



Product Description

Polycoat 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 (-28.89°C).

Features

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

Typical Uses

With its durable characteristics, Polycoat 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:

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

Packaging

10-gallon kit	5 gallons (18.9 liters) Side-A and 5 gallons (18.9 liters) Side-B
100-gallon kit	50 gallons (189 liters) Side-A and 50 gallons (189 liters) Side-B

Colors

Clear/Neutral. Custom colors are available upon request. Color Packs, when used, must be added to Side-B.

Due to its aromatic composition, Polycoat Tuffshield II HAR will tend to yellow or darken in color and will become flat after exposure to UV light.

Technical Data (Based on Draw Down Film)

Mix Ratio by Volume	1A : 1B
Pot Life @ 160°F (66°C), 50% R.H.	2-4 Seconds
Tack-Free Time (thickness & substrate temperature dependent)	20-40 seconds
Recoat Time	< 1 hour
Viscosity cps at 150-160°F (66.5-71°C)	
Side-A	200 ± 20
Side-B	200 ± 20
Density (Side-A & Side-B Combined)	9.28 lbs/gal (1110 kg/m ³)
Flash Point	> 200°F (93.3°C)
Hardness, ASTM D2240	42 ± 5 D
Tensile Strength, ASTM D412*	3200 ± 300 psi (22.1 ± 2 MPa)
Elongation, ASTM D412*	275% ± 50%
Tear Strength, ASTM D624*	350 ± 50 pli (62 ± 8.7 kNm)
Service Temperature - Dry	-40°F to 250°F -40°C to 121°C
Service Temperature - Wet	40°F to 120°F 4.44°C to 48.89°C
Water Vapor Permeability, ASTM E96	1.340 perm-inch
Volatile Organic Compounds, (Side-A & Side-B Combined) ASTM D2369-81	0 lbs/gal (0 gm/liter)
Abrasion Resistance ASTM D4060 ^{1 kg wt 1000 cycles:}	
H-18 Wheel Weight Loss	39 mg
CS17 Wheel Weight Loss	0.8 mg
Recommended Applied Thickness	> 2 mm (0.1 cm)
Return to Service: Foot Traffic	2-4 hours
Return to Service: Full Service	10-24 hours
Water Absorption, ASTM D471 (maximum 74°F or 23°C, 24 hours)	< 0.5%
Crack Bridging, ASTM C836 (-13°F or -25°C, 1.6mm crack, 25 cycles)	Pass
Impact Resistance @ 77°F or 25°C (ASTM G14)	> 200 lbs (>90 kg)
Pull-Off Strength (minimum), ASTM D4541: Inter-Coat Adhesion (within recoat time)	Excellent
Concrete (Shot blasted profile), substrate failure occurred	>500 psi (3.4 MPa)
Concrete (Primed), substrate failure occurred	>500 psi (3.4 MPa)
Steel (90 um blast profile)	>900 psi (6.2 MPa)
Lineal Shrinkage	1 - 2%
Flexibility (1/8" [3mm] Mendrel Bend Test), ASTM D1737	Pass
Resistance to Weathering, ASTM G-23 (Type QUV Weatherometer-3000 hrs exposure)	No cracking or blistering. Color change, gloss reduction & chalking 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 (65°C to 71°C) blistering. Color change, gloss reduction & chalking are noted.. Different machine and parameter will change these properties. User should perform their own independent testing as properties are approximate..

Coverage

Polycoat Tuffshield II HAR may be applied at any rate to achieve desired thickness. Theoretical coverage for 1 mil (0.254 microns) thickness is one gallon per 1600 sqft (3.78 liters per 149 sqm).

Estimating Formula: (1600 sqft per gal /Dry Mil Thickness) x Solids Content = Application Rate per gallon.

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 previously used substrates, 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 project to another. The following information is for general reference. 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. Remove all dust, etc. on all surfaces intended for coating, 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 801 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

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

Application

Both Side-A and Side-B materials should be preconditioned to 75-85°F (24-27°C) before application. Recommended surface temperature must be at least 5°F (3°C) above the dew point.

Polycoat 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 Side-A and Side-B materials should be sprayed at a minimum of 2000 psi and at temperatures above 150°F (66°C). Adequate pressure and temperature should be maintained at all times.

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

Storage

Polycoat Tuffshield II HAR has a shelf life of one (1) year from date of manufacture in original, factory-sealed containers when stored indoors at a temperature between 60-95°F (15-35°C).

Side-A and Side-B drums are recommended to be stored above 60°F (15°C). Avoid freezing temperatures.

Store drums on wooden pallets to avoid direct contact with the ground. If stored for a long period of time, rotate Side-A and Side-B drums regularly.



**POLYCOAT
PRODUCTS**

A Division of American Polymers Corp.

TECHNICAL DATA SHEET
POLYCOAT TUFFSHIELD® II HAR
*High Abrasion Resistance
Spray Elastomer Coating*

Limitations

Do not open until ready to use. Both Side-A and Side-B containers must be fitted with a desiccant device during use.

WARNING

This product contains isocyanates and curative material.

Limited Warranty: Please read all information in the General Guidelines, Technical Data Sheets, Guide Specifications and Safety Data Sheets (SDS) before applying material. These products are for professional use only and preferably applied by professionals who have prior experience with the Polycoat Products materials or have undergone training in application of Polycoat Products materials. Published technical data and instructions are subject to change without notice. Contact your local Polycoat Products representative or visit our website for current technical data, instructions, and project specific recommendations.

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