Sea Hawk
PREMIUM YACHT FINISHES

Steel Vessel
Surface Preparations & Procedures

Learn About:
- Proper Steel Preparation
- Equipment Needed
- Application of Bottom Paint and Primers
- Correct Sea Hawk Products to Use

TECHNICAL BULLETIN STL45

Steel Vessel Surface Preparation & Procedures

General

Steel is an excellent material for the construction of large yachts and used by many superyacht builders worldwide. Preparing the surface prior to painting, however, must be done following strict procedures to ensure paint system success. The following outlines the proper procedures to follow along with recommendations for specific equipment and the ideal antifouling paint products and primer systems sold by Sea Hawk Paints. It is equally important to recognize the value and need for strict adherence to paint product and systems applications.

Sea Hawk antifouling paints are normally used as part of a paint system for underwater hull areas on steel vessels. Nominally, Sea Hawk antifouling paint is applied over a properly cleaned existing surface of another antifouling paint or sealer. The surface must be clean and dry prior to application, free of all surface contamination. We highly recommend the hull bottom be high pressure water washed immediately upon haul out with 2,500-3,000 psi clean fresh water. Some areas may need to be cleaned in accordance with SSPC-SP-1 Solvent Cleaning to ensure all oils, grease, and other contaminants are removed.

Surface Preparation

The first step in any metal preparation is the initial cleaning and in this case, that requires the removal of all oils, grease, processing fluid residue or other water soluble contaminants. Use Sea Hawk Cleaner S80 or S90 to remove those surface contaminants in accordance with SSPC Solvent Cleaning procedure SSPC-SP-1. Once cleaned and dry, the next step is the preparation of the surface by abrasion with one of the following methods.

The most common procedure is by blasting the entire area using a blast media such as copper slag, gade G-40 angular grit. Also referred to as "black beauty" abrasive. This should produce a blast profile of 2.0-3.0 mils when measured with an Elecometer Profilometer. If the use of silica sand is prohibited there are numerous other blast media to consider. These include materials such as garnet, silicon carbide, DuPont Starblast, or possibly steel oxide. The alternative blast medias are generally more expensive than silica sand and under certain conditions may be safer to handle or may allow for more expediency in the blasting time. For more specific information, please contact your local Sea Hawk representative. Recognize that the use of other blast media like copper slag are not recommended as these are dissimilar metals to steel and if embedded in the steel surface may cause galvanic corrosion at some later date.

The technical service people on the job site, must check the blast profile to ensure the profile (the depth of the impact on the surface due to the blast media used). The blast profile is a critical component in the success of the adhesion of the paints to be applied. In addition, the technical service representative must inspect the cleanliness of the blast cleaning. The SSPC standards for surface cleaning were designed for steel surfaces, the SSPC-SP-5 ('white' metal) or SSPC-SP-10 ('near white' metal) visual standards in SSPC-SP-Vis should be used for steel surfaces to determine if the degree of blasting and cleanliness is acceptable to start the painting process.

If blasting of the steel is not an acceptable surface preparation procedure, the alternative procedure is for power tool cleaning using a rotary disc sander with 24-36 grit wheels. This procedure is acceptable if necessary and will use the same coating system as would be recommended if the surface is sand blasted.

Follow the procedure SSPC-SP-3 for Power Tool Cleaning

The power tool cleaned surface must also be to bright metal void of any deep grooves that might exceed a depth of 5 mils.

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After blasting or grinding, it is important to remove all blasting or sanding dust by brush or broom or by vacuuming. Any residual dust can cause adhesion problems if not addressed. In addition, under no circumstances should a blasted or power tooled surface be cleaned with rags with or without solvent. Rags can leave fine hairs or fibers on the surface and can function like a 'wicking' agent which could wick water to the substrate causing future adhesion problems.

Paint Application

Once the steel surface is properly prepared, the first paint in the total paint system must be applied as soon as possible. Steel metal can oxidize rapidly if not painted immediately with the first paint in the system.

1. If surface has been power tooled, Sea Hawk recommends that the first coat be our Sea Hawk S76/S76C Strontium Chromate Epoxy Primer to a dry film thickness of 1.5-2.0 mils dry film thickness (DFT). If surface has been blasted, you may use Tuff Stuff 1284/1285 directly over the surface. (Skip to step 3.)

2. Once the first coat is cured to specification, (Min. 4 hours—Max. 8 hours @ 73°F) apply a second coat of Epoxy Primer S76/S76C.

3. Once the second coat of our S76/S76C Strontium Chromate Epoxy is properly cured and meets the S-76/S76C overcoating interval (Min. 4 hours—Max. 8 hours @ 73°F) apply sufficient layers of our Sea Hawk TUFF STUFF 1284/1285 High Build Epoxy to a dry film thickness of 6.0-7.0 mils per coat. (Minimum of 10 Mils). Please refer to the TUFF STUFF 1284/1285 Technical Data sheet to meet proper overcoating intervals. (Max. 24 hours @73°F)

The antifouling paint can then be applied and we recommend at least two coats be applied to a total dry film thickness 5.0-6.0 mils. NOTE: The first coat of antifouling paint must be applied following the 'thumb print' method to determine if the epoxy primer is ready for over coating. Usually this is from 2-6 hours after application of the last coat of epoxy but is temperature dependent.

Note:

1. The first coat of our S76/S76C Strontium Chromate Epoxy must be applied by spray or brush for small areas. Roller pads have the potential to leave nap material on the surface similar to the potential problems of wiping down a blasted or power tool cleaned metal surface. After the initial application all subsequent applications can proceed using spray equipment or by solvent resistant rollers. Note: if rollers are used, additional coats will be required to achieve the specified dry film thickness of the various paint products.

2. All products must be tested for wet film thickness during the application process with a wet film thickness gauge such as an Elcometer WFT Gauge. Use the information on the individual products' product data sheets for thickness requirements per coat.

3. Likewise, the dry film thickness must be tested for each application and as a total system. There are magnetic dry film thickness gauges available today for ferrous surfaces. Check with your Sea Hawk representative for more specifics.

4. SSPC stands for Steel Structures Painting Council, an industry organization that writes various specifications for surface cleanliness and paint specifications. SSPC provide both written and pictorial standards for the paint and coatings industry.

5. When performing a spray application, Sea Hawk recommends back rolling any sprayed materials to ensure adequate and uniform coverage of coatings.

6. We strongly recommend the applicator read all available Sea Hawk literature on the paint products to be applied including the product data sheets and material safety data sheets before the application process begins. This will provide an understanding of any application limits and of any hazards related to the products application and handling.

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