



# Environmentally Safe Polymers, Inc.

## Technical Data

Updated 11/2004

### **POLYSTEEL #84 HIGH TEMPERATURE PROTECTIVE LINING SYSTEM**

#### **PRODUCT DESCRIPTION AND USAGE:**

PolySteel #84 is a high performance, 100% solids, spray applied, polyurea urethane elasto-plastic polymer. It is characterized by high physical properties, outstanding chemical and solvent resistance, usability under wide climatic conditions with outstanding durability. It is composed of isocyanate prepolymers which are reacted with amine prepolymers to form a polyurea-urethane elastomer. Both components are low viscosity fluids which react very quickly to form a tough polymer when mixed and applied using heated, plural component airless spray equipment. Some applicable uses would include, but not be limited to the following:

- Protective lining for bulk materials handling equipment to provide abrasion resistance, thermal protection and enhanced slip to aid material transfer.
- Sanitary coatings for lining meat, poultry and other food processing facilities.
- Lining of steel, masonry or wood tanks, silos, pipes and flumes.
- Application to geotextiles to form ponds, contain spills, prevent escape of effluents and prevent loss of water or petroleum products.
- Provide protection for rigid urethane foam insulation.
- Coat expanded polystyrene board to provide both physical and chemical protection.
- Can be applied over open-cell flexible foam to seal the surface and provide a good wear surface.
- Provides a tough, abrasion, chemical and corrosion resistant liner for truck beds and under carriages.
- May be used to repair or replace existing containment liners.
- Production of plastic articles by spraying into open (one sided) molds.
- Lining of cargo holds on ships to provide abrasion resistance or for sanitation and ease of cleaning.
- Lining of rail freight cars to provide abrasion resistance, improve sanitation and enhanced slip for easier more complete discharge of loads.
- Encapsulation of asbestos and other environmentally undesirable materials.
- Abrasion resistant surfaces for snow plows, salt and sand spreaders.
- Sealing and corrosion protection of sewer manholes.
- Lining of hot asphalt dump trucks.

#### **PHYSICAL PROPERTIES**

##### **TENSILE PROPERTIES:**

ASTM D-4 12	
Strength:	3600 ± 200 psi minimum
Elongation:	100% minimum
Permanent Set:	5% maximum
Flexural Modulus:	60 (K) psi
Density PCF:	66
Gardner Impact:	250 in/lbs

##### **TEAR RESISTANCE:**

ASTM D-624	
Die C	500 ± 50 pli

##### **WEATHERABILITY:**

ASTM G-53  
No cracking, checking or loss of integrity after 2000 hours. **Note:** Product is an aromatic and will exhibit surface oxidation. Significant color change will be noticed in light colors.

##### **SERVICE TEMPERATURE:**

-40° to 300°F.

##### **ABRASION RESISTANCE:**

Taber abrasor, 1 Kg load, 1000 cycles H-18 wheel, -190 mg loss.

##### **HARDNESS:**

ASTM D-2240	
Shore A	95
Shore D	60 ± 2

##### **COLD TEMPERATURE FLEXIBILITY:**

ASTM D-3111  
Pass 0.5 inch mandrel @ -40°F.

##### **CHEMICAL RESISTANCE:**

See E.S.P. Polyurea & Polyurea Hybrid Chemical Resistance Chart.

##### **WATER VAPOR PERMEABILITY:**

ASTM E-96 procedure BW.  
100% R.H. differences @ 73°F.  
0.01 perm inches @ 30 mil film

##### **WATER ABSORPTION:**

ASTM D-471  
One week at room temperature 0.5%

## **POLYSTEEL #84**

### **LIQUID PROPERTIES**

**COVERAGE:**

1600 mil square feet per gallon.

**SOLIDS:**

“A” 100% by weight and volume.

“B” 100% by weight and volume.

**VOLATILE ORGANIC COMPOUNDS:**

None.

**FLASH POINT:**

Above 200°F.

**VISCOSITY:**

“A” Component: 600-800 cps @ 77°F.

“B” Component: 800-1000 cps @ 77°F.

**SHELF LIFE:**

“A” One year @ 50-90°F.

“B” Two years @ 20-100°F.

**THINNER:**

Not recommended.

**CURE TIME:**

Gel in 3-5 seconds. Cure to handle in 30-40 seconds. Develops chemical resistance and physical properties in 8 hours, Recoatable for up to 8 hours.

**MIX RATIO:**

1:1 by volume.

**CLEAN UP SOLVENT:**

Toluene, Xylene, MEK. For reduced fire hazard use glycol ethers or environmentally acceptable chlorinated solvents.

### **APPLICATION**

**EQUIPMENT:**

PolySteel #84 requires hot airless plural component equipment capable of producing a minimum of 2000 psi and heat to 140°F. Higher pressures to 2500 psi may provide better mixing with enhanced physical properties for the end product. Contact your E.S.P. Representative for more specific spray gun recommendations. Self-purging impingement mixing spray guns are required.

**PRIMER:**

Self-priming on most surfaces. PolyPrime #01 or PolyPrime #06 epoxy primers are recommended where enhanced adhesion is needed. Please contact Environmentally Safe Polymers, Inc. for specific recommendations.

**PRECAUTIONS:**

See Material Safety Data Sheet for complete safety data. Protect from exposure to moisture. Water will cause the “A” component (ISO) to generate carbon dioxide with resulting high pressure in closed containers.

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Our data is based on information from lab and field testing which we believe to be reliable and accurate. Environmentally Safe Polymers, Inc. makes no warranties, expressed or implied of the products use or its results, and assumes no obligation or liability in connection therewith.