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## **PURPOSE**

The purpose of this section is to provide a brief overview of marine fouling and anti-fouling.

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## **FOULING**

The marine environment is one of the most aggressive that a coating system needs to protect against. Coating systems are subject to attack from both an aggressive chemical and biological environment.

### **Slime**

Slime is a viscous syrup-like bacteriological layer which allows the development of other micro-organisms to occur. Slime can appear and re-appear depending upon the environmental conditions.

### **Barnacles**

Barnacles reproduce by releasing millions of larvae into the water. These drift around in currents and feed on waterborne nutrients. If a barnacle can attach itself to a stationary object it can feed more efficiently. Boats generally spend a substantial period of time stationary, creating an excellent feeding platform.

### **Weeds**

Weeds also attach themselves to static surfaces. This generally occurs around the waterline where sunlight prevails. Some types of weed will fall off a vessel's hull as soon as it gets underway, however, others will not.

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## **DEGREE OF FOULING**

The degree of fouling is affected by many factors, including temperature, salinity, pH, flow speeds, water quality, sunlight and inflows from rivers. As a general rule fouling is greater in tropical waters than in temperate waters and occurs when the vessel is stationary.

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## **REASONS TO PREVENT FOULING**

### **Safety**

A fouled craft will not respond as quickly as a craft with a smooth hull, reducing the margin for error. A heavily fouled boat will also sit lower in the water which has obvious implications for sea worthiness.

### **Hull Protection**

The prolonged growth of fouling can damage the hull whether it be of metal, fibreglass or wood. Fouling can also mask hull damage caused by corrosion or impact and affect the hulls integrity.

### **Speed and Efficiency**

With the ever-increasing price of fuel, the cost of pushing a vessel through the water is a major concern.

Heavily fouled boats will either work harder or, be unable to reach their potential speed. Either way the fuel costs will rise due to the drag caused by fouling, increasing journey time.

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## **ANTI-FOULING**

Self-polishing or ablative anti-fouling coatings will wear away with use at a rate that is controlled by water temperature, salinity, alkalinity, hull speed and time in service. These factors coupled with those in the Degree of Fouling section make it very difficult to predict the exact life expectancy of an anti-fouling.

As the anti-fouling coating is exposed to the marine environment toxins are released into the stationary laminar water layer that surrounds the hull. This layer has enough toxicity to prevent the settlement of free-swimming larvae on the hull. Without the protection of an anti-fouling these larvae would attach and subsequently grow into adult species. The toxins will also gradually leach from the stationary laminar zone into the water surrounding the vessel.



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