
Prevents penetration of water (waterproofing)  
Environmentally-friendly  
Fast cure (can be walked on in minutes)

#### General Application

• Metal roofs  
• UV protection  
• Corrosion/moisture protection  
• Concrete decks

## Sealants

### BioSeal 3.0 and BioSeal 6.0

BioSeal 3.0 is a 3.0 lb closed cell sealant that integrates 16% bio-based content in the finished system. BioSeal 6.0 is a 6.0 lb closed cell sealant that integrates 17% bio-based content in the finished system. These sealants can be used in agricultural applications, such as sealing poultry houses or pole barns; geotechnical or industrial applications.

#### Product Benefits

High density sealant  
Available in black, white or neutral

#### General Application

• Thermal and moisture protection  
• Poultry house and barn insulation  
• Industrial and geotechnical sealant

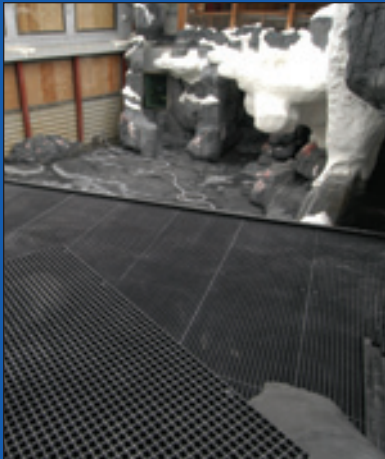
### Municipal Applications

- Chlorine systems
- Clarifiers
- Cooling tower interior
- Dredging equipment
- Digester tanks
- Frac tanks
- Immersion services
- Lift stations
- Manholes
- Potable water tanks
- Primary containment
- Roofs
- Secondary containment
- Settling tanks
- Sewage tanks
- Slurry reservoirs
- Wastewater facilities
- Water softeners
- Water filtration systems
- Water tanks
- Wet wells



**Theme Applications**

- Amusement park rides
- Animal park enclosures
- King-sized basketball displays
- Museum displays
- Paper mache building décor
- Skating park
- Styrofoam rock gardens
- Theme park floors
- Water slides



# Repair, Primer and Top Coat

## Rhino™ Concrete Repair

Rhino Concrete Repair is an advanced urethane chemistry designed for concrete repair. The unique liquid properties allow the material the versatility to repair hairline and large cracks as well as spalls and popouts without any difficulties. Rhino Concrete Repair is not designed to be used without being coated by another Rhino™ thick film or thin film coating. It is not designed to provide primary chemical resistance.

**Product Benefits**

- Sandable/grindable
- High compression strength
- Low viscosity

**General Application**

- Trowelled applications
- Mixed with aggregate
- Interior and exterior repairs

## Bonding Agent 1K

Rhino Linings® Bonding Agent 1K is a convenient-to-apply, single component primer system. Designed as a standalone product for porous substrates, the VOC free, Bonding Agent 1K is a moisture-cure MDI formulation which has low viscosity.

**Product Benefits**

- Good flexibility
- Low viscosity – easy to process
- No sanding required

**General Application**

- Fiberglass
- Wood
- Metals

## Epoxy 200

Epoxy 200 is a two-component, low viscosity primer system. It will bond to dry, damp or wet concrete. Epoxy 200 has excellent adhesion, flexibility, impact and chemical resistance.

**Product Benefits**

- Squeegee/roller application
- Low viscosity – easy to process
- Excellent resistance to moisture vapor

**General Application**

- Concrete
- Wood
- Metals

## Primer 101

Primer 101 is a two-component, 100% solids (no solvents), zero VOCs, flexible, epoxy primer used for sealing bug holes and porosity in concrete prior to Primer 161, 251 or Bonding Agent 1K application. Primer 101 has good flexibility to withstand mechanical stresses.

**Product Benefits**

- Brush or roller application
- Excellent moisture tolerance
- Good flexibility and low viscosity

**General Application**

- Concrete
- Wood
- Metals

## Primer 161

Primer 161 is a two-component, 100% solids (no solvents), zero VOCs, flexible, elastomeric polyurethane primer and sealant.

### Product Benefits

Spray, HLVP gun and roller application  
Excellent adhesion to a variety of substrates  
Good flexibility and low viscosity

### General Application

- Fiberglass
- Wood
- Metals

## Primer 251

Primer 251 is a two-component, 100% solids (no VOCs, no solvents), flexible, elastomeric, polyurethane primer and sealant. It has a high resistance to acids, hydrolysis and salt spray.

### Product Benefits

Spray, HLVP gun and roller application  
Excellent adhesion to a variety of substrates  
Resistant to acids, hydrolysis and salt spray

### General Application

- Metals

## Rhino 1500

Rhino 1500 is a two part, waterborne epoxy primer/sealer that is easy to mix, easy to use and provides superior results.

### Product Benefits

Brush, roller or airless spray application  
Can be applied on damp surfaces  
Long working time and quick dry to touch

### General Application

- Concrete
- Wood
- Metals

## UV Topcoat Polyurethane

UV Topcoat is a 40–45% solids, two-component, solvent based, elastomeric aliphatic polyurethane which provides a high level of protection from the damage of ultraviolet spectrum sunlight.

### Product Benefits

- Provides tough, light stable, elastomeric protection from color change and dulling of the surface
- Shields Rhino protective linings such as TuffGrip®, HardLine®, Rhino Extreme™ and Rhino Hybrid™ from color change
- Allows custom color matching, even metallic colors



## Transportation Applications

- Animal control van interiors
- Biomedical waste hauling trucks
- Dump trucks
- Fertilizer truck buckets
- Fire truck compartments
- Forklift fork covers
- Gas cylinder exteriors
- Gasoline storage tank repair
- Grain hauler floor and wall
- Hazardous waste handling
- Livestock trailer floor and wall
- Manure spreader components
- Pumper vacuum interiors
- Railroad cars
- Salt spreaders
- Snow plow blades





**Rhino Linings Corporation**

9151 Rehco Road  
San Diego, CA 92121

1-800-422-2603  
Tel: 858-450-0441  
Fax: 858-450-6881

[info@rhinolinings.com](mailto:info@rhinolinings.com)  
[www.rhinolinings.com](http://www.rhinolinings.com)