



MarineLINE[®] 784 RECEIVES ABS CERTIFICATE OF DESIGN ASSESSMENT



The American Bureau of Shipping (ABS) is one of world's leading ship classification societies, establishing and administering standards for the design, construction, and operational maintenance of marine vessels and structures.

ABS has awarded Advanced Polymer Coatings, Ltd's patented MarineLine[®] 784 with its Certificate of Design Assessment. The coating is used to line and protect tanks in marine chemical tankers, chemical storage tanks, tank (ISO) containers, and railcars, to provide protection against corrosive chemicals, and to ensure the product purity of the cargo being carried.

Documentation was provided to, reviewed and certified by the ABS on MarineLine[®] 784's specifications, performance data, standard of compliance, engineering analyses, and other data.

Description

MarineLine® 784 is a patented polymer (Siloxirane®) cargo tank lining that provides outstanding chemical resistance, ease of cleaning and higher profits for less than half the cost of stainless steel. The chemical resistance is far superior than stainless steel and its efficient ease of cleaning quickly increases profits in no time.

When properly cured, MarineLine® 784 delivers an extremely dense and highly cross linked coating. This means that the cargo cannot be absorbed into the coating as with traditional epoxy and zinc coatings, enabling faster cleaning time and more sailing days.



MarineLine® 784's higher cross link density means:

- Higher Chemical Resistance
- Higher Temperature Resistance
- Higher Resistance to Absorption
- Higher Toughness
- Ease of Cleaning
- Faster Turn Around

Suggested Uses

- Cargo Tank Linings
- Chemical Storage Tanks
- Tank Containers
- Railcars

Packaging

Material is available in three sizes: 0.75, 4, and 20 liter kits. Each kit contains two pre-measured containers (part A and part B). All parts are to be mixed together thoroughly without splitting of kits.

• Color	Gray/Red
• V.O.C. Level	108 grams/L
• Lead Content	Zero
• Pot Life	60 min@ 24° C (75° F)
• Flash Point	53° C (127° F)
• Vapor Transmission	0.00
• Coefficient of Thermal Expansion (1/°C x 10-5)	10.45
• Viscosity (ASTM 2392)	9,900
• Gel Time (min)	300 @ 23° C
• Solids by Volume	89.6% (+/- 3%)
• Solids by Weight	95.5% (+/- 2%)
• Theoretical Coverage	2.9 m ² /L @ 300mic
• Recommended DFT	300 microns
• Shelf Life	12 months

Physical Properties

Impact Test (ASTM D2794)	130 in. lbs
Pull Off Strength (ASTM D4541)	3500psi
Barcol Hardness (ASTM D2583)	72
Water Absorption (ASTM D570)	0.09%
Taber Abrasion (ASM D4060-90)	3.92mg
Elongation (ASTM D538)	8.2%
Bend Test Conical (ASTMD522)	5.21%
Compressive Strength (ASTM D695)	223.4 MPa
Flexural Strength (ASTM D790)	76.4 MPa
Flexural Modulus (ASTM D790)	6.75 GPa



Chemical Resistance

Below is a partial list of MarineLine®-tested products. All tests were performed to ASTM D543 with properly cured MarineLine® Test

Samples. A full listing of our chemical resistance can be found on our website www.adv-polymer.com

KEY: A = Good at ambient temperatures L = Limited service N = Not recommended

Acetaldehyde	A	Formaldehyde	A	Octanoic Acid	A
Acetic Acid	A	Formamide	A	Orthonitro Benzene	A
Acrolein Acid	A	Formic Acid 10%	A	Oleum	A
Acrylic Acid	A	Green Liquor	A	Olive Oil Fatty Acid	A
Acrylonitrile	A	Glycerol	A	Palm Oil Fatty Acid	A
Ammonium Persulfate	A	Grape Juice	A	Perchloroethylene	A
Azabenzene	A	Grapefruit Juice	A	Perchloric Acid	A
Benzene	A	Grease Oil	A	Phenol	A
Benzene Carboxylic Acid	A	Heptanoic Acid	A	Phosphoric Acid	A
Benzoyl Chloride	A	Herring Oil	A	Phthalic Anhydride	A
B-Methacrylic Acid	A	Hexahydroaniline	A	Piperzine	A
Bichromate of Soda	A	HMDA	A	Polyethylene Polyamines	A
Bromine	A	Hydrazine	A	Potassium Hydroxide	A
Butanoic Acid	A	Hydrobromic Acid	A	Potassium Permanganate	A
Butyric Aldehyde	A	Hydrochloric Acid	A	Propionic Acid	A
Calcium Hydroxide	A	10% Hydrofluoric Acid	A	Pyridine	A
Calcium Hypochlorite	A	5-20% Hydrogen Chloride	A	Rubber Extender Oils	A
Caustic Potash	A	35% Hydrogen Peroxide	A	Rum	A
Carbolic Acid	A	10-30% Hydrogen Sulfate	A	Sodium Carbonate	A
Chlorine Water	A	5-17% Hypochlorite Bleach	A	Sodium Dichromate	A
Chlorosulfonic Acid	A	Isobutanol	A	Sodium Hydroxide	A
Chlorinated Acetone	A	Isobutyric Acid	A	Sodium Hypochlorite	A
Chloroacetic Acid	A	Isopropyl Amine	A	Sodium Sulfide	A
Chromic Acid	A	Javelle Water	A	Stannic Chloride	A
Coal Tar Oil	A	Juices, Fruit	A	Stearic Acid	A
Coconut Fatty Acid	A	Lactic Acid	A	Styrene Monomer	A
Colamine	A	Lactonitrile	A	Spent Sulfuric Acid	A
Cresol	A	Latex	A	Sulfur	A
Dichloromethane	A	Liquified Ammonia	A	Sulfuric Acid 1-70%	A
Detergents	A	Liquid Pitch Oil	A	Sulfuric Acid 70-99%	A
Diethyl Formamide	A	M-Phosphoric Acid	A	Sulphurous Acid	A
Diethylamine	A	Maleic Anhydride	A	Tall Oil	A
Diethylene Chloride	A	MCA	A	Tallow Acid	A
Diethyl Ether	A	Methacrylonitrile	A	Tar Acid	A
Dimethylamide Acetate	A	Methanamide	A	Tetra Chloroacetic Acid	A
Disulphuric Acid	A	Methanol	A	Tetra Hydrofurfuryl Alcohol	A
EDTA	A	MEK	A	Toluene Diamine	A
Ethanolamine	A	Methylene Chloride	A	Toluol	A
Ethonic Acid Anhydride	A	Monochloroacetic Acid	A	Valeraldehyde	A
Ethyl Acrylate	A	Monochloro Benzene	A	Vegetable Oils	A
Fatty Acids	A	Naphtalene	A	Vinegar	A
Fatty Acid, Palm	A	Nitric Acid 1-20%	A	Vitriol Oil 65%	A
Ferric Chloride	A	Nitro Benzene	A	Water, Acid	A
Flaked Stearic Acid	A	Nitrogen Fertilizers	A	Wine	A
Fluoraboric Acid	A	Norval Amine	A	Xylenol	A

Surface Preparation

Grit blast to Sa 2.5 surface cleanliness with a blast profile of 75-100 microns.

Mixing Instructions

Material is supplied in two containers as a unit. Always mix a **complete** unit in the proportions supplied.

- (1) Thoroughly mix the contents of Part A with a power agitator until uniform consistency and color is obtained. Be sure that any solids that may have settled through storage have been put back in suspension.
- (2) Slowly combine the contents of Part B with the previously mixed Part A.
- (3) Thoroughly mix the two parts until a uniform consistency and color is obtained.

Clean Up Solvent

Acetone, Xylene, Toluene

Limitations

Apply when the air and surface temperatures are above 10° C (50° F). Relative humidity must be kept at 70% or lower. The substrate temperature should be at least 3° C above the dew point and rising. For optimum application properties, bring material to 21-30° C (70-86° F) prior to mixing and application. Increased temperatures will result in shorter pot life.

Application

Airless spray equipment with a minimum 60:1 pump ratio @ 80-100 lbs. to achieve 2500-3000 p.s.i. tip pressure: Reverse-A-Clean tip .019 to .023, with 3/8" fluid hose, and 1/4" whip hose. MarineLine[®] is a low VOC compliant material. If conditions require a viscosity adjustment, thin with Toluene or Xylene.



Recoat Time (Per Coat)

Temp °C (°F)	Overcoat Minimum	Overcoat Maximum
15 (59)	10 hours	4 days
20 (68)	8 hours	3 days
25 (77)	6 hours	3 days
30 (86)	6 hours	2 days

MarineLine[®] should be stored in a temperature controlled facility out of direct sunlight and weather conditions. The material should be stored at a minimum temperature of 15° C and a maximum temperature of 30° C. Excursions beyond this range that may occur during shipping are acceptable. Settling and separation may occur over time or at elevated temperatures. Reconstitute prior to use by mixing Part A prior to adding Part B.



Material Curing

Stowage of aggressive cargoes is possible only when MarineLine[®] is fully cured. To avoid problems, MarineLine[®] includes forced hot air curing in their pricing. The cargo tanks are forced hot air cured at 90° C for a minimum of 6 hours.

Safety

Solvents and chemicals are contained in this product. Consult the Material Safety Data Sheet (MSDS) for details. Adequate safety and health precautions should be taken during handling, application and drying of this product. The material should be applied under local, state, and federal regulations and in accordance with OSHA and ANSI bulletins and safety requirements.

Advanced Polymer Coatings, Ltd.
Avon, Ohio 44011 U.S.A.
440/937-6218 Phone 440/937-5046 Fax
800/334-7193 Toll-Free in USA & Canada

© Copyright 2007 www.adv-polymer.com
Advanced Polymer Coatings, Ltd.