



# ENDURA-FLEX<sup>®</sup> 1988

ELASTOMERIC POLYURETHANE  
COATING



# **ENDURA-FLEX® 1988**

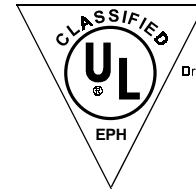
## **PRODUCT DESCRIPTION**

ENDURA-FLEX® 1988 (EF-1988) is a specially formulated 100 percent solids, aromatic, MDI (recognized for its superior hydrolytic stability) elastomeric polyurethane coating/lining system for potable water and waste water applications, and is designed for use in gaseous or liquid phase exposures. Adhesion of EF-1988 to concrete exceeds the cohesive strength of concrete and shows excellent adhesion to abrasive blasted steel by industry standards. EF-1988 is fluid applied using plural component equipment designed to proportion the two components utilizing airless spray guns or ECOSYSTEM® designed spray equipment. A modified EF-1988 (EF-1988FR) is available for enriched oxygen environments such as concrete reactors used for waste water treatment. Contact your Representative for details.

## **TYPICAL USE AREAS**

EF-1988 is a spray applied coating which provides a seamless monolithic lining system and is suitable for the protection of concrete or steel (multi-pass spray applications of 30 mils to in excess of 250 mils are possible depending on surface roughness) used in potable water treatment and waste water treatment, to include clarifiers, digesters, sedimentation basins, chlorine contact or aeration basins, sewer manholes, storage tanks, and water conveyance pipe.

EF-1988 can be applied as a traditional plural component solid lining over surfaces such as new concrete or steel. However, should applications be required over extremely degraded surfaces such as deteriorated concrete with exposed aggregate, the EF-1988 may be applied by licensed applicators using patented expansion technology registered under the name of ECOSYSTEM®, Patent No. 4,590,218. Pinhole-free applications have been shown possible without primers using this technology by closing off pinholes with multi-pass spray applications and allowing the cellular product to encapsulate displaced air.



ENDURA-FLEX® 1988  
Drinking Water System Components  
In Accordance With  
Standard ANSI/NSF 61  
When Properly mixed (2:1)  
ENDURA-FLEX® 1988 (B:A)  
3P83



View of sedimentation basin coated with ECOSYSTEM® expanded EF-1988

Applications of ECOSYSTEM® expanded EF-1988 can offer advantages in the area of surface preparation by avoiding the common and expensive practice of filling voids, bug holes, tie holes, or cracks with cementitious grouts and fillers. These surface defects can be filled, bridged, or sealed during application of the expanded lining system thus reducing surface preparation costs and down-time. Such spray-applied films conform to the surface producing a smoother appearance to the rough surface.

Also, in the area of rehabilitation of severely deteriorated “old “ concrete, the expanded materials have worked very well when applied to extremely irregular surfaces with peak-to-valley exposures in excess of one inch. Due to lighter weight and lower density, ECOSYSTEM® expanded EF-1988 offers high build and hang characteristics unmatched by traditional solid film materials without changing chemical resistance or permeability characteristics as defined in the non-expanded solid condition.

## **ET-2000 PROCESS**

ET-2000 is the name of a patented application process that allows licensed applicators to inject a controlled amount of inert solid filler (i.e., sand) into the cross-linking materials to form a dense, impact resistant polyurethane composite system for areas such as drum storage, vehicular traffic, tank bottoms, and secondary containment areas. U.S. Patent No. 5,532,281.

The ET-2000 process can be combined with EF-1988 (as well as other materials) to create unique spray-applied sand-filled coating systems for a wide variety of service requirements.



Cross-sectional view of ET-2000 process combined with EF-1988 and spray applied to deteriorated concrete (with hand trowel finish).

## SURFACE PREPARATION

For specific recommendations on each individual project, consult your Representative. The following are basic guidelines for preparing steel and concrete substrates prior to coatings application.

**Steel:** SSPC-SP10 “Near-White Metal Blast Cleaning” for immersion service. SSPC-SP6 “Commercial Blast Cleaning” for non-immersion service such as splash and spillage. Blast profile should be a minimum of 2.5 mils.

**Concrete:** Concrete and masonry surfaces should be dry (per ASTM D-4263) and require the recognized 28-day cure to allow sufficient compressive strength to develop unless such values are verified sooner to the satisfaction of the Owner. Sweep blast to remove laitance, deteriorated concrete, and/or old coatings and provide an etched surface. Sharp edges and protrusions should be removed using hand or power tools. Voids should be filled or sealed using suitable grouts, epoxies, ENDURA-FLEX® or ET-2000 products.

## PRIMER

EF-1988 is self-priming on concrete and steel surfaces that are clean, dry, and properly etched. ENDURA-FLEX® 12P EPOXY PRIMER SEALER may be used as a “holding primer” for abrasive blasted steel surfaces or as a “barrier/tie-coat” over properly prepared concrete surfaces. ENDURA-FLEX® 550 PRIMER/SEALER may be used as a “barrier/tie-coat” over properly prepared concrete surfaces and ENDURA-FLEX® 19P FILLER/SURFACER may be used to fill voids. Always consult your Representative and review the Global EcoTechnologies “Guide Specifications” for specific and proper use.

## PHYSICAL PROPERTIES

Consult the Product Data “Physical Properties Data Sheet.”

## CHEMICAL RESISTANCE

EF-1988 is formulated for use in water and wastewater applications. However, chemical resistance generally follows the same positive values as for epoxy relative to acid, caustic, and alkali environments. EF-1988 also shows some resistance to aromatic solvents. For detailed chemical resistance, consult the Product Data “Chemical Resistance Data Sheet.”

## TECHNICAL DATA

COMPONENTS: A: Activator  
B: Base

MIX RATIO: 1:2 by volume (1 part A to 2 parts B)  
Laboratory Atlas Cell Testing of EF-1988

THEORETICAL COVERAGE: 1604 ft<sup>2</sup>/mil/gal

DRY TIME AT 70 DEGREES FAHRENHEIT:

Touch: 20 min.  
Lt. Foot: 1 hour  
Hvy. Foot: 24 hours  
Cured to Service: 24 hours  
Full Cure: 5 days

MATERIAL TEMP. REQUIREMENT FOR APPLICATION:

Activator: 100°F  
Base: 100°F

FILM SHRINKAGE: -0- (wet to dry)

VOLUME SOLIDS: 100%

VOC CONTENT: None

PACKAGING: 3 Drum Kits  
(48 gal. Each)

SERVICE TEMPERATURE RESISTANCE:

Immersion: 120°F  
Dry: 180°F

WATER VAPOR TRANSMISSION- ASTM E 96:

0.0011 grams/24hr/ft<sup>2</sup>  
0.282 grams/24hr/m<sup>2</sup>

FLASH POINT: A: 390°F  
B: 300°F

COLOR: A: Brownish or black  
B: Various colors available  
Off-white is standard

SAG RESISTANCE/EDGE HANG: Excellent

ALLOWABLE AMBIENT AIR TEMPERATURE FOR

APPLICATION: Max. 120°F  
Min. -25°F

FILM THICKNESS: Unlimited, consult Guidelines

MINIMUM SUBSTRATE TEMPERATURE FOR  
APPLICATION: 5°F above dew point

POTABLE WATER: Suitable in accordance with  
ANSI/NSF STANDARD 61

HUMIDITY TOLERANCE DURING APPLICATION: <85%



## GENERAL INFORMATION

**APPLICATORS:** Only approved Contractors can apply EF-1988. An applicator-training program is available. The focus of the training program is “hands on” experience for the attendees, with special emphasis on how to deal with the everyday problems inherent to plural component equipment operations that can cause unplanned delays, downtime, and/or substandard quality of the applied product. The intent of the GET applicator training program is to have attendees not only versed in the proper procedures for equipment start-up, operation, and shut-down, but to have the knowledge and confidence for “in the field” problem avoidance and problem solving. Consult your Representative for details.

**ECOSYSTEM®:** For Contractors desiring to incorporate the patented ECOSYSTEM® expansion technology into their application program, a licensing agreement is available. The use of ECOSYSTEM® does require some equipment modifications with mandatory specialized training.

**EQUIPMENT:** The application system for ENDURA-FLEX® 1988 is plural component. The plural component equipment is designed to pump, heat, proportion, and mix the two-component materials at the specified material temperatures, utilizing airless or ECOSYSTEM® spray guns, or pour nozzles.

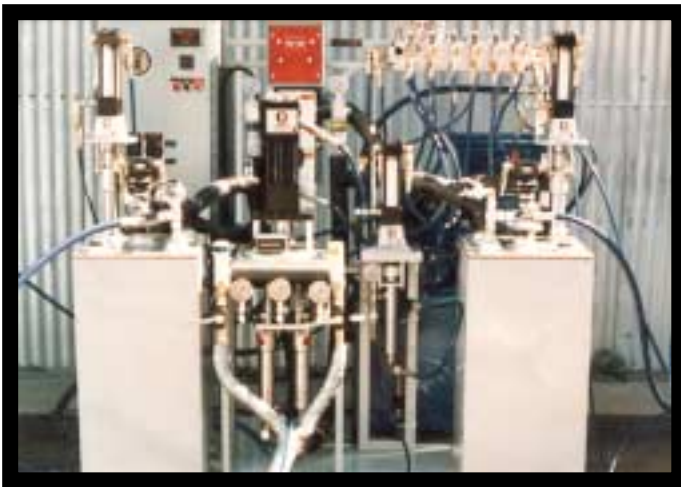
GET provides plural component equipment to support the ENDURA-FLEX® and ET-2000 products. Our unique equipment design (air or hydraulic power) allows Contractors to apply plural component materials at distances in excess of 1000 feet while operating at pressures as low as 1200 psi, with the capability to apply a variety of products. Upgrades of Contractor’s existing units can be done for specific applications of the ENDURA-FLEX® and ET-2000 products. Contact your Representative for additional information.

**SUPPORT SERVICES:** GET support services include:

- \*Technical support
- \*Spare parts inventory
- \*Upgrades of existing units for improved performance
- \*Training of personnel
- \*Manufacturing of equipment



Contractor’s crew receiving on-the-job training from GET Technician.



EPM-1 Module with hydraulic power, designed for high volume output with a variety of products



EPM-88 Module, air powered plural component system designed for EF-1988

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**NOTE:** GET®, ENDURA-FLEX®, ENDURA-TUF®, ECOSYSTEM®, ARE TRADEMARKS OF GLOBAL ECOTECHNOLOGIES, INC.

Disclaimer: All recommendations, statements, and technical data contained herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. User shall rely on his own information and tests to determine suitability of the product for the intended use and user assumes all risk and liability resulting from his use of the product. Seller’s and manufacturer’s sole responsibility shall be to replace that portion of the product which proves to be defective. Neither seller nor manufacturer shall be liable to the buyer or any third person for any injury, loss, or damage directly or indirectly resulting from use of, or inability to use, the product. Recommendations or statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding upon the manufacturer or seller. Manufacturer reserves the right to modify all data without prior notification or liability.

**Global Eco Technologies, Inc.**

*“creative solutions for environmental concerns”*

P.O. Box 767, Pittsburg, CA 94565

Telephone: (925) 473-9250\*\*\*Fax: (925) 432-0853

[www.getcoatings.com](http://www.getcoatings.com)