POLYCOAT PRODUCTS
A Division of American Polymers Corp.

# TUFFSHIELD™ II HAR

*High Abrasion Resistance Spray Elastomer Coating*

## DESCRIPTION

Tuffshield™ II HAR (High Abrasion Resistance) is a revolutionary fast set, 100% solids, flexible two component spray elastomer that gives outstanding physical performance against abrasion tear and impact. It is designed to give exceptional values including tensile, high tear and impact resistance in severe demanding applications against abrasion and corrosion. It may be applied in single or multiple applications without appreciable sagging and is relatively insensitive to moisture and temperature allowing application in most temperatures. Its extremely fast gel time makes it suitable for applications down to -20°F.

## FEATURES

- ❖Exceptional Abrasion Resistance
- ❖Exceptional Hydrolytic Stability
- ❖High Tear and Impact Resistance
- ❖Excellent Impact Dampening
- ❖Excellent Thermal Stability
- ❖Zero VOC (100% Solids)
- ❖Low Temperature Flexibility
- ❖Good Chemical Resistance
- ❖Coats Carbon or Mild Steel Metals without Primer

## TYPICAL USES

With its durable characteristics, Tuffshield™ II HAR is intended to use as a protective lining and coating on interior of concrete, masonry and metal structures in various facilities like:

- ❖Dredging
- ❖Cargo Containers
- ❖Landfill Containment
- ❖Secondary Containment
- ❖Water and Waste Water Treatment
- ❖Industrial and Manufacturing Facilities
- ❖Petrol Refineries
- ❖Mining Operations
- ❖Marine Environments

## COLORS

Clear/Neutral. Custom colors are available upon request. Color Packs, when used, must be added to Part-B.
Due to its aromatic composition, Tuffshield™ II HAR will tend to yellow or darken in color and will become flat after exposure to UV light.

## PACKAGING

10 gallon kit: 5 gallons Part-A (Isocyanate side) and 5 gallons Part-B (Resin side).

100 gallon kit: 50 gallons Part-A (Isocyanate side) and 50 gallons Part-B (Resin side).

## COVERAGE

Tuffshield™ II HAR may be applied at any rate to achieve desired thickness. Theoretical coverage for 1 mil thickness is one gallon per 1600 sq. ft.

## SURFACE PREPARATION

In general, coating performance and adhesion are directly proportional to surface preparation. Most failures in the performance of surface coatings can be attributed to poor surface preparation. Polyurea coatings rely on the structural strength of the substrate to which they are applied. All surfaces must be free of dust, dirt, oil, grease, rust, corrosion and other contaminants. When coating substrates previously used, it is important to consider the possibility of substrate absorption, which may affect the adhesion of the coating system, regardless of the surface preparation. Polycoat recognizes the potential for unique substrates from one

## TECHNICAL DATA

| | | |
|---|---|---|
| Abrasion Resistance | | |
| ASTM-D4060, 1 kg wt 1000 cycles: | | |
| H-18 Wheel Weight Loss | | 39 mg |
| CS17 Wheel Weight Loss | | 0.8 mg |
| Tear | ASTM D-624 | 350 ± 25 pli |
| Elongation | ASTM D-300 | 275% ± 50% |
| Tensile | ASTM D-412 | 3200 ± 300 psi |
| Hardness | ASTM D-2240 | 42 ± 3 D |
| Pot Life | @ 160°F | 2 - 4 secs |
| Tack Free Time | @ 75°F | 20 - 40 secs |
| Recoat Time | @ 75°F | < 1 hour |
| Viscosity | @150-160°F (66.5-71°C), Brookfield: | |
| Part-A | | 200 ± 50 cps |
| Part-B | | 200 ± 50 cps |
| Density | Side A & B Combined | 9.28 lbs/gal |
| Flash Point | | > 200°F |
| Service Temperature - Dry | | -40°F to 250°F |
| Service Temperature - Wet | | 40°F to 120°F |
| Water Vapor Permeability, ASTM E-96 | | 1.340 perm-inch |
| VOC Content | | 0 gm/lit |
| Recommended Applied Thickness | | > 2 mm |
| Return to Service: | | |
| Foot Traffic | | 2 - 4 hours |
| Full Service | | 10 - 24 hours |
| Water Absorption, ASTM D471 (maximum 23°C, 24 hours) | | < 0.5 % |
| Crack Bridging, ASTM C836 (-25°C, 1.6mm crack, 25 cycles) | | Pass |
| Impact Resistance @ 25°C (ASTM G14) | | > 200 lbs |
| Pull-Off Strength (minimum), ASTM D4541: | | |
| Inter-Coat Adhesion | | Excellent (within recoat time) |
| Concrete (Shot blasted profile), substrate failure occurred | | > 500 psi |
| Concrete (Primed), substrate failure occurred | | > 500 psi |
| Steel (90 um blast profile) | | > 900 psi |
| Lineal Shrinkage | | 1 - 2% |
| Flexibility (1/8" (3mm) Mendrel Bend Test), ASTM D1737 | | Pass |
| Resistance to Weathering, ASTM G-23 (Type QUV Weatherometer-2000 hrs exposure) | | No cracking, blistering. Color change, gloss reduction & caulking are noted. |

(*These physical properties from sample sprayed with Graco Foam Cat 200 @ 2000 psi minimum, with Gusmer GX7-400 mechanical purge gun @ 150-160°F. Different machine and parameter will change these

project to another. The following information is for general reference, and for project-specific questions, contact Polycoat.

**Carbon Steel:**

A. Exterior coating: Abrasive Blast to SSSP, SP-10 (Near-white) with a surface profile of 1.2 - 2.2 mils.

B. Internal Lining: Abrasive Blast to SSSP-SP-5 (White metal) with a surface profile of 2.2 -3 .2 mils. Vacuum all surfaces to remove dust, etc., prior to application.

**New and Old Concrete:**

Refer to SSPC-SP13/NACE 6, or ICRI 03732: CSP 3-5. New concrete must be cured for 28 days prior to product application. Surface must be clean, dry, sound and offer sufficient profile for product adhesion. Remove all dust, dirt, oil, form release agents, curing compounds, salts, efflorescence, laitance and other foreign matter by shotblasting and/or suitable chemical means, in accordance with local chemical regulations. Rinse thoroughly, to achieve a pH between 8.0 and 11.0. Allow to dry completely. If old concrete has a surface that has deteriorated to an unacceptably rough surface, Polycoat Products PC-260 or a mixture of Polyprime 21 and sand should be used as a repair agent for cracks, spalls, bug holes and voids. Upon full cure of the repair agent, prime the entire surface intended for coating.

**Concrete Surface Preparation Reference:**

ASTM D4258 - Standard practice for cleaning concrete
ASTM D4259 - Standard practice for abrading concrete
ASTM D4260 - Standard practice for etching concrete
ASTM F1869 - Standard test method for measuring moisture vapor emission rate of concrete
ICRI 03732 - Concrete surface preparation

**Wood:**

All wood should be clean, dry and free of any knots, splinters, oil, grease or other contaminants. Splintered or rough areas should be sanded. Knots should be repaired using Polycoat Products PC-260 with sand. Upon full cure of the repair agent, prime the entire surface intended for coating.

**Steel (Atmospheric and Immersion Exposure):**

Remove all oil, grease, weld spatters and round off any sharp edges from surface. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Optimum surface profile is 2-3 mils. Prime and shoot Tuffshield™ II HAR on to any bare metal the same day as it is cleaned to minimize any potential flash rusting.

**Aluminum:**

Aluminum should be blasted with aluminum oxide or sand, and not with steel or metal grit. Excessive blasting may result in a warped or deformed surface. After blasting, wash aluminum with a commercially available aluminum cleaner. Allow to dry, then prime.

**Brass and Copper:**

Brass and copper should be blasted with sand, and not with steel or metal grit. Remove all dust and grease prior to applying primer.

**Galvanized Surfaces:**

Clean and degrease any contaminated surfaces before priming. Do not blast galvanized surfaces with an abrasive grit. An adhesion test is recommended prior to starting the project.

**Fiberglass Reinforced Plastic:**

The gel coat should be lightly blasted or sanded with 80 grit sandpaper and cleaned.

**Plastic Foams:**

Enhanced adhesion is obtained when the foam is mechanically abraded. When coating polystyrene, do not use a solvent-based primer.

**Textiles, Canvas, Fabrics:**

Adhesion to most fabrics, geothermal membranes and textiles does not require a primer.

**Stainless Steel:**

Stainless steel may be grit blasted and degreased before priming. Some stainless steel alloys are so inert that it is not possible to achieve a satisfactory bond. An adhesion test is recommended prior to starting the project.

**New and Old Cast Iron:**

Blast with a steel grit and degrease before priming. Old cast iron is difficult to prepare for a satisfactory bond. It can absorb oil and water soluble contaminants that will keep returning to the surface after the coating system has been applied and affect the coating system adhesion. An adhesion test is recommended prior to starting the project.

**All Other Surfaces:**

An adhesion test is recommended prior to starting the project.

## MIXING

Tuffshield™ II HAR may not be diluted under any circumstances. Thoroughly mix Tuffshield™ 801 Part-B (Resin side) with air driven power equipment until a homogeneous mixture and color is obtained.

## APPLICATION

Both Part-A and Part-B material should be preconditioned at 75-85°F before application. Recommended surface temperature must be at least 5°F above the dew point.

Tuffshield™ II HAR should be applied using a plural component, heated, high pressure 1:1 spray mixing equipment like Graco's Reactor, Glass Craft or other equivalent machine may be used.

Both Part-A and Part-B materials should be sprayed at a minimum of 2000 psi and at temperatures above 160-170°F. Adequate pressure and temperature should be maintained at all times.

Tuffshield™ II HAR should be sprayed in smooth, multidirectional passes to improve uniform thickness and appearance.

## EQUIPMENT CLEAN UP

Equipment should be cleaned with an environmentally safe, urethane-grade solvent (alcohol free) as permitted under local regulations immediately after use.

## STORAGE

Tuffshield™ II HAR has a shelf life of one (1) year from date of manufacture, in factory-sealed containers.

Part-A and Part-B drums are recommended to be stored above 60°F. Avoid freezing temperatures

Store drums on wooden pallets, avoid direct contact with the ground. If stored for a long period of time, rotate drums regularly.

## LIMITATIONS

Do not open until ready to use.

Both Part-A and Part-B containers must be fitted with a desiccant device during use.

## WARNING

This product contains Isocyanates and Curative Material.