

Part A – TuffGrip® 21-90 Iso – Part # 60016

Part B – TuffGrip® 21-90 Resin – Part # 60026

**DESCRIPTION:**

TuffGrip® system is a two-component, 100% solids (no VOCs, no solvents), exothermic, rapid curing, elastomeric polyurethane/polyurea hybrid lining. Lining thickness can vary from a minimum of 1/16" (62.5 mils; 1.5mm) for non-load bearing or abrasion-resistant linings up to unlimited thickness.

**TYPICAL USES:**

- Excellent protective lining for abrasion, impact and corrosion resistance
- Spray-on application creates a monolithic, seamless lining which conforms to any shape and size.
- Elastomeric properties allow for application to surfaces subject to vibration, expansion, contraction, movement, flexing, abrasion and impact.
- Stable from -40° F (-40° C) to 175° F (79.4° C)
- Withstands light vehicular and foot traffic
- Casting material for material handling equipment such as chutes, hoppers, rollers, etc.
- Aggressive non-slip performance can be achieved with aggregate integrated into lining.

**FEATURES & BENEFITS:**

- Excellent slip resistance
- Good impact resistance
- Excellent abrasion resistance
- Excellent corrosion resistance
- Good chemical resistance
- Reduces noise from vibration and impact
- Excellent casting material
- Excellent weather resistance

| <b>CHEMICAL PROPERTIES*:</b>     | <b>Test</b> | <b>Isocyanate (A)</b>       | <b>Resin (B)</b> |
|----------------------------------|-------------|-----------------------------|------------------|
| Specific Gravity (grams/cc)      | ASTM D-792  | 1.2                         | 1.03             |
| Viscosity, CPS                   |             | 400 – 600                   | 850 – 1100       |
| Mix Ratio, Parts per Volume      |             | 1                           | 2                |
| Mix Ratio, Parts per Weight      |             | 60                          | 100              |
| Gel Time, Seconds                |             | 10 – 15                     |                  |
| Solids by Volume/Weight          |             | 100%                        | 100%             |
| Volatile Organic Compounds       |             | 0 lbs/gal                   | 0 lbs/gal        |
| Shelf Life - Unopened Containers |             | 12 months                   | 6 months         |
| Base Color                       |             | yellow or light-straw color | opaque           |

\*Properties were tested at 77°F (25°C).

| <b>TYPICAL PHYSICAL PROPERTIES:</b>                                                 | <b>Test</b>   | <b>Result</b> |
|-------------------------------------------------------------------------------------|---------------|---------------|
| Hardness (Shore A)                                                                  | ASTM D-2240   | 85±5          |
| Tensile Strength (psi)**                                                            | ASTM D-412    | 1100 – 1300   |
| Elongation (%)**                                                                    | ASTM D-412    | 250 – 300     |
| Compressive Strength (psi)                                                          | ASTM D-695-96 | 800           |
| Taber Abrasion Resistance (mg of loss/1000 cycles)<br>CS17 Wheel; 1000 grams weight | ASTM D-4060   | 10 – 15       |
| Tear Resistance (pli)** Die C                                                       | ASTM D-624    | 200 – 250     |
| Ross Flex (% crack growth per 50,000 cycles)                                        | ASTM FIA-308  | 0             |
| Coefficient of Friction on Steel                                                    | Static        | ASTM D-1894   |
|                                                                                     | Kinetic       | ASTM D-1894   |
| Water Absorption (%)                                                                | ASTM D-570    | ≤1.6          |

**TUFFGRIP® 21-90****TYPICAL PHYSICAL PROPERTIES** *(continued):*

|                                 | Test       | Result      |
|---------------------------------|------------|-------------|
| Dielectric Strength (volts/mil) | ASTM D-149 | 300         |
| Volume Resistancy (ohm/inches)  | ASTM D-257 | 6 X 10 (12) |
| Dielectric Constant (MHz)       | ASTM D-150 | 5.4         |
| Dissipation Factor (MHz)        | ASTM D-150 | 0.058       |
| Cathodic Disbonding             | ASTM G-8   | Pass        |

\*\*Properties were checked of TuffGrip® lining, 1/8" (125 mils), (3.18 mm) thick stock.

**PROCESSING CHARACTERISTICS:** The system settings required to achieve quality spray sealant application will vary depending on environmental and substrate conditions. The following recommended parameters will help ensure optimum lining quality.

| Equipment Used         | Spray Pressure | Process Pressure | Spray Gun                        | Mix Module        |
|------------------------|----------------|------------------|----------------------------------|-------------------|
| RhinoPro HP-21 Classic | 2000 psi       | 1700 – 1800 psi  | Fusion - Air or Mechanical Purge | AR2932 or greater |

**Process Temperatures**

| Component Temperature (A&B) | Hoses - High Pressure | Substrate Surface        |
|-----------------------------|-----------------------|--------------------------|
| 150°F (66°C)                | 150°F (66°C)          | 60° – 110°F (15° – 43°C) |

**NOT RECOMMENDED FOR:**

- Sustained temperatures below -40° F (-40° C) or above 175° F (79.4° C)
- Application to high density polyethylene or thermo plastics

**CHEMICAL RESISTANCE:** Good resistance to many routine chemicals such as: weak acids, weak alkalies, oils and cleaning agents. For specific applications and/or information, consult with a Rhino Linings® representative.

**SUBSTRATES:** Metals, wood, concrete, fiberglass and geotextiles.

**DRY FILM THICKNESS RANGE:** Varies based on application. Lining thickness can vary from a minimum of 1/16" (62.5 mils; 1.5mm) for non-load bearing or abrasion-resistant linings up to unlimited thickness.

**COLOR OPTIONS:** Full color range available. Pigments sold separately. Standard colors - black, indigo blue, graphite and flame red. Custom colors available by special order.

**HOW SUPPLIED:** Net weight per set is 1400 pounds (636.4 kg). A set of TuffGrip 21-90 consists of one (1) 55 gallon (208 L) drum of 'A' component and two (2) 55 gallon (208 L) drum of 'B' component.

**SAFETY PRECAUTIONS: Health Considerations: Consult the Rhino Linings® Safety Data Sheets (SDS)**

This chemical system requires the use of proper safety equipment and procedures. Please follow the Rhino Linings® product SDS and Safety Manual for detailed information and handling guidelines.

**For Your Protection:** The information and recommendations in this publication are, to the best of our knowledge, reliable. Suggestions made concerning the products and their uses, applications, storage and handling are only the opinion of Rhino Linings Corporation. Users should conduct their own tests to determine the suitability of these products for their own particular purposes and of the storage and handling methods herein suggested. The toxicity and risk characteristics of products made by Rhino Linings Corporation will necessarily differ from the toxicity and risk characteristics developed when such products are used with other materials during a manufacturing process. The resulting risk characteristics should be determined and made known to ultimate end-users and processors.

Because of numerous factors affecting results, **Rhino Linings Corporation makes no warranty of any kind, express or implied**, other than that the material conforms to its applicable current Standard Specifications. Rhino Linings Corporation hereby disclaims any and all other warranties, including but not limited to those of merchantability or fitness for a particular purpose. No statements made herein may be construed as a representation or warranty. The liability of Rhino Linings Corporation for any claims arising from or sounding in breach of warranty, negligence, strict liability, or otherwise shall be limited to the purchase price of the material.

©2015 Rhino Linings Corporation. All rights reserved.