

Paint Basics

Detailing the Types of Paints and Paint Coatings, and Explaining Various Terms and Descriptions

What is a Primer?

A primer is the first coat that is put onto the substrate to prepare the surface and form a binding layer that is more suitable to receive a topcoat. It is used on each substrate for the following reasons:

Wood: It is essential that wood is prepared with a suitable primer as it is very porous and will therefore absorb the solvent from any topcoat. A primer is therefore used to help the topcoat to undergo a complete curing process. Primer also waterproofs the surface to eliminate the possibility of warped parts, mildew and dry rot. Primer can also hide the woodgrain, ensuring an even colour finish.

Metal: Some metals may not require a primer. Some, like untreated aluminium, will. A metal primer is essential if the metal is to be exposed to moisture as if water gets through to the bare metal the surface can oxidize and rust.

Plastic: A primer is only necessary on a GRP vessel if undergoing a drastic change in colour as the surface is not very porous and not damaged by moisture. A primer will help to reduce the number of coats required to completely eliminate the previous colour and help the paint make a strong bond with the surface. An important point when choosing a primer for GRP is to make sure that the solvents will not damage the surface.

What is a Tie Coat?

A tie coat is a layer of paint that is applied to the primer coat to ensure that the layer of paint going on top of it (Antifouling) adheres properly to the surface and to prevent surface defects such as bubbling.

What is a Top-Coat?

A top-coat paint is the last coat of paint that is applied when painting above the waterline. It seals the layers underneath and is the final colour. Generally, if the paint is used on an external surface, it will be a polyurethane paint to ensure UV protection. If a single-pack primer is used then a single-pack topcoat must be applied over it (the same applies to two-pack paints) as the solvents in the two-pack will attack the single pack layer.

What is Antifouling?

An antifoul is applied to the submerged area of the substrate to prevent and slow the growth of organisms that can attach to the hull. These organisms can affect durability and performance. Antifouling can also improve the flow of water around the hull of a fishing vessel.

You can find two different types of Antifoul - Soft (also known as Eroding, Ablative and Self Polishing) and Hard. Soft antifouling is soluble and is designed to erode gradually so that a fresh layer of biocide is always on the surface. Hard antifouling dries to a hard finish and uses biocides that dissolve very slowly in water as the season progresses. The hard finish enables occasional scrubbing during the season to keep the bottom clean.

What is a single-pack paint?

A single-pack paint comes in a single tin. Because no curing agent is used, single-pack paints dry either by oxidation if the paint is Alkyd based, or solvent evaporation if the paint is acrylic based. They're slow drying and as such can be applied by hand.

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What is a two-pack paint?

A two-pack paint comes in two components - the base (component A) and the curing agent (component B). The ratio required is measured out exactly between the two tins so all that is required before painting is to pour the contents of Comp. B to Comp. A and mix well to make sure that the curing agent is thoroughly mixed (to avoid any weaknesses in the layer). Two pack paints are generally epoxy / polyurethane and as the drying process of a two-pack paint is a chemical reaction rather than oxidation they can dry within hours.

What is an Alkyd Paint?

An alkyd paint is an oil based paint and can be used as both an undercoat primer, such as the AlkydPrimer, or as a topcoat, such as the Pilot II. They are a single-pack oxidative paint (so called as the paint reacts with oxygen as it dries to form a hard enamel) and as such can take time to react and dry. Therefore it is a better idea to paint several thin coats rather than one thick coat.

One problem with alkyd paints is that they aren't that resilient to solvents or chemicals, but the advantage is that because they have such a long drying time it can be applied by hand. They are also inexpensive

What is an Acrylic Paint?

An acrylic paint is a single-pack paint and can be used as both a primer and a topcoat. As a single pack, they undergo no chemical reactions when drying and do so by solvent evaporation only. Due to their high percentage of solvent they flow easily and produce a nice, smooth finish.

As the paint dries purely by solvent evaporation, if a second coat is applied (applying to all acrylic paint) the top coat will slightly dilute the undercoat causing the two layers to physically bond. Because they're effectively one paint layer, the two coats should never flake off.

What is a Polyurethane Paint?

Polyurethane paints are primarily used as a topcoat paint due to their excellent UV protection, high gloss finish and high durability. As it is a two-pack paint the components undergo a chemical reaction to achieve this. The disadvantage of using a two-pack paint is that it cannot be applied over an existing single pack paint layer due to the solvents which can affect the single pack.

What is an Epoxy Paint?

An epoxy paint are two pack paints that offer a very high level of both chemical and water resistance along with a extremely high durability and adhesion to a variety of surfaces.

Their disadvantage is that they have a poor resistance to UV light and so, in direct sunlight, have a tendency to 'chalk'. Only a cosmetic issue but one that can be easily avoided with the use of a suitable topcoat.