

ShieldPoly F-15

Advanced Pure Polyurea

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Product Description

ShieldPoly F-15 is a 100% pure polyurea with a gel time off (12-20 seconds) designed for constant immersion and formulated to ensure excellent wetting and adhesion of all substrates, especially concrete. ShieldPoly F-15 is ideal for commercial construction, mineral processing, high abrasion/impact environments, general infrastructure, and general waterproofing. ShieldPoly F-15 is formulated for almost all substrates with added waterproofing benefits. Unlike many waterproofing membranes, F-15 can withstand long term water ponding and will not deteriorate.

Low permeability combats many osmotic problems associated with waterproofing and tank coatings in constant immersion. Due to ShieldPoly F-15 high physical properties and UV stability it is commonly used in exposed environments subject to other trades and facilities during construction, whilst maintaining its waterproofing integrity.

ShieldPoly F-15 is a 100% solid, flexible, aromatic, two component 1:1 pure polyurea with very low permeability, extreme UV protection and corrosion protection features. It's a general use pure polyurea for most applications and is AS4020-2018 potable water approved for a very high exposure rate. It has a high dielectric strength and is perfect for electrical insulation applications and below ground corrosion protection of power poles.

Technical/Performance Data

| | |
|---|---------------------------------------|
| Hardness, ASTM D-2240 | 47-52 Shore D |
| Mix Ratio by Volume | 1A:1B |
| Gel/Set Time | 15-20 seconds |
| Tack-free Time | 30-60 seconds |
| Maximum Recommended Recoat Window (environment dependent) | 12-24 Hours |
| Taber Abrasion Resistance; C-17,1000cycles, 1kg | 15 mg |
| Tensile Strength ASTM412-C | 19-21 MPa |
| Elongation, ASTM412-C | 370-470% |
| Tear, ASTM 624-86 | 75-80 kN/m |
| Service Temperature | -30°C to 120°C |
| Water Vapour Permeability | 0.00036 perm-in |
| Fire Resistance (spread of flame, Class rating, etc.) | Class 2 Class A for Roof Coverings |
| Dielectric Strength | >20 kV/mm |
| Root Barrier Protection | 2mm DFT |
| Potable Water – AS 4020-2018 | 18,000mm ² /L Exposure |

Note: The above properties describe the typical values. Spray pressure can affect these values, hence we recommend a minimum pressure at the nozzle of 2000Psi to get good physical properties.

Benefits

- Abrasion Resistance**
The balance of physical properties inherent in this elastomer provides outstanding abrasion resistance.
- Potable Water**
This product is suitable for lining tanks used to store water intended for human consumption.
- Toughness and Flexibility**
The exceptionally high tensile strength and elongation of this product provides protection from mechanical damage and resistance to puncture and compression.
- Increased Productivity and Economy**
This product maybe sprayed to thicknesses exceeding 2mm per pass and cures to become rain insensitive within minutes.
- Safety**
This product contains no volatile or flammable solvents. This reduces hazards during transport, storage, and application.

Application Areas

- ✓ Airports
- ✓ Hotels and Casinos
- ✓ Power Plants
- ✓ Residential Applications
- ✓ Structural Steel
- ✓ Fertilizer Plants
- ✓ Warehouse Flooring
- ✓ Cold Storage Facilities
- ✓ Mining/Landfill Heap/Leach Containment
- ✓ Marine Environments
- ✓ Paper & Pulp Mills
- ✓ Primary Containment
- ✓ Secondary Containment
- ✓ Trafficable Parking Decks
- ✓ Potable Water
- ✓ Wastewater Treatment
- ✓ Food Processing Plants
- ✓ Geotextile Rehabilitation Composite

Features

- ✓ Excellent thermal stability
- ✓ Zero VOC
- ✓ Very high abrasion and impact resistance
- ✓ Meets USDA criteria
- ✓ 100% Solids
- ✓ Seamless
- ✓ Flexible at low temperatures
- ✓ Low water vapour permeability
- ✓ Non-reactive
- ✓ Good chemical resistance
- ✓ Can be used without primer in some applications (particularly steel tanks)
- ✓ Potable water approved (AS4020-2018)

Typical Wet Properties

| Material Property | Component A (Isocyanate) | Component B (Resin) |
|---|---------------------------------------|---------------------|
| Density (kg/L) | 1.11 | 1.00 |
| Viscosity (Cps @ 21°C) | 260 | 380 |
| Mix ratio (by volume) | 1:1 | |
| Solids (mixed) by volume | 100% | |
| Flash Point (Pensky Martens Closed Cup) | >93°C | |
| Theoretical Coverage | 1L = 1mm thick over 1m ² . | |

Application Guidelines

This coating is designed for application through heated, plural component, high pressure reactor spray equipment capable of supplying material at the spray gun at a minimum of 2000 psi spray pressure and material temperature of 60-80°C (depending on environment). Graco plural component reactors using impingement mix tips in plural component air and mechanical purge guns (air purge recommended) are typically used, but there are a range of other systems now available.

If there is any change in colour or consistency of the material, the sprayer should stop immediately and troubleshoot the equipment.

Filters should be checked periodically for any build-up of material.

Application Temperatures

Minimum recommended material and substrate temperatures are 60°C and 10°C respectively. Maximum recommended substrate temperature is 50°C. Wider temperature windows can be achieved but please consult your technical representative for specific advice.

Cure Time and Recoat Time

Development of a full cure may take up to 48 hours. Material may be recoated when tack-free. Old, sound coatings should be lightly abraded to remove any oxidized material and cleaned thoroughly prior to recoat. Consult your technical representative for options regarding treatment of day joints and coating over cured product.

Colours

Standard grey/black/White and natural / cream. Custom colours can be produced on request but may require additional lead time and price premium. Contact your local distributor for availability.

Due to its aromatic composition, ShieldPoly F-15 will tend to yellow or darken in colour and will become matt after exposure to UV light. It can be top coated with an aliphatic polyurethane or similar coating for a colour-fast finish.

System Specification

Primer

Refer to ShieldCrete® technical representatives and distributors for recommendations based on your specific application. Typically, it will be ShieldPrime UNI for steel, concrete and wood, and ShieldPrime CV for rubber, some steel, and other difficult substrates.

Recommended Thickness

Recommended minimum thickness for abrasion resistant duty is 3mm, 4mm for heavy abrasion. Recommended minimum thickness for waterproofing is 1.5-2mm. Contact your local distributor for application specific recommendations.

Number of Coats

This product can be applied in thicknesses from 1mm up to several cm in one monolithic coat. To build to specification, allow just enough cure time for the first coat to become firm, and then spray the next coat. Do not exceed recommended recoat windows. When building to more than 4mm thickness, pause for at least 5 minutes every 3mm (approximately) to allow the coating to exotherm and cure evenly in the layers.

Sometimes two or more coats are applied using different colours as a visual wear indicator. The additional coats should be applied as soon as possible after the preceding coat has gone tack-free, but no longer between coats than the specified recoat window.

Contact your distributor for reactivation requirements for coating over cured product.

Topcoat

An aliphatic polyurea or polyurethane, or polyaspartic polyurea topcoat may be required for some applications, particularly where colour stability is required (this product is UV stable, but not colour stable). Contact your distributor for a range of options. The topcoat shall be applied as soon as possible following the final coat reaching tack-free status, with a maximum time between coats as specified by the recoat window of this product.

Storage and Handling Precautions

The Part A should be kept properly closed and stored indoors in a well-ventilated area under normal factory conditions. Storage at room temperature (20-30°C) also provides a convenient viscosity for handling.

Storage at low temperatures (below 10°C) is not recommended because it may lead to crystallisation: this material must be protected from frost. Drum heaters may be used with the heat setting at low.

The material should be agitated or recirculated to uniformly distribute the heat. In no circumstances should the material be heated above 80°C. Storage temperatures above 50°C are not recommended since they can accelerate the formation of insoluble solids and may affect chemistry and increase the viscosity over extended storage intervals.

Under the recommended storage conditions and in properly sealed containers with average humidity levels, the components have minimum storage life of 12 months. If either component is opened and partially used, it should be purged with nitrogen or desiccated air and resealed or refilled into smaller containers to their maximum volume. Particular care should be taken in humid environments.

Packaging

Standard 400L kits, 2x200L Drums per kit. Other sizes may be available on request.

Chemical Resistance

The following technical information and data should be considered representative or typical only and should not be used for specification purposes. Contact ShieldCrete® technical representatives and distributors for specific recommendations for chemical resistance prior to specifying these products in this application type.

| | | | |
|--------------------------|----|---------------------------|----|
| Acetic Acid | R | Phosphoric Acid (10%) | R |
| Ammonium Hydroxide (20%) | R | Potassium Hydroxide (10%) | R |
| Ammonium Hydroxide (50%) | RC | Potassium Hydroxide (20%) | RC |
| Hydraulic Fluid | R | Sodium Hydroxide (10%) | R |
| Hydrochloric Acid (10%) | R | Sodium Hydroxide (50%) | RC |
| Gasoline (unleaded) | R | Sulphuric Acid (15%) | R |
| Hydrogen Sulphide (gas) | R | Wastewater | R |
| Diesel Fuel (Kerr-McGee) | RC | Sea Water | R |
| Motor Oil, Brake Oil | RC | Water (Tap) @ 80°C | R |

R-Resistant, RC – Slight surface change, discoloration with no loss of hardness.

DISCLAIMER

The information provided herein, especially recommendations for the usage and the application of our products, is based upon our knowledge and experience. Due to different materials and equipment used, as well as varying working conditions and environments beyond our control we strictly recommend carrying out intensive trials to test the suitability of our products regarding the required processes and applications. This data sheet is provided free of charge, and we do not accept any liability regarding the above information or regarding any verbal recommendation, except for cases where we are liable of gross negligence or false intention.