

Steel



Steel is a heat treated alloy based on iron with a lower carbon content and small quantities of other elements. The high strength of steel in relation to the plate thickness and the ability to cut and bend it into many different shapes, makes it a suitable material for building hulls and superstructures. Fastenings such as bolts and rivets are often a different alloy for added strength while fittings contain added chromium which makes it stainless and resistant to rust.

Features of steel

Having stated that steel is a good material for building boats, it is important to be aware of some of the characteristics of the material in order to ensure good results.

Steel corrodes!

The most common form of corrosion in steel is rust. This brown iron oxide results when iron reacts with oxygen. For the reaction to take place, water must also be present. The marine environment is therefore an ideal place for rust to occur.

Additionally, the salts in seawater will corrode the steel. In order to avoid this, the steel must be kept separate from the external reacting substances. Applying a good protective coating system is the only effective solution.

Steel stretches!

Due to the high flexibility and strength of steel it is hard to break, but impact damage may well result in a dent owing to the metal stretching and deforming locally. This can present problems for a protective coating which may not be so flexible.

All impact damage should be inspected for any cracks or splits in the coating which could allow moisture ingress and lead to corrosion under the fillers or coating systems.

Preparing a steel surface

Steel plates and sections used in construction or repair may be bare or pre-primed. The primer will have been applied to reduce rusting of the surface but will not necessarily be designed to form part of the final coating scheme. In either



case, it is necessary to start with a fresh, bare metal surface.

This can be achieved by the use of a grit blaster or an angle grinder. When blasting the requirement is for Sa 2^{1/2} to 3 or white metal finish, and all blasting debris to be cleared away before continuing the job. When grinding, which is only really suitable for smaller areas, the surface should be as smooth as possible with all traces of rust or primer removed. In cases where welds are exposed they should be ground back to smooth bare metal. Any faults in the weld exposed by this should be ground out and re-welded.

This bare metal finish will not stay unruined for long once exposed to the atmosphere. Primers should be

applied as soon as practically possible to avoid flash rusting.

If a project is being completed in stages, a holding primer can be used to protect the exposed surface. Interprotect is suitable for this if thinned by 15% and will last for several days depending on weather conditions. After that, it should be lightly sanded and then washed with fresh water to remove any impurities. Prior to application of the full primer coat, surface dust should be removed with a dust wipe.

Priming steel

The purpose of priming is to provide protection to the substrate and to promote good adhesion of the paint system.

Handy Specs

PRIMING STEEL



Above Water

Pre-treatment

Surface Primer

Filler

Primer

Conventional

No. of Coats

High Performance

No. of Coats

(not needed)

Yacht Primer

Interfill 200
(if needed)

Yacht Primer

1

3

(not needed)

Interprotect

Interfill 200/Watertite
(if needed)

Interprotect

1

3



Below Water

Pre-treatment

Surface Primer

Filler

Primer/Tiecoat

Conventional

No. of Coats

High Performance

No. of Coats

(not needed)

Primocon

Watertite
(if needed)

Primocon

1

4

(not needed)

Interprotect

Watertite
(if needed)

Interprotect

1

4

