

Part A – Tuff Grip® 21-90 Iso – Part # 60016
 Part B – Tuff Stuff 21-85-120 Resin – Part # 60040

DESCRIPTION: Tuff Stuff system is a two-component, 100% solids (no VOCs, no solvents), exothermic, rapid curing, elastomeric polyurethane 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:

- Maximum thickness – unlimited
- Excellent abrasion resistance
- Excellent impact resistance
- High tensile strength, elongation and tear strength
- Provides vibration and acoustic dampening
- Excellent weather resistance
- Excellent corrosion resistance
- Excellent casting material
- Good chemical resistance

FEATURES & BENEFITS:

- Excellent protective lining for abrasion, impact and corrosion resistance
- Spray-on application creates a monolithic, seamless lining which conforms to any shape and size.
- Tough, durable lining for military applications such as:
 - Tactical vehicles and equipment requiring abrasion, corrosion and impact protection
 - Foot traffic areas requiring non-slip surfaces
- Excellent blast mitigation properties for military barracks, vehicles, temporary structures and buildings
 - High tensile and elongation properties contains and reduces shrapnel in vehicles and buildings.
- Can withstand tracked vehicle traffic and heavy loads with proper thickness build
- Reduces noise from vibration and impact
- Spray-on application creates a monolithic, seamless lining which conforms to any shape and size.
- Can withstand vehicle forklift traffic and heavy loads with proper thickness build.

CHEMICAL PROPERTIES*:	Standard Test	Isocyanate (A)	Resin (B)
Specific Gravity (grams/cc)	ASTM D-792	1.19	1.03
Viscosity, CPS		400 – 600	900 – 1000
Mix Ratio, Parts per Volume		1	2
Mix Ratio, Parts per Weight		60	100
Solids by Volume/Weight		100%	100%
Volatile Organic Compounds		0 lbs/gal	0 lbs/gal
Gel Time, Seconds		150 ± 30	
Tack-free, Seconds		180 ± 30	
Cure		24 hrs	
Shelf Life - Unopened Containers		12 months	6 months
Base Color		clear light straw/amber	opaque white/yellow

*Properties were tested at 75 – 85°F (23.9 – 29.4°C) in cups gms combine.

TYPICAL PHYSICAL PROPERTIES:	Test	Result
Hardness (Shore A)	ASTM D-2240	85±5
Tensile Strength (psi)**	ASTM D-412	1100 – 1300
Elongation (%)**	ASTM D-412	200 – 300
Taber Abrasion Resistance (mg of loss/1000 cycles) 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
Water Absorption - 24 hrs (%)	ASTM D-570	16
Dielectric Strength (volts/mil)	ASTM D-149	300
Volume Resistancy (ohm/inches)	ASTM D-257	6 X 10 (12)

(continued)

TUFF STUFF® 21-85-120

TYPICAL PHYSICAL PROPERTIES (continued):

	Test	Result
Dielectric Constant (MHz)	ASTM D-150	5.4
Dissipation Factor (MHz)	ASTM D-150	0.058
Cathodic Disbonding	ASTM G-8	Pass
Elcometer Adhesion Pull Test	ASTM D-4541	Pass

**Properties were checked of Tuff Stuff polyurethane lining, 1/8" (125 mils (3.18 mm) thick stock.

DRY FILM THICKNESS RANGE: Varies based on application, typically used at a minimum of 1/16" (62.5 mils; 1.5 mm) up to unlimited thickness.

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	Process Pressure	Spray Gun	Mix Module
RhinoPro™ HP-21	2000 – 2500 psi	Fusion - Air Purge or Mechanical Purge	AR2232

Process Temperatures

Component Temp. - Low Pressure	Component Temp. - High Pressure	Substrate Surface Temp.
75 – 85°F (60° – 66°C)	150° – 160°F (65.6° – 71.1°C)	60 – 110°F (15.6 – 43.3°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:

(Guidelines only: Fume, splash, spillage as noted. Individual testing required for immersion).

Acetic Acid to 10%Excellent	Ammonia to 5%Excellent
Formic Acid to 5%Excellent	Caustic Soda Lye to 50%Excellent
Sulfuric Acid to 10%Excellent	Potash Lye to 20%Excellent
Tannic Acid to 20%Excellent	OilsExcellent
SolventsModerate	

Properties were check from polyurethane lining, 1/8" (125 mils), (3.18mm) thick stock.

SUBSTRATES: Metals, wood, concrete, fiberglass and most plastics.

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

STORAGE: Part A (Isocyanate) like other organic isocyanates, can react with water to form insoluble ureas and carbon dioxide gas with can result in a pressure buildup inside closed containers. Therefore, extreme care must be taken to assure containers used for Part A remain dry. Part A should be stored at temperatures between 75° F and 80° F under a dry nitrogen atmosphere. **Part B (Resin)** is hygroscopic and should be stored in sealed containers to prevent ingress of moisture. If stored at temperatures between 75° F and 80°F, the storage life of this product is 12 months. Part B will separate upon storage. This material must be thoroughly mixed just prior to use.

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.

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