



## **Anti-Fouling Specifications**

For More Information Call

**1-952-252-2000**

### **Anti-Fouling Multi-Season Co-Polymer Bottom Coating**



AWLSTAR™'s unique cleaning formula prevents the permanent attachment of slime and other types of fouling organisms below the waterline, minimizing the need to dive and scrub. Appropriate for all fiberglass, wood or steel hulls, AWLSTAR™'s self polishing surface "ablates," or erodes away, at a controlled rate that reduces hull drag by continually exposing a fresh layer of paint. Many owners report its effectiveness lasts two or three seasons with just minor touch-ups.



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#### **Features**

- Prevents the buildup of fouling organisms and slime
- Appropriate for use on fiberglass, wood or steel
- Unique self polishing formula reduces drag and maximizes hull speed
- Recommended where extended dry docking intervals are required
- For use below the waterline only
- Not recommended for aluminum boats



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#### **AWLSTAR™ Gold Label Standard Fast Coat System**



AWLSTAR™ Gold Label is a tin-free ablative co-polymer type anti-fouling designed to provide multi-season protection from fouling when applied according to specification. An ablative anti-fouling performs by the movement of the hull through the water, gradually wearing away the coating. As a result a fresh, fully potent layer of anti-fouling is always exposed to the water.



**This is our simplest and most popular bottom coat system yet. Just two products - HULL-GARD® E.R. epoxy primer and AWLSTAR™ Gold Label - are required to deliver anti-fouling, multi-season protection to fiberglass, wood and steel surfaces.**

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1. All surfaces must be clean, dry and free of any wax, grease, grime or other contaminants before beginning. The best method of doing this, is to wash down the hull using a high pressure, clean water wash. Scrub the surface with Scotchbrite<sup>®</sup> pads and powdered household cleanser, then rinse thoroughly.



2. Using an airless spray gun, brush or roller, apply 3 coats (12 mils total DFT) of HULL-GARD<sup>®</sup>E.R. primer to the hull surface. This two-part epoxy can be recoated as soon as the solvents evaporate, making application fast and easy.



3. Once the final coat of HULL-GARD<sup>®</sup> E.R. has dried to a barely tack-free state, but not cured hard (at 77 degrees F/25 degrees C, 50% R.H., HULL-GARD<sup>®</sup> reaches this point in approximately 2 hours), apply a minimum of 3 coats (12 mils total DFT) AWLSTAR<sup>™</sup> Gold Label over primed surface. Allow a minimum of 4 hours (at 77 degrees F/25 degrees C, 50% R.H.) between coats of AWLSTAR<sup>™</sup> Gold Label.



4. To provide a built-in indicator of when it is time to renew your AWLSTAR<sup>™</sup>, apply the first coat using a different color from the remaining coats. When the first color begins to show through, it's time to renew.

5. Allow a minimum of 5 hours after the application of the last coat of AWLSTAR<sup>™</sup> before launching (longer cure time required at cooler temperatures). A total of twenty-four hours wait before launching is preferable.



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## AWLGRIP® AWLSTAR™ GOLD LABEL ANTI-FOULING: BP201, 401, 501, 502, 701, & 802

### Features & Uses



For use below the waterline only. Unique cleaning mechanism prevents permanent attachment of slime and all other types of fouling organisms. Eliminates the need to dive and scrub. Self-polishing surface “ablates” away at a controlled rate that reduces the drag on the underwater hull and increases speed. Excellent static fouling protection. Ideal for use where serious fouling conditions are encountered. Recommended for use where extended dry-docking intervals are required. Tin-free. Extended shelf life. For use on fiberglass, steel, or wood hulls.



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### Specification Data

Type: Tin-free Polypeptide Co-Polymer

Packaging: Available in 1 gallon and 1 quart containers.



Active Ingredients:	BP501	BP201, BP401, BP502, BP701	BP802
Cuprous Oxide:	40.36*	44.15*	17.0*
*(Metallic Copper Equivalent)	(35.56%)	(38.95%)	(15.54%)
Inert Ingredients:	59.64	55.85	83.0
	100%	100%	100%

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Theoretical Coverage - Sq. Feet/Gallon

780 Sq. Feet at 1 mil dry (25 microns)

65 Sq. Feet at recommended dry film thickness: 12 mils (300 microns) 3 to 4 coats.

Coverage calculations are based on theoretical transfer efficiency of 100%. Actual coverage rate obtained will vary according to equipment choice, application techniques, part size, and application environment.

Recoatibility: With itself; 4 hours minimum at 77°F/50% R.H.

No maximum recoat time.

To Launch: 77°F/50% R.H.: 5 hours minimum, 24 hours preferred.

No maximum launch time.



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## Product Components, Reducers, Additives, and Auxiliary Components



Charcoal Black	BP201
Medium Green	BP401
Light Blue	BP501
Deep Blue	BP502
Red	BP701
White Lightning	BP802
Reducer	T0101
Equipment Cleaning	T0101 or T0093 Reducers or M.E.K.



## Application Equipment

Conventional or airless spray, brush, or roller. Pressure feed equipment required for spray application.



## Surface Preparation

New Applications: Prime with HULL-GARD® E.R or HULL-GARD® W.B. Apply first coat of AWLSTAR™ GOLD LABEL just as the last coat of HULL-GARD® Primer is tack free. This takes approximately 2 hours for HULL-GARD® E.R. and 4 hours for HULL-GARD® W.B.



Renewing AWLSTAR™: Power wash as soon as the boat comes out of the water, allow to dry. Sanding is not normally required but a thorough 80 grit sanding is advised under any of the following conditions:

- Any time the cleanliness of the surface is in doubt.
- Fast boats which have ablated to a very smooth surface.
- Sailboats which were recently burnished.
- The surface was not power washed immediately after hauling.





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### **Mixing & Reduction**



Check for settling, then thoroughly mix until a consistent homogenous blend is obtained. Power mixers or shakers are preferred. If not available, thorough hand mixing is acceptable. Reduction is not normally recommended. However, if needed for conventional air atomized spray equipment or brush/roller application, 10% or 12 oz. per gallon with T0101 is a recommended maximum reduction.

Induction Time after Mixing: N/A

Anticipated Pot Life at 77°F/50% R.H.: N/A



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### **Application Instructions**

AWLSTAR™ GOLD LABEL can be applied by airless spray, brush, rollers, or air atomized spray.

Apply heavy coats of 9 mils WFT per coat, yielding 4 mils DFT per coat.



For maximum anti-fouling performance and protection apply a minimum of 3 coats of AWLSTAR™ GOLD LABEL Anti-Fouling. Optimum performance is achieved at a total dry film thickness of 12 mils. One gallon of AWLSTAR™ GOLD LABEL Anti-Fouling is required for each 65 square feet of below the waterline hull area to achieve optimum performance.



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## GLOSSARY OF TERMS

The following painting terms are abstracted from the glossary of Understanding Paint and Painting Processes

**acetone** A powerful ketone-type lacquer solvent.

**acrylic** A coating based on a polymer containing short-chain esters of acrylic and methacrylic acid. Acrylics are widely used as automotive topcoats. Their physical properties can be controlled in part by the choice of the alcohol used to make the ester.

**active solvent** A liquid that can dissolve a paint binder when used alone.

**additive** Any one of a number of special chemicals added to a paint to bring about special effects. Examples are plasticizers, light stabilizers, and fungicides.

**adhesion** The phenomenon by which one material is attached to another by means of surface attraction.

**agglomerate** Clumps of pigment crystals that have formed loose clusters containing entrapped air. Usually undesirable in paint, as they tend to settle out and have poor optical properties.

**aliphatic solvent** A type of solvent comprised mainly of straight-chain hydrocarbons. Examples are gasoline, kerosene, hexane, and naphtha.

**alkyd** A coating based on a polyester binder. The polyester binders are chemical combinations of molecules that contain more than one acid or alcohol group. Alkyds are widely used in water-based house paints and automotive primers.

**anhydride** A reactive form of dicarboxylic acid containing a monomer that has one mole of water removed. The major anhydride used in the synthesis of alkyds is phthalic anhydride.

**anti-skinning agents** Chemicals added to a paint to help prevent the formation of a surface film on the paint.

**aromatic** A type of solvent based on benzene ring molecules. Aromatics are often used as diluents in acrylic lacquers. Typical examples are benzene, xylol, and toluol.

**benzoic acid** An aromatic monocarboxylic acid used in terminating chain growth in polyester or alkyd polymers. Also used in the manufacture of plasticizers.

**beta rays** Beams of electrons that can be used to cure certain kinds of paint.

**binder** The paint material that forms the film, so called because it binds the pigment and any additives present into a solid durable film. Also referred to as the resin.

**branched polymer** A polymer that has some branching along its backbone chain. An example is low-density polyethylene.

**catalyst** A chemical used to change the rate of a chemical reaction. Differs from a curing agent in that the catalyst is not itself chemically consumed in the reaction, while a curing agent is. Technically, catalysts that increase reaction rates are called accelerators; those that decrease reaction rates are called inhibitors or retarders.

**cathodic protection** The prevention of corrosion of a metal by electrically connecting it to a sacrificial anode. The anode is itself decomposed, and the object of interest is protected. The sacrificial anode must be replaced periodically.

**coalescence** The fusing or flowing together of liquid or solvent particles.

**colloids** Aggregates of molecules in solution (dispersion) resulting in particles having dimensions in the 0.001 milli micron to 1000 micron range.

**condensation cure** Any crosslinking process that liberates water and other simple molecules during the reaction.

**conjugated double bond** Two double bonds in alternate positions as indicated by the formula -CH=CH-CH=CH-.

**copolymer** A polymer comprised of two or more different monomer units.

**critical pigment volume concentration (CPVC)** The volume percent pigment in a coating in which the pigment particles are surrounded by resin so that no free surface pigment exists. The process by which paint is converted from the liquid to the solid state.

**Desmodur N®** An aliphatic-type polyisocyanate commercially available from Mobay Chemicals.

**diluent** A liquid that extends a solution but definitely acts to weaken the solvent power of the active solvent.

**double bond** An unsaturated hydrocarbon of the type  $C_nH_n$  with the formula  $-C=C-$ , indicated by the suffix -ene.

**drier** A catalyst added to speed the cure of oil-based paints. Driers are often metal salts of carboxylic acids.

**drying oil** A water-insoluble liquid, usually obtained from a plant source, that reacts with oxygen (from the air) to form a crosslinked polymeric film.

**electrocoating (E-coat)** See electrodeposition.

**electrodeposition** The process by which electrically charged paint is plated on conductive surfaces of the opposite charge.

**electrolyte** A substance that dissociates to some extent into two or more ions in water and other polar solvents. Solutions of electrolyte conduct electrical current and can be decomposed by it (electrolysis).

**electron beam curing** A system for curing paint films using the energy of an electron beam. The process lends itself to high-speed curing of paint on flat surfaces. Special paints must be used and personal shielding is required.

**electron beam radiation** Radiation generated from high-energy electrons that is used in crosslinking coating systems.

**electrostatic spray** The process by which paint particles are electrically charged and attracted to a substrate bearing an opposite charge.

**emulsion polymerization** The formation of a polymer in which the growing polymer molecules form droplets in the reaction medium. This situation arises when the solvent can dissolve the monomer, but not the polymer.

**emulsion** A class of colloidal dispersions containing two or more immiscible liquids such as oil in water. Emulsions are usually unstable and will separate into their components unless a stabilizing agent is present.

**enamel** A broad classification of free-flowing clear or pigmented varnishes, treated oils, or other forms of organic coatings that usually dry to a hard, glossy or semi glossy finish.

**epoxy** Synthetic resins formed by the condensation of epichlorohydrin and bisphenol-A.

**exempt solvents** Solvents that are not subject to air pollution legislation. Many alcohols, esters, some ketones, and mineral spirits are exempt. Aromatic and some ethylenic compounds are not exempt, and their use as solvents is therefore subject to regulation.

**flash time** The time between paint application and baking. Usually a considerable quantity of solvent is lost during this interval, and this solvent loss prevents popping problems in the oven.

**functionality** Ability of a compound to form covalent bonds.

**gamma radiation** High-energy radiation, similar to X-ray radiation, that is emitted by radioactive substances.

**glass transition temperature** The temperature at which polymer molecules are able to move fairly freely in the solid state.

**hiding power** The ability of a paint to mask the color or pattern of a surface. Usually expressed as square feet per gallon or square meters per liter.

**high-solids paint** Paint containing 35-80% solids. These products have become popular because of the reduction in solvent emissions associated with their use.

**homopolymer** A polymer containing only one kind of monomer.

**inhibitor** A chemical added to retard some particular reaction. Examples are antioxidants and anti-skinning agents.

**interfacial free energy** The minimum amount of work required to create an interface between two immiscible materials.

**latent solvent** A liquid that cannot itself dissolve a binder but increases the tolerance of the paint for a diluent.

**linear polymer** A polymer containing little or no branching. Examples are high-density polyethylene and nitrocellulose or acrylic lacquers.

**molecular weight** The relative mass of a molecule in relation to that of a hydrogen atom. It is obtained by adding together the atomic weights indicated in the formula of the substance.

**monomers** Low-molecular-weight reactive materials that are used in the synthesis of polymers.

**nonconjugated double bond** Double bonds that are not in the relationship outlined under conjugated double bonds. They are indicated by the formula  $-C-C=C-C-C=C-C$ .

**oil-based paints** Paints with films that form solids by the air-induced crosslinking of certain unsaturated plant oils known as drying oils. Oxygen is consumed in the process.

**paint** A material that when applied as a liquid to a surface forms a solid film for the purpose of decoration and/or protection. Generally, a paint contains a binder(s), solvent(s), and a pigment(s). Often other materials are present to give special properties to the paint film. Examples of such additives are rust inhibitors, light stabilizers, and softening agents (plasticizers).

**percent solids** The percent mass of a paint due to its nonliquid components.

**pigment** Small particles added to the paint to influence properties such as color, corrosion resistance, and mechanical strength.

**pigment volume concentration (PVC)** The percent volume of a paint film occupied by the pigment.

**plasticizer** A low-molecular-weight material added to polymeric materials such as paints, plastics, or adhesives to improve their flexibility.

**polyamides** Polymeric compounds synthesized by the reaction of amine and carboxylic-containing compounds. They are sometimes amine terminated and used in the crosslinking of epoxide polymers.

**polymers** Large molecules built up by the combination of many small molecules.

**primer** A type of paint applied to a surface to increase its compatibility with the topcoat or to improve the corrosion resistance of the substrate.

**refractive index** The ratio of the velocities of light in a medium and in air under the same conditions. The result is that light passing from one medium to another is bent to some degree.

**skinning** The formation of a thin, tough film on the surface of a liquid paint film, usually due to reaction with the air or to rapid solvent loss.

**styrene** An unsaturated reactive monomer used extensively in the synthesis of polymers. It can also be used to thin out reactive polyesters with subsequent crosslinking in the ethylenic groups.

**thermoplastic** A type of polymer that softens and melts when heated and then resolidifies upon cooling. Thermoplastics generally have linear or branched structures.

**thermosetting** A type of polymer that does not soften appreciably when heated. Thermosets may char when heated in air. They are generally crosslinked polymers.

**thixotropy** The tendency for the viscosity of a liquid to be shear-rate dependent. When the liquid is rapidly shaken, brushed, or otherwise mechanically disturbed, the viscosity decreases rapidly. Thixotropic behavior is the result of molecules or particles in the liquid forming weakly associated structures that break apart when agitated.

**throwing power** The ability of an electrodeposition resin to coat recessed areas, usually measured by noting the coating distance up a cylindrical tube that is coated in an electro-deposition bath.

**topcoat** Usually the final paint film applied to a surface.

**ultraviolet radiation** High-energy short-wavelength radiation used in coatings to crosslink primarily acrylic and methacrylic systems by means of free-radical reactions.

**UV stabilizers** Chemicals added to paint to absorb the ultra-violet radiation present in sunlight. Ultraviolet radiation decomposes the polymer molecules in a paint film, and thus UV stabilizers are used to prolong paint life.

**vehicle** The combination of binder and solvents or diluents, which are used to put the binder in a liquid, usable form.

**vinyl cure** A curing process involving the crosslinking of vinyl groups.

**vinyl toluene** An unsaturated, aromatic monomeric compound reacted into oil-modified alkyds to modify its drying properties.

**viscosity** The property of liquid that enables it to resist flow, often measured by the time required for a given volume of liquid to flow through a small hole in the bottom of a cup under controlled conditions. A thick liquid-like molasses has a high viscosity.

**volatile organic compounds (VOC)** Volatile organic materials, such as solvents, that are present in many coating products.