



Corporate Offices  
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**PROTECTO-FLAKE 800/900**

**GLASS FLAKE-FILLED, TROWEL APPLIED, HIGH MOLECULAR WEIGHT VINYL ESTER TANK LINING, 60-80 MILS (2 mm)**

**FEATURES**

FDA Compliant (Flake 800)  
 Very Low Permeability  
 Excellent Chemical Resistance

**RECOMMENDED APPLICATIONS**

Process Tanks	Storage tanks
Scrubbers	Duct Work
Stacks	Ion Exchange
Pickling Lines	Columns
Fan Housings	

**CHEMICAL RESISTANCE**

**Inorganic Acids**

Sulfuric  
 Chromic  
 Hydrochloric  
 Phosphoric  
 Nitric

**Salts**

Chlorides  
 Phosphates  
 Sulfides

**Organic Acids**

Acetic Acid  
 Fatty Acids

**Solvents**

Aliphatic  
 Aromatic

**TEMPERATURE LIMITS (METAL APPLICATION)**

Immersion up to 200°F  
 Continuous Dry 220°F | Intermittent 250°F

**PHYSICAL PROPERTIES**

Tensile Strength ASTM C-307	3,900 PSI
Flexural Strength ASTM C-580	9,300 PSI
Elongation ASTM C-307	1%
Coefficient of Expansion ASTM D-696	12-16x 10 <sup>-6</sup> in./in./°F
Taber Abrasion ASTM D-4060	68 mg.
Flame Spread ASTM D-635	100 mm
WVT ASTM E-96	.0002 perm. in.
Adhesion to Steel ASTM D-4541	2,200 PSI

**SPECIFICATIONS**

**Protecto-Flake 800** shall be an FDA compliant, high molecular weight vinyl ester resin based lining, filled with large diameter glass flakes with a permeability of .0002 perm. inches as manufactured by Dudick, Inc. Application shall consist of a primer applied at 3-4 wet mils followed by a trowel applied basecoat and topcoat, both at 30-40 mils according to the manufacturer's recommendations.

**Protecto-Flake 900** is formulated with a higher cross-link density novolac vinyl ester resin for improved chemical resistance to salts, acids and organic solvents.

**THE PROTECTO-FLAKE 800/900 SYSTEM**

**Protecto-Flake 800 and 900 Systems** utilize a primer and two trowel applied layers of glass flake filled, vinyl ester resin to protect metal substrates from the corrosive effects of continuous chemical contact.

**Primer 27:** Is applied at 3-4 wet mils to prevent abrasive blasted steel from developing rust bloom.

**Lining:** The lining is trowel applied in two 30-40 mil layers to allow the glass flake filler in each layer to be properly oriented to the substrate and, thus, achieve maximum resistance to water vapor permeation. To assure complete coverage, the basecoat is pigmented white and the topcoat is pigmented gray.

**Optional Gel Coat:** A 5-10 mil clear or pigmented gel coat can be applied to the cured **Protecto-Flake 800/900** lining to provide the very smooth surface sometimes required to prevent the vessel contents from adhering. It also provides an added measure of protection from product contamination.

**ESTIMATING QUANTITIES AND ORDER BILL OF MATERIAL**

APPROXIMATE SQUARE FEET PER GALLON	
STEEL	
PRIMER 27	275-300 ft. <sup>2</sup>
Protecto-Flake 800/900	
Basecoat	23-28 ft. <sup>2</sup>
Topcoat	23-28 ft. <sup>2</sup>
Optional Gel Coat	100-150 ft. <sup>2</sup>
Styrene	150 ft. <sup>2</sup>
S-10 Solvent	500 ft. <sup>2</sup>

\*Quantities shown are for estimating purposes only. Actual field usage may vary.

**During manufacturing, some air entrapment occurs in the more viscous lining systems. During storage and transportation, settling can occur when entrapped air escapes this mix indicating less than 100% volumetric fill. All products are priced and sold by weight and not necessarily by volume.**

**APPLICATION INSTRUCTIONS**

**SURFACE PREPARATION**

**Metal:** Surfaces must be abrasive blasted with sharp sand or grit to a “white metal” finish according to SSPC-SP5 or NACE # 1, with a 3.0 mil minimum profile.

**APPLICATION SPECIFICATIONS**

Substrate temperature for metal must be between 50°F and 110°F.

Relative humidity must not exceed 90%.

Substrate temperature must be 5°F above the Dew Point.

Hardener	Substrate Temperature	Primer 27	PF-800/900 B-coat T-coat	Gel Coat
PH-1	50° - 70° F	3-4 oz.	3-4 oz.	3-4 oz.
PH-1	70° - 90° F	2-3 oz.	2-3 oz.	2-3 oz.

Pot life of the mixed materials will depend on the temperature. To prevent material waste, do not mix more than can be used according to the following table:

TEMPERATURE	POT LIFE
50°F	90 min.
75°F	60 min.
90°F	40 min.

Do not attempt to store mixed material. Residual material should be properly disposed of at the end of each work period.

**PRIMING**

Immediately after abrasive blasting and before any rust bloom occurs, prime the metal with **Primer 27**, mixed with the correct amount of **PH-1 Hardener** using a brush, roller or spray. The prime coat should be 3-4 mils WFT to assure a minimum of 1 mil DFT on the peaks of the abrasive blasted profile.

**EDGE TREATMENT**

Baffles, angle iron and corners, which may be subject to mechanical damage, may require special treatment. Consult with a Dudick technical representative for specific recommendations and application details.

**BASECOAT**

Add the correct amount of **PH-1 Hardener** to each gallon of **Protecto-Flake 800/900** (White) basecoat. Mix thoroughly for 2-3 minutes or until a uniform color is achieved. Check the sides and bottom of the container for uncatalyzed material distinguished by a non-uniform color. Apply a 30-40 mil thick basecoat using a plasterer’s trowel. Spread to an even, smooth finish.

Immediately after the trowel application and before the lining has cured, roll the **Protecto-Flake 800/900** surface with a short nap paint roller dampened with styrene. This orients the glass flakes parallel to the substrate. Use only



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enough styrene to prevent the lining from sticking to the roller.

Allow the basecoat application to cure until firm or tack-free. Check the lining for soft spots or defects before proceeding with the topcoat application.

**TOPCOAT**

Add the correct amount of **PH-1 Hardener** for each gallon of **Protecto-Flake 800/900** (Gray) topcoat. Mix thoroughly at least 2-3 minutes or until a uniform color is achieved. Check the sides and bottom of the container for uncatalyzed material distinguished by a non-uniform color. Apply a 30-40 mil thick topcoat using a plasterer's trowel. Spread to an even, smooth finish.

Immediately after the trowel application and before the lining has cured, roll the **Protecto-Flake 800/900** surface with a short nap paint roller dampened with styrene. This orients the glass flakes parallel to the substrate. Use only enough styrene to prevent the lining from sticking to the roller.

**In order to prevent curing problems with styrenated products, air movement and/or ventilation must be maintained not only during application but also after application until the system has totally cured. This will prevent high concentration of styrene inhibiting/retarding the cure of the system.**

**TESTING**

Allow the topcoat to cure overnight. Spark test the lining with a 10,000 Volt AC spark tester (100 volts/mil.). Mark and repair all pinholes using **Protecto-Flake 800/900** topcoat. Retest only the repairs.

**Optional 800/900 Gel Coat:** On completion of the spark test and repair procedures, an optional gel coat can be applied. Add the correct amount of **PH-1 Hardener** to 1 gallon of gel coat and mix thoroughly for 1-2 minutes to achieve a uniform color. Apply using a brush, roller or spray to a nominal 8-12 mil WFT.

The gel coat does not require a spark test. Observe the cure cycles below before placing the vessel into service.

**Cure Cycle for Protecto-Flake 800**

TEMPERATURE	RECOAT TIME		CURE TIME
	MIN.	MAX.	
50°F	12 hrs.	120 hrs.	96 hrs.
75°F	4 hrs.	96 hrs.	24 hrs.
90°F	3 hrs.	72 hrs.	20 hrs.

**Cure Cycle for Protecto-Flake 900**

TEMPERATURE	RECOAT TIME		CURE TIME
	MIN.	MAX.	
50°F	12 hrs.	60 hrs.	96 hrs.
75°F	4 hrs.	48 hrs.	24 hrs.
90°F	3 hrs.	36 hrs.	20 hrs.

**Protecto-Flake 900 must be recoated within 6 hours when exposed to direct sunlight.**

If these recoat times are exceeded, consult a Dudick representative; sanding or abrasive blasting may be required before the next coat. Recoat times are dramatically reduced when the coating is exposed to direct sunlight.

**CLEANING**

Use **S-10 Cleaning Solvent** to clean tools and equipment. **DO NOT USE ACETONE.**

## SHIPPING

Refer to Material Safety Data Sheets.

## STORAGE

**Warning:** All Dudick products classified by DOT with either white, yellow or red labels must not be mixed or stored together as an explosive reaction may occur.

All products should be stored in a cool, dry area away from open flames, sparks or other hazards.

When properly stored in their original, unopened containers at 50°F-75°F, **Primer 27, Protecto-Flake 800/900** and **800/900 Gel Coat** will have a shelf life of three-months or less, at temperatures above 75°F, two months or less. PH-1 Hardener has a six-month shelf life at 50°F-75°F.

## SAFETY

**M.S.D.S: Material Safety Data Sheets must always be read before using products. Protecto-Flake 800/900** systems are intended for application by experienced, professional personnel. Dudick, Inc. can supply supervision to help determine that the surface has been properly prepared, the ingredients correctly mixed, and the materials properly and safely applied.

If **Protecto-Flake 800/900** materials are to be applied by your own personnel or by a third party contractor, please be sure that they are aware of the following safety precautions:

- Exposure to resins and hardeners through direct skin contact and/or inhalation may cause severe dermatitis reactions in some people. Cleanliness of the skin and clothing is critical and must be of paramount concern.
- Fumes are flammable and heavier than air. Proper ventilation should be maintained to minimize breathing of concentrated fumes.
- Suitable respirators should be used during application.
- Safety glasses, gloves, and suitable protective clothing must be worn at all times during application.
- If contact with hardeners occurs, remove any clothing involved and flush the skin with flowing water. Discard the clothing. Do not attempt to wash

and reuse it. **Protecto-Flake 800/900** liquid can be removed with S-10 Cleaning Solvent, MEK, or lacquer thinner. **DO NOT USE ACETONE.**

- Keep open flames and sparks away from the area where materials are being mixed and applied.
- If a rash occurs, remove the individual from the work area and seek a physician's care for dermatitis.
- In case of eye contact, flush with water for at least 15 minutes and consult a physician.
- If swallowed, do not induce vomiting; call a physician immediately.

**NOTE:** Dudick, Inc. ("Dudick") warrants all goods of its manufacture to be as represented in its catalogs and that the manufacture of its products by its employees or sub-contractors shall be performed in a workmanlike manner. Dudick's sole obligation under this warranty shall be to replace any material which its examination shall disclose to be defective. Dudick makes no warranty concerning the suitability of its product for application to any surface, it being understood that the goods have been selected and the application ordered by the Purchaser. DUDICK, INC. MAKES NO WARRANTY, EXPRESS OR IMPLIED, THAT THE GOODS SHALL BE MERCHANTABLE OR THAT THE GOODS ARE FIT FOR ANY PARTICULAR PURPOSE. THE WARRANTY OF REPAIR OR REPLACEMENT SET FORTH HEREIN IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES ARISING BY LAW OR OTHERWISE; AND DUDICK INC. SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DOWN TIME, DAMAGES TO PROPERTY OF THE PURCHASER OR OTHER PERSONS, OR DAMAGES FOR WHICH THE PURCHASER MAY BE LIABLE TO OTHER PERSONS, WHETHER OR NOT OCCASIONED BY DUDICK'S NEGLIGENCE. This warranty shall not be extended, altered or varied except by written instrument signed by Dudick and Purchaser.

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