Product Data Sheet

REDEFINING CORROSION CONTROL

LINING 65 VE
Heavy Duty Vinyl Ester Laminate Lining

PRODUCT DESCRIPTION
LINING 65 VE is a heavy duty fiberglass reinforced laminate lining based on Vinyl Ester resin.

LINING LAYERS COMPOSITION
The lining system consists of a primer, one trowel applied basecoat, two layers of 1.5 oz. fiberglass mat, one surface veil, and two resin topcoats. The total lining thickness is 120-160 mils (3.0-4.0 mm).

FIELDS OF APPLICATION
LINING 65 VE provides resistance to a wide range of strong acids, alkalis, bleaches and many organic chemicals. It is excellent for hypochlorite service. It is an ideal protective lining system for steel and concrete structures including agitator vessels, process and storage tanks, concrete pits, sumps, trenches.

FEATURES
- Excellent chemical resistance
- Resistance to continuous operating temperatures up to 180°F (82°C)
- Incorporates FDA compliant resin
- Excellent adhesion to concrete and steel
- Very good mechanical properties

CHEMICAL RESISTANCE
Information on the chemical resistance properties is available upon request.

SURFACE PRE-TREATMENT
Carbon steel

For immersion or frequent spillage conditions, abrasive blast to “White Metal” in accordance with SSPC SP-5, NACE Specification #1 or SA 3. For fumes or occasional spill exposure and dry environments, abrasive blast to “Near White” in accordance with SP-10, NACE #2 or SA 2 1/2. A minimum surface profile of 3 mils (75 µm) is required. Refer to specification, RCC TT-14. After blast cleaning the steel surface shall be primed before the formation of any rust bloom.

Concrete

The concrete shall have a minimum compressive strength of 3500 psi (25 N/mm²) and a minimum surface strength of 200 psi (1.4 N/mm²) for coatings and 300 psi (2.1 N/mm²) for linings. The concrete must be thoroughly cured and dry at the time of application.

The residual moisture content should not exceed 4%. ASTM D 4263 plastic sheet test method is recommended to ensure concrete is moisture free. If moisture is detected, repeat test until dry.

Abrasive blast or mechanically abrade surface to remove the weak laitance and surface contaminants. Refer to specification, RCC TT-3 for details.

APPLICATION
- Prime the substrate with **COROFLAKE N PRIMER U** and allow the primer to cure.
- Trowel apply the Basecoat mixture of **LINING 65 VE Resin**, **Hardener No. 1 Clear** and **F-1 Filler** in one uniform layer at approximately 60 mils (1500 µm) WFT.
- Immediately upon placement of the Basecoat (while it is still wet), the 1st layer of 1.5 oz. fiberglass mat is pressed onto the surface, then saturated by roller with catalyzed **LINING 65 VE Resin**. Roll again with a ribbed roller to remove entrapped air. Repeat this application step for placement of the 2nd mat layer. Repeat this step for the placement of the surface veil. Application must be done while the previous layer is still wet (uncured).
- Once the reinforcement layer has cured and been quality control tested the Resin Topcoats (RTC) are applied at 6-8 mils (150-200 µm) WFT per coat.
- Allow 1st RTC to cure before applying the 2nd. Add Thin Film Curing Agent (TFCA) to the 2nd RTC.

Note: During application the lined surface should be shaded from direct or indirect sunlight when possible.

MIX RATIO
Hardener No. 1 Clear is used for the **COROFLAKE N PRIMER U Resin** and **LINING 65 VE Resin**. The mixing ratio is 1.5-2.5 oz. of hardener per gallon of resin. **TFCA** is added to the mixed 2nd **RTC** Resin at 6-8 oz per gallon of resin.

The primer and lining components are supplied in kits including resin and hardener. Filler, fiberglass mat and thin film curing agent are supplied separately.

CONSUMPTION

Layer	Thickness mils (µm)	Coverage (mix ratio)
PRIMER on steel	2-5 (50-125)	250-300 ft²/gal
PRIMER on concrete	2-5 (50-125)	160-200 ft²/gal
BASECOAT LINING 65 VE Resin & Hardener No.1 Clear F-1 Filler	60 (1500)	45-50 ft²/gal (1.5-2.5 oz/gal of resin) 100 ft²/50 lb bag (20-25 lb/gal of mixed resin)
REINFORCEMENT LINING 65 VE Resin & Hardener No.1 Clear (2) 1.5 oz. mat (1) surface veil	70-80 mils (1750-2000)	15-17 ft²/gal (1.5-2.5 oz/gal of resin) 2.2 ft²/ft² 1.1 ft²/ft²
RESIN TOPCOATS LINING 65 VE Resin & Hardener No.1 Clear Thin Film Curing Agent (2nd RTC)	6-8 mils/coat (150-200) WFT	90-120 ft2/gal 2 coats (1.5-2.5 oz/gal of resin) (6-8 oz/gal mixed resin)

WORKING TIME & RECOAT TIME

Temperature	Working Time	Min Recoat	Max Recoat
50°F (10°C)	approx. 120 min	12 hrs	14 days*
70°F (21°C)	approx. 60 min	6 hrs	14 days*
90°F (32°C)	approx. 30 min	3 hrs	7 days*

* Maximum when area is shaded. If exposed to direct or indirect sunlight, maximum recoat time is 7 days @ 70°F (21°C).

CURE TIME (to place in service)

Temperature	Minimum Cure time
50°F (10°C)	72 hrs
70°F (21°C)	48 hrs
90°F (32°C)	24 hrs

Generally **LINING 65 VE** can be placed in service after the final cure time intervals have been achieved. Shorter or longer intervals may apply depending on service conditions. Consult RCC Corrosion Control for specific recommendations.

SAFETY MEASURES

The material safety data sheets of the individual components as well as the legal requirements for handling hazardous materials must be observed.

PACKING UNITS

The products are supplied in the following standard package sizes:

Description	Package Size
COROFLAKE N PRIMER U	1, 4, 50 gal kits
LINING 65 VE	1, 4, 50 gal kits
1.5 oz. Fiberglass Mat, Veil	Per sq.ft.
F-1 Filler	50 lb Bag
Thin Film Curing Agent (TFCA)	.25, 1 gal

STORAGE

The materials must be stored in a cool and dry place. Material shelf life at 70°F (21°C) is as follows:

COROFLAKE N PRIMER U Resin 6 months
LINING 65 VE Resin & TFCA 6 months
Hardener No. 1 Clear 12 months
F-1 Filler Indefinite, if kept dry
1.5 oz. Mat, Surface Veil Indefinite, if kept dry

If the storage time is exceeded, the materials must be tested before use. Higher storage and transport temperatures will reduce the shelf life. The containers must be kept tightly closed. Liquid products must be stored frost-proof.

CLEANING: Cleaning Agent T-100

Technical Data	Testing Standard	Unit	Value
Density	ASTM D1475	lbs/gal kg/l	8.74±0.25 (1.04)
Compressive Strength	ASTM C579	Psi (MPa)	9,400 (65)
Tensile Strength	ASTM D638	Psi (MPa)	7200 (50)
Flexural Strength	ASTM D790	Psi (MPa)	8,000-12,000 (55-83)
Adhesion Strength - Concrete	ASTM D7234	Psi (N/mm²)	Exceeds concrete strength
Minimum Adhesion Strength - Steel	ASTM D4541	Psi (N/mm²)	1000 (7)
Linear Coefficient of Thermal Expansion	ASTM C531	in/in°F (cm/cm°C)	15-17 x 10^{-6} (27-30 x 10^{-6})
Water Vapor Permeability	ASTM E-96, Procedure E	perm-inch	0.006
Volatile Organic Compounds (LINING 65 VE Resin)	EPA Method 24	g/L (lbs/gal)	127 (1.06)
Maximum Operating Temperature* Immersion Steel Immersion Concrete Splash/Spill Concrete		°F °C °F °C °F °C	160 71 180 82 220 104

***Maximum operating temperature limits may vary depending on actual service conditions**

We warrant that our goods will conform to the description contained in the order and that we have good title to all goods sold. This Product Data Sheet is considered accurate and reliable to the best of our knowledge at the date of its publication, but are used as guides only. The user assumes all risks and liabilities in connection therewith regardless of any suggestion, we may give. We assume no liability for performance of the product or for any loss or damage resulting from its use. Our liability, in law and equity, shall be expressly limited to the replacement of non-conforming goods at our factory, or at our sole discretion, to repayment of the purchase price of the non-conforming goods.