Alternative Fouling Control Systems

(Environmental options for bottom painting)

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Georgia Strait Alliance

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Alternative Fouling Control Systems

The products listed below are biocide-free foul-release systems for use on vessel hulls. Although these coatings will not completely prevent growth of aquatic organisms, they can be combined with mechanical hull cleaning to become effective fouling control strategies. Please note that this is not an exhaustive list. Prices and information listed are current as of January 2008.

Regardless of the type of coating used, all coating residues generated during hull maintenance activities should be collected and disposed of appropriately. The residues may be harmful to aquatic organisms. Depositing or allowing the deposit of a deleterious (harmful) substance into fish-bearing water is a contravention of the *Fisheries Act* (ss.36.3).

Follow manufacturer's instructions regarding surface compatibility, preparation, application, and maintenance. Remember that some products require professional application. Caution should be used as coated surfaces may be slippery. Examine and evaluate products carefully as some are relatively new and experience with them is limited.

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Product	Recommended Use (Carrier type, speed, material)	Spreading Rate & Cost	Maintenance	Longevity
Silicone elastomers This type of coating provides a slippery, water-repellent, low-friction surface to which micro-organisms have difficulty attaching. When vessels are stationary, micro-organisms may begin to settle. However, the natural movement of water when a vessel is in motion helps scour away the attached micro-organisms.				
a) Hempasil 77500 **b) Hempasil 77100** Manufacturer: Hempel www.hempel.us	**a) Hempasil 77500** is for high activity vessels. When operational parameters are above 75% activity and 15 knots service speed, Hempel will issue a performance guarantee against fouling. **b) Hempasil 77100** is for high speed crafts. When operational parameters are above 50% activity and 25 knots service speed, Hempel will issue a performance guarantee against fouling. The system is comprised of two coats of epoxy either modified or pure, one tie coat Nexus, and one top coat Hempasil. In subsequent years, only one full coat of Hempasil needs to be applied to damaged areas.	**a) Hempasil 77500** Topcoat: 184 sq ft/gallon at 150 microns dft. **b) Hempasil 77100** Topcoat 187 sq ft/gallon at 150 microns dft. Epoxy $40-70 CAD/gallon Nexus Tie Coat- $250-300 CAD/gallon Hempasil 77500/77100-$250-300 CAD/gallon	Maintenance requirements will depend on the vessel activity level. Fouling can be removed with a nylon brush in order to avoid coating damage.	The flexibility of the coatings can be renewed after 5 years by applying a new layer of fresh topcoat on top of the old topcoat, making it possible to operate for 10 years with only 3 coating layers applied on the anticorrosive coating.

Product	Recommended Use (Carrier type, speed, material)	Spreading Rate & Cost	Maintenance	Longevity
a) Si-COAT 565 Fouling Release Coating **b) Si-COAT 561 basecoat/567 topcoat Fouling Release Coating** Manufacturer: CSL Silicones, Inc. www.cslsilicones.com To order, e-mail info@cslsilicones.com	**a) Si-COAT 565** is a one-coat system suitable for non-metallic hulls only. It was designed specifically for pleasure crafts **b) Si-COAT 561 basecoat/567 topcoat** is a two-coat system suitable for metallic hulls. It is suitable for deep sea vessels travelling between 15-30 knots, and it is designed to self-clean during vessel movement. Both coats can be applied by spray or brush/roll.	**a) Si-COAT 565** 73 sq ft/gallon at 500 microns dft. $190 CAD/gallon **b) Si-COAT 561** 50 sq ft/gallon at 500 microns dft. $380 CAD/gallon **Si-COAT 567** 73 sq ft/gallon at 500 microns dft. $380 CAD/gallon Suggested dry film thickness for all coats is 300 to 400 microns dft.	**a) 565** Fouling is best removed by hand cleaning with a rag or stiff brush while growth is still wet. In some cases, fouling may release when the vessel moves. **b) 561/567:** Marine growth will release when the vessel moves. As vessel approaches 8 knots, fouling loosens and as vessel exceeds 13 knots, fouling will clear. May be cleaned also with minimal pressure water wash. Si-COAT 567 must not be abraded by manual cleaning methods.	**a) Si-COAT 565** is designed to last a minimum of 7-10 years. **b) Si-COAT 561 basecoat/567 topcoat** system is designed to last a minimum of 5-7 years.
SP 1000ST® Manufacturer: Specialty Polymer Coatings http://www.spc-net.com/marine/products/index.htm	The recommended types of vessel uses for the SP 1000ST® are cargo ships, freighters and work boats that do not have heavy traffic against their sides. The speed of these ships should be over 10 knots.	$5-10/sq ft. (dependent on thickness and application usage) $302/gallon	Use a scrub brush to remove the fouling organisms and slim. The coating can be touched up using roller application and smaller repair kits that the deck hands can use while the vessel is in service.	This coating is designed to last up to 7 years if maintained correctly.

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EC 4300, 4600, and 4900 Manufacturer: Ecological Coatings www.ecologicalcoatings.com	Ideal for vessels with higher activity levels such as fishing boats, tug boats and ferries.	220-230 sq ft/gallon at 75 microns. $179 to $199 USD/gallon	Growth can be removed with the movement of the vessel and by manual cleaning with a sponge, cloth or mop wipe.	The coatings can last up to four seasons in fresh water, three in salt water, but depends on usage, cleaning and if the coating is exposed to abrasion.
Photo-active coatings When immersed in oxygenated water, the product photochemically generates minute levels of peroxides, are effective in deterring the settling of fouling organisms on the hulls surface. The peroxides do not persist in the environment because they quickly decompose back into oxygen and water by natural ions dissolved in the water.				
a) EP21 **c) Sun Wave** Manufacturer: ePaint www.epaint.com Call directly to purchase product. 508-540-4412 or Rugged Marine Industries 250-664-6788 www.ruggedmarine.ca	**a) EP21** is a single component, solvent-based, photo-active release coating. It is compatible with aluminum, fiberglass and wood substrates and over most existing bottom paint systems. It is ideal for recreational boats. **b) Sun Wave** is a two-component, water-based epoxy, photo-active release coating. It is compatible with aluminum, fiberglass and wood substrates and over most existing bottom paint systems. It is suited for recreational & commercial boats, high speed boats and boats frequently launched and hauled by trailer.	**a) EP21** 258 sq ft/gallon at 75-100 microns dft. $125 USD/gallon **b) Sun Wave** 210 sq ft/gallon at 75-100 microns dft. $80 USD/gallon	The movement of the boat should be enough to knock off any fouling that occurs if the boat has been sitting for a while. Gently scrub with a Scotch-Brite type pad or sponge to remove any fouling that does accumulate.	When the manufacturer's recommended amount of paint is applied, at least 12 months of in-water service-life should be achieved. However, the coatings may perform longer in cooler waters where the sunlight is less intense.

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Wax-based products These products adhere to hulls by molecular attraction. In addition to preventing hull growth, they also prevent osmosis.				
a) Easy On Bottom Wax **b) Easy Spray Bottom Coating** Manufacturer: Alex Milne www.alexmilne.com E-mail: alexmiln@idirect.com	**a) Easy On Bottom Wax** is applied with a soft cloth. It cures in 12-24 hrs to a soft moveable invisible surface that is not polished. **b) Easy Spray Bottom Coating** is sprayed on with trigger spray bottle, thinned out with soft cloth, and cures to allow boat surfaces to be polished. Products can be used on fiberglass, aluminum, wood, rubber, steel, concrete, electronics, and outdrives, as well as over old toxic anti-fouling paint. Can be used for a full season in freshwater and intermittently in saltwater. Ideal for racked and trailored boats, pontoon, sail, power, and inflatables.	**a) Easy On Bottom Wax -** 450 mL treats up to 300 sq ft. $34.68 CDN/bottle **b) Easy Spray Bottom Coating -** 400 mL treats up to 300 sq ft. $28.93 CDN/bottle	Clean with sponge, deck brush, or white abrasive pad when fuzz develops. These coatings cannot be removed by pressure wash or acid wash. Only a high Ph detergent wash will remove the coating	After cleaning, apply a thin overcoat each season.
Polymer Slippery coatings that reduces surface friction and seals fiberglass to prevent osmosis.				
a) VS721 Bottom Coat **b) Repelin** Manufacturer: Aurora Marine Industries Inc. www.auroramarine.com E-mail: boatcare@auroramarine.com	**a) VS721 Bottom Coat** is a clear coating that can be used on aluminum, fiberglass, and hard painted surfaces. Ideal for powerboats, jet boats, sail boats, trailered boats, fishing boats, PWC's, and pontoons. **b) Repelin** is a clear, flexible, coat designed for inflatable boats and rigid inflatable boats. Can be used on hypalon, PVC, fiberglass and aluminum. Both products can be used on salt/fresh water boats that stay in the water for short/long periods of time. In each case, 2 coats are needed and are applied with a damp sponge. Cannot be used over existing antifouling paint.	**a) VS721 Bottom Coat** 450 mL covers 400 sq ft. $43.99 CDN for 450 mL **b) Repelin** is 220 mL covers 200 sq ft. $28.99 CDN for 220 mL	Regular use of vessel will self-clean the hull. Stationary boats may be cleaned periodically with a sponge or deck brush. At end of season or upon attachment of marine growth, pressure wash or wash off with Boat Clean Plus and a sponge.	Coatings need to be reapplied each season.

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Teflon-based coatings These types of coatings provide a non-stick surface that prevents organisms from adhering to boat surfaces.				
Swiftsure Manufacturer: Consolidated Coatings www.consolidatedcoatings.com	Ideal for aluminum hulls below the waterline and aluminum outdrive legs**.** They are suited for racing-boats and vessels with a high activity level. Not ideal for vessels operating below 18 knots.	440 sq ft/gallon at 25 microns dft. $175 CAD/gallon	When the vessel is not in motion, some organisms may start to attach. The organisms can be washed off by the vessel through the water, by gentle scrubbing, or through pressure washing when the boat is out of the water.	The exact longevity of the coating will depend on how well the surfaces are maintained.
Hard epoxy coatings These coatings provide a hard, slippery and durable surface. They do not contain solvents and have zero VOCs.				
Aquaply M Manufacturer: Sound Specialty Coatings www.sscoatings.net/aquaplym.htm	Ideal for wood, metal and fiberglass hulls, for pleasure crafts and work boats. Do not apply over old copper paint. 2 coats are recommended.	150-200 sq ft/gallon at 125-250 microns dft. $280 USD/2 gallons	Require frequent and aggressive cleaning (perhaps once a month in warm waters). Use soft cloth, brush, or burlap to remove marine growth. Manufacturer claims that the surface is cleanable by divers.	They are expected to last for many years. Manufacturers have reported that their coatings have lasted from 6-12 years.

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Fluoropolymer These products have a lower coefficient of friction and provide a significantly smoother surface than Intersleek 700.				
Intersleek 900 Manufacturer: International Paints www.internationalmarine.com/include/Intersleek900_Brochure.pdf	Ideal for steel, aluminum and fiberglass hulls. Can be used by all vessels above 10 knots, including scheduled ships, tankers, bulkers, general cargo ships and feeder containers.	201 sq.ft/ gallon at 150 microns dft. Seal coat (Intersleek 730): $486 CAD/gallon Top coat (Intersleek 900): $566 CAD/gallon	Low pressure fresh water wash	Each coating system has a life expectancy of 5 years before recoating would be required.
Polyurethane This type of coating has fouling control and anti-corrosion properties. The tight binding molecules create a slippery surface that prevents organisms from attaching to the surface of the coating and prevent water from penetrating through the coating. There are no VOCs released by the product and the product cures quickly. The manufacturer also claims that the boat does not need to be cleaned as the organisms simply slough off when the vessel moves.				
SP 1386® and SP 1864® Manufacturer: Specialty Polymer Coatings http://www.spc-net.com/marine/products/index.htm	Both coatings are for ships that are moving at approximately 15 knots. Both products have been used on vessel types from barges, tug boats, Great Lake Cargo ships, to Canadian Coast Guard Ice Breakers. The SP 1386® contains an elastomeric polymer that gives this coating a 50% elongation and is mainly used in underwater areas that flex or that need cushioning such as dock pillars piles, and ballast tanks. The SP 1864®, on the other hand, does not flex. Both coatings are designed for abrasive environments.	For both products: 1604 sq ft/gallon/mil, at 20-100 dft. $100/gallon, or approximately $1.25/sq ft.	The coatings can be touched up using roller application and smaller repair kits that the deck hands can use while the vessel is in service. The coatings can be cleaned using a scrub brush to remove the fouling organisms and slim.	These coatings are designed to last up to 7 years if maintained correctly.

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Ceramic coatings These coatings provide an oxygen and water barrier between the boat hull and the water. They bond tightly to the hull and create a surface that makes it difficult for organisms to attach. More resistant to abrasion.				
Cerakote Clear Coatings Manufactured for Viking Performance Coatings (VPC) by NIC Industries www.vikingperformancecoatings.com	These coatings can be applied to ferrous and non-ferrous metals, plastics, paints and powder coated substrates. Come in gloss or matte finish. The material is best applied with typical HVLP spray equipment at very low pressure. This coating can be used on boats of various operating speeds and activity levels.	440 - 800 sq ft/gallon at 15-22 micron dft. above the waterline, & 20-35 micron dft. below the waterline depending on the hull surface and whether a clear or matte coat is used. Application assistance is available through VPC. $350/gallon.	Exhibits a high degree of self-flushing when the boat is in motion. It is necessary that below-waterline surfaces be also wiped on a regular basis with a sponge or cotton rag to remove growth, especially in warmer waters & depending on local growth conditions.	This coating can last a couple of years. The exact longevity will depend on the surface is prepped, application dft, and how effectively the surfaces are maintained.
CeRam-Kote 99M Manufacturer: CeRam-Kote Coatings Inc. www.ceram-kote.com	Can be applied on fiberglass, steel, or aluminum. Do not apply over old copper paint. 2 coats are needed and coats should be sprayed on.	100 sq ft/gallon at 175-250 microns dft. $103 USD/gallon kit	Manual cleaning will be required on a regular basis. Cleaning frequency will depend on the temperature of the water.	Up to 10 years.