ENVICOAT®

WET HYDROPHOBIC COATING

Product Data/ Application Instructions

- Protects against moisture, corrosion, and oxidation.
- Ideal for interior and exterior commercial and residential applications.
- Repels and prevents the adherence of foreign particulates.
- Provides a clear, invisible protective barrier.
- Will not crack, chip, peel, or discolor.
- Suitable for many surfaces.
- Easy to apply.
- Smoothes rough surface profile (Friction Reducing).

When exposed to the elements, unprotected surfaces are costly to maintain and replace. They require ***more frequent maintenance***, are ***harder to clean***, and suffer ***shorter life spans*** due to degradation, resulting in ***earlier replacement, lower ROI*** (return on investment) and ***loss of initial investment***.

Typical Uses

Envicoat is a highly advanced siliconzed polymer compound that creates an invisible yet durable molecular coating that is hydrophobic (non-polar/water repelling) in performance.

- For use as a surface treatment on glass and non-porous surfaces.
- For use as a surface treatment on glass to minimize the damage due to moisture, corrosion, oxidation, and hard water spots.
- For use as a surface treatment on non-ferrous metal surfaces, porcelain surfaces, fiberglass surfaces, non-vitreous (porous) surfaces, and plastic surfaces.
- For use as a surface treatment on polished natural stone surfaces.
- For use as a surface treatment on vehicles to reduce the frequency of washing (save water) and improve appearance.
- For use as a surface treatment on vehicles to reduce friction.
- For use as a surface treatment on boat hulls and boat superstructures to protect against corrosion.
- For use as a surface treatment on boat hulls and boat superstructures to reduce the frequency of washing (save water) and improve appearance.
- For use as a protective surface treatment on exterior building walls to protect against corrosion.
- For use as a surface treatment on exterior building walls to reduce the frequency of washing (save water) and improve appearance.
- For use as a surface treatment on decorative fixtures in the home, in office buildings, and commercial buildings to protect against tarnishing and to reduce the frequency of dusting.

Benefits

- Envicoat *extends wash down cycles* for residential and commercial buildings, automobiles, water vessels, trucks, RVs, and airplanes – saving water (Eco-Friendly) and maintenance costs.
- Envicoat *extends the life* of many unprotected surfaces exposed to the environment, avoiding high replacement costs.
- Envicoat *reduces maintenance time*, and *lowers labor costs* – enabling more enjoyment and less time cleaning.
- Envicoat makes surfaces easier to clean by *avoiding harsh chemicals* which can damage the surface and its surroundings.

Physical Data

Finish	Clear
Color	Clear
Components	1
Mixing	None
Coats Required	1
Application Method	Manual or Mechanical
Application Equipment	Microfiber towels; microfiber applicators; buffing towels; Atomizers; Misters; Hand-held Pump Sprayers; Mechanical Sprayers.
Curing/Drying Time	3 minutes
Curing Mechanism	Air Dry; Evaporation of a carrier; Chemical reaction between components
Coverage Rate (Manual)	1500 ft^2/gal
Coverage Rate (Mechanical)	3000 ft^2/gal
Specific Gravity	.810 at 60 ºF (H20 =1)
Density (LBS/GAL)	6.58 at 60 ºF
Flash Point (Closed Cup)	53 ºF
Initial Boiling Point	180 ºF
Evaporation Rate	7.0 (Ether =1)
Vapor Pressure	33mmHg
Vapor Density	2.0 (Air =1)
Solubility in Water	90%
Odor	Rubbing alcohol
Contains	Isopropynol CAS #67-63-0

Performance/Durability

Envicoat's performance ***exceeded*** standards for these tests:

ASTM C 813-90
(2004) Standard test method for hydrophobic contact angle measurement.

ASTM G53-84
Accelerated weathering for exposure to light and water (Model DMC-R ATLAS WEATHEROMETER)

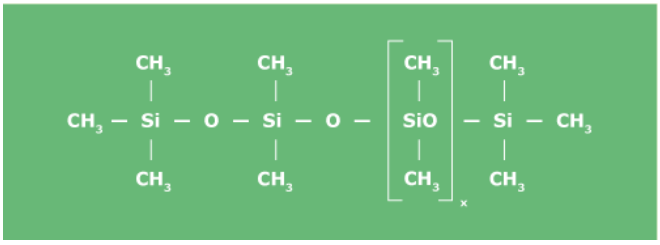
ASTM B117
Salt Spray (tested on aluminum extrusions, both coated and uncoated).

How Envicoat Works[1]

Envicoat® is a blend of synthetic polymers that is designed to alter the properties of glass and similar nonporous surfaces in such a way as to cause water, sleet and snow to be repelled from the surface. In addition, Envicoat® is also capable of reducing the adhesion and buildup on glass and non-porous surfaces (hereafter referred to simply as glass surfaces) of many other materials such as dust, salt and other forms of environmental substances.

The reason why water and such substances adhere to glass surfaces is the molecules that make up these materials have similar polarities. That is, these substances have dipole moments within their molecular structure that causes the molecule to have a positive and negative end. This property will cause the negative end of one molecule to be attracted to a positive end of another molecule. When a surface has such polar properties it is referred to as being "hydrophilic." This refers to the fact that the surface will attract water molecules and other substances that have polarity properties similar to water. Glass surfaces exhibit hydrophilic properties. Therefore, in order to cause a glass surface to repel water, its polar "hydrophilic" characteristics must be changed in such a way that it becomes nonpolar. A nonpolar surface is referred to as exhibiting "hydrophobic" properties; that is, it repels water.

When Envicoat® is applied to a glass surface it causes the surface to become hydrophobic. The way that this is accomplished is through the use of silicon polymers. Silicones, or more specifically organopolysiloxanes, are polymeric materials that contain silicon, oxygen, and organic groups. The term "polymeric" with respect to these molecules refers to their property of being able to be linked together to form long chain of molecules called polymers. The methyl silicones (also called dimethylpolysiloxanes) are perhaps the most important members of this class of materials. A typical structure of methyl silicon is the polymer shown below:



The value of [X] determines the length of the polymer and thus the molecular weight of the polymer. The molecular weight of the polymer controls many properties of the polymer such as its viscosity, melting point, boiling point, electrical resistivity, etc. The length of the polymer also affects its ability to be used in glass treatment applications. For example if the polymer chain is too short it will not bond to the glass surface very strongly and if the chain length is too long then the polymer will cause a smearing effect to appear on the glass surface. Envicoat® uses silicon polymers of optimum chain length to produce strong bonds to the glass surface without producing a smearing effect. In addition, Envicoat contains a special catalyst that helps to promote rapid bonding of the silicon polymers to the glass surface.

When the silicon polymers are bound to the glass surface, the surface changes from hydrophilic to hydrophobic. This change occurs because there are now the methyl groups ($-CH_3$) that stick out from the glass surface. This is important because the ($-CH_3$) group is nonpolar. Thus, when a water molecule approaches the silicon-treated surface it sees no attractive sites to bond to and thus will seek out other water molecules to bond to instead of bonding to the glass surface. This causes the water molecules to form small droplets (i.e. beads) on the glass surface. Since these beads of water are not attracted to the glass surface they are easily removed via such forces as wind currents or other physical forces. A similar shedding process also occurs for other polar materials such as dust, etc. Thus, Envicoat® functions as a very effective method for minimizing maintenance time and expense in keeping glass surfaces clean.

Surfaces

- Envicoat can be safely used for interior and exterior commercial and residential surfaces.
- Envicoat can be safely used on all glass surfaces, mirrors, non-ferrous metals, porcelain, fiberglass, non-vitreous tiles, and most plastic materials.
- Envicoat may also be used on polished natural stone surfaces, but careful consideration must be given to the possible effects of it forming a moisture barrier.
- Envicoat is also chemically compatible with nearly all anodized, siliconized, epoxy enamel, polyurethane and flouropolymer coatings.

Surface Preparation

Coating performance is proportional to the degree of surface preparation. Surfaces must be clean and dry and free of contaminants such as dust, dirt, grease, or oil. Many cleaning solutions leave a residue which may impact performance. For General Surface Cleaning: (Recommended: Use rubbing alcohol to remove fingerprints or any residue left from cleaning solutions.)

Application Procedure

1) Ensure the surface to be coated is clean and dry.
2) Spread the liquid evenly over the surface to achieve a smooth, uniform coat. See “Application Methods and Equipment”.
3) Allow to dry/cure for three minutes. See “Curing”.
4) If necessary, apply a second coat using Envicoat sparingly. Allow the second coat to dry/cure three minutes.
5) Buff off the remaining haze with a microfiber towel and rinse with water and dry until crystal clear. See “Buffing”.

Application Methods and Equipment

Wet Coatings can be applied using a variety of methods, including dip coating, spray coating, flow coating, spin coating, capillary coating, and roll coating – to name just a few. The methods and equipment chosen depend upon the desired controlled environment (interior, exterior, laboratory, public, etc.), area to be covered, application times, coverage rates, and coverage efficiency. Regardless of the method and equipment chosen, the goal is to spread the liquid evenly over the surface in order to achieve a smooth, uniform coat.

[1] *This information is proprietary and relative to the trade secret of the Envicoat® product and copyrighted by the manufacturer.*

Manual
Apply Envicoat to a microfiber towel, microfiber applicator, or buffing towel and spread the liquid evenly over the surface to achieve a smooth, uniform coat.

Mechanical
Atomizers, misters, hand-held pump sprayers, mechanical sprayers and other equipment can be used to apply Envicoat directly to the surface or to a microfiber towel, microfiber applicator, or buffing towel prior to spreading the liquid evenly over the surface in order to achieve a smooth, uniform coat. Atomizing the coating speeds the application process and increases coverage rates. Mechanical methods including containers, spray bottles, pressurized pump sprayers require the following safety precautions:

REFILL PROCEDURES: Do not mix Envicoat® with any other liquids. When using JFlint QuickCoat™ Re-Useable 8 oz Atomizer Spray Bottle, unscrew the collar nut and remove spray mechanism. Refill carefully to 75% capacity (8 oz) with Envicoat. Replace screw nut and secure tightly. Caution: Overfilling can damage the atomizer.

WARNING: Excessive pressure can damage the pump sprayer and increase the risk of overspray and personal harm.

DIRECTIONS FOR USE: Inspect sprayer for damage and/or plugged nozzle prior to use. Do not use sprayer if damaged or if nozzle is not clear. Use only in well ventilated area. Wear eye protection to keep mist out of eyes.

PRECAUTIONS: Do not attempt exterior application where wind velocity, or temperatures are in excess of 85°F. These conditions may accelerate the cure rate, making it difficult to achieve the desired result. Avoid direct sunlight when possible and apply in the shade when the surface is cool.

Curing
Envicoat cures quickly. During this short period, the Envicoat polymers align themselves to the surface and electrically densify to create a “hydrophobic” (non-polar, water repellant) coating. As the carrier evaporates, the Envicoat coating first appears as a buff-able haze. Let the haze sit at least three minutes in order to cure.

Buffing
Always buff with a clean microfiber towel. Buffing removes unwanted haze. After buffing, Envicoat appears as a tough, crystal clear shield. Too thick a coat results in a residual haze. It’s simply excess material that develops because Envicoat cannot bond to itself. Continue buffing and/or rinse with water.

Shipping Data

Packaging	~ Shipping Weight (lb)	~ Shipping Weight (kg)
2 oz. unit	0.13	0.057
8 oz. Atomizer Pump Sprayer	0.50	0.226
8 oz. unit	0.50	0.226
16 oz. unit	1.00	0.453
1 Gallon unit	7.0	3.175
5 Gallon unit	35.0	15.88
55 Gallon unit	385.0	174.63

Envicoat’s® shelf life when stored indoors at 40ºF to 100ºF (4ºC to 38ºC) is 1 year from shipment date.

Numerical values are subject to normal manufacturing tolerances and testing variances. Allow for application losses and surface irregularities. See application instructions for complete information and safety precautions.

Safety Precautions
Read the material safety data sheet before use. Safety precautions must be strictly followed during storage, handling, and use.

Do not attempt exterior application where wind velocity, or temperatures are in excess of 85°F. These conditions may accelerate the cure rate, making it difficult to achieve the desired result.

DANGER: **FLAMMABLE!** Do not use or store near heat, sparks, electrical current, fire or flames. Use only in well ventilated area.

WARNING: **AVOID INHALATION.** Vapors may be harmful. Keep face away from sprayer nozzle. If breathing difficulties, dizziness, or lightheadedness occurs when working in areas with high vapor concentrations, move to area free of vapors. If breathing stops, begin artificial respiration and seek immediate medical advice and/or attention. **EYE IRRITANT:** Keep out of eyes and wear eye protection. If eyes are affected flush with water for at least 15 minutes and seek immediate medical attention. **SKIN CONTACT:** Wash with soap and large quantities of water. **IF SWALLOWED:** Do not induce vomiting. Seek medical advice immediately.

STORAGE: Store in a secure location away from heat.

KEEP OUT OF REACH OF CHILDREN.

Warranty

JFlint Products Co. warrants its products to be free from defects in material and workmanship. JFlint Products Co.'s sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at JFlint Product Co.'s option, to either replacement of products not conforming to this Warranty or credit to Buyer's account in the invoices amount of the nonconforming products. Any claim under this Warranty must be made by Buyer to JFlint Products Co. in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the delivery date, whichever is earlier. Buyer's failure to notify JFlint Products Co. of such nonconformance as required herein shall bar Buyer from recovery under this warranty.

JFlint Products Co. makes no other warranties concerning the product. No other warranties, whether express, implied, or statutory, such as warranties of merchantability or fitness for a particular purpose, shall apply. In no event shall JFlint Products Co. be liable for consequential or incidental damages.

Any recommendation or suggestion relating to the use of the products made by JFlint Products Co., whether in it technical literature, or in response to specific inquiry, or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyers having requisite skill and know-how in the industry, and therefore it is for Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, at its sole discretion and risk. Variation in environment, changes in procedures of use, or extrapolation of data may cause unsatisfactory results.

Limitations of Liability

JFlint Products Co.'s liability on any claim of any kind, including claims based upon JFlint Product Co.'s negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or part thereof which give rise to the claim. **In no event shall JFlint Product Co. be liable for consequential or incidental damages.**