

ULTRIMAX[®]

Advantages and Disadvantages of using different Coatings



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The Advantages and Disadvantages of using Polyester

The Advantages and Disadvantages of using a polyester coating

Polyester coatings are the most commonly used method for wood finishing's in furniture and interiors when trying to achieve a high gloss finish. Comprising of lacquer, activator, catalyst and a thinner.

Polyester coatings can increase the durability of wood and add an attractive finish. If you're looking for a finish with no imperfections and without covering the natural beauty of the wood then polyesters are a great choice. Clear/pinkish in colour, polyester allows you to fill and protect the grain whilst still being able to see the definition through the coating. Wanting a colour? There are certain polyester pigments we can use to achieve any RAL or BS colour.

What is the difference between wax and wax free?

Most polyester coatings are either made using wax or are made to be wax free.

Wax Polyesters

Wax Polyesters have excellent chemical stability, high filling capacity and high resistance to shrinkage.

They often use a wet-on-wet application system which involves applying the next coat as soon as the previous coat has gelled. One huge benefit to this method is that the wax floats to the surface bringing any debris with it, these imperfections can then simply be sanded away with a pad sander or flatbed sander once fully cured normally 3-5 days. Once sanded, best practise would be to go up through the grits to P2000 or P3000 before then polishing to full gloss, or after sanding you may choose to overcoat with a matt lacquer.

The temperature of the polyester should be kept above 18-20 degrees at all times.

Wax Free Polyesters

We recommend the Sayerlack Extra Clear Flexible Polyester Basecoat which has a high build, excellent transparency and can be buffed after hardening normally 3-5 days.

The temperature of the polyester should be kept above 18-20 degrees at all times.

Furniture makers and sprayers can also choose to use a combination of:

- Polyester Basecoats
- Polyester Clear Topcoats
- Polyester Primers
- Polyurethane Clear Topcoats



The Advantages and Disadvantages of using Polyester

The Disadvantage to using Polyester Coatings

As with anything, polyester coatings won't be perfect for every job. Here are some of the drawbacks that could affect the coating you choose for your next job.

1. Shorter pot life - polyester coatings generally have a shorter pot life than most coatings. Once mixed up, this can be as short as 10-30 minutes making it unsuitable for certain jobs unless using a plural pump.
2. You may need a barrier coating - in cases where you want to overcoat a stain or a potential resinous timber you may require a barrier coat. Refer to the Technical Datasheet to be sure.
3. Polyester can be a fire hazard if not disposed or correctly - when preparing a polyester coating, most people add the catalyst and activator using a pipette or syringe. It's vitally important that they are kept separately.

How to mix Polyester

It is important when mixing a polyester that you remember to stir it 4 times:

1. Stir the Polyester and weigh out the amount required
2. Add 1-2% of PH888 depending on which Polyester you are using and stir well
3. Then add 2% of PH999 and stir well again
4. Finally, add your thinners and stir well for the final time.



The Advantages and Disadvantages of using Polyurethane

Polyurethane paint, also referred to as PU paint/coating, is a durable, highly-resistant coating used in industrial and architectural coating systems. It is popular in the marine industry and is used for numerous applications including, rigid and flexible foams, and varnishes. It is also used in steelwork, concrete, wood and other substrates.

Polyurethane is a reaction polymer, a combination of polyol resin and an isocyanate hardener or curing agent. Essentially, a polyurethane coating is a liquid plastic which dries to form a paint-like film on an underlying substance or layer. Polyurethane paint provides durability, resistance to chemicals, water, abrasion, and temperature, as well as an attractive glossy finish. The most common application of polyurethane is as a solid foam, accounting for approximately 60% of all polyurethane produced.

The Advantages of using a polyurethane coating

Polyurethane is an extremely versatile elastomer used in countless applications worldwide. The elastomers have excellent abrasion resistance but high hysteresis; the associated heat build-up has limited their use in applications such as tires. Rigid polyurethane foams have become widely used as insulation materials because of their combination of low heat transfer and good cost effectiveness. Use as insulation and other applications are restricted by an upper temperature capability of about 250F.

Advantages:

1. Good physical and mechanical properties. Its film is hard, bright, flexible, strong adhesion, wear resistant.
2. Excellent corrosion resistance. It is resistant to oil, acid, chemicals and industrial waste gases.
3. Better aging resistance than epoxy coating. Used as topcoat or primer.
4. Polyurethane resin can be mixed with a variety of resins, and the mixing formula can be adjusted to meet various requirements for use.
5. Can be cured at lower temperatures.



The Advantages and Disadvantages of using Polyurethane

The Disadvantage to using Polyurethane Coatings

As with anything, polyurethane coatings won't be perfect for every job. Here are some of the drawbacks that could affect the coating you choose for your next job.

1. Odour - Polyurethane emits odours and fumes, though they are not that highly noticeable, which can cause physical problems for the painter if correct PPE is not worn.
2. Poor thermal capability
3. Attacked by most solvents
4. Utilize toxic isocyanates
5. Flammable

How to mix Polyurethane

While it's clear that polyurethane can be utilized for a number of advanced and highly specific needs, it's important to understand that the key requirements for meeting those needs is mixing polyurethane in a precise and consistent ratio.

1. Stir the Polyurethane and add the hardener to the correct ratio.
2. Add 10-20% of Polyurethane thinners, depending on which Polyurethane you are using and stir well



The Advantages and Disadvantages of using Water-Based

In a world that needs to reduce its environmental impact and adopt sustainable manufacturing practices, water-based paints are becoming the new standard. They're less hazardous than solvent-based coatings and offer several other benefits too. Historically, solvent-based products have out-performed water-based coatings, but technology has moved on, and there are plenty of high-performing alternatives on the market.

The Advantages of using Water-Based coatings

A water-based coating uses water as the liquifying agent instead of chemical solvents, so it emits fewer VOCs.

Using water-based paints brings benefits that go beyond complying with regulations:

1. Environmentally friendly - Water-based coatings do not contain hazardous compounds as solvent based coatings. These hazardous compounds, known as Volatile Organic Compounds (VOCs) are monitored by the EPA and covered under the National Emission Standards for Hazardous Air Pollutants Compliance and Monitoring.
2. Lower clean up costs - Water-based Coatings can be cleaned with water and do not require solvent thinners. Solvents can be costly to dispose of and so water-based coatings can typically have a lower clean up cost associated with them.
3. Less flammable - Due to typically having lower solvent content water-based coatings can be less flammable than solvent-based coatings.
4. Can require less gloss finish - Water-based coatings in automotive applications often have a high natural gloss to them which can result in requiring less clear coat to achieve a desired appearance.



The Advantages and Disadvantages of using Water-Based

The Disadvantage to using Water-Based Coatings

As with anything, Water-Based coatings won't be perfect for every job. Here are some of the drawbacks that could affect the coating you choose for your next job.

1. Less tolerant of application environment - due to their composition, water-based coatings are more sensitive to temperature and humidity. This can make it difficult to apply water-based coatings in environments where you do not have any control over temperature and humidity, especially during cure cycles.
2. Can Require Additional Equipment Expense - Water is corrosive to a variety of metals and if you will be using water-based coatings you will want to ensure your coating application equipment whether it be a spray gun or airless paint sprayer is made of stainless steel or another material that is non corrosive. Stainless steel pressure tanks are more expensive than other pressure tank options like a galvanized tank.

How to mix Water-Based Coatings

Water Based Coatings, such as Sayerlack AT99 are ready to use. If thinning is required however, use max 5% drinking water.

To use a Hardener/Cross Linker, use a ratio of 1-2%.



The Advantages and Disadvantages of using Acid-Catalysed

These paints and lacquers have similar properties to Pre-Catalysed but use an acid to crosslink the paint. Crosslinking means that molecules of resin become bonded together into a larger more durable molecule. This has made them attractive to be used in kitchen environments where traffic is heavier, and a more durable finish is required. The disadvantage of Acid Catalyst products is the presence of Formaldehyde in the resin which is a respiratory irritant that causes chest pain, shortness of breath, coughing, nose and throat irritation and can also cause cancer. We would recommend the use of an air fed breathing mask to be used at all times when spraying acid catalysed paints and lacquers.

The Advantages of using Acid-Catalysed coatings

Acid Catalysed Lacquer coatings are easy to apply, quick drying and extremely hard wearing - providing a harder and tougher finish than the pre-catalysed equivalent.

Advantages:

1. Can be tinted to all colours, including, RAL, BS, Farrow & Ball, Little Greene, Dulux etc
2. Is rock hard once cured
3. Available in all gloss levels
4. Easy to use
5. Easy to apply



The Advantages and Disadvantages of using Acid-Catalysed

The Disadvantage to using Acid-Catalysed Coatings

Despite their unrivalled level of durability, acid cat lacquers are the most problematic to use for several reasons:

1. The finish has to cure - full hardness takes 21-28 days to achieve
2. Most AC coatings have a short pot life of 8-12 hours
3. Sensitive to overbuild
4. Will yellow (some non-yellowing formulas are available)
5. Contains formaldehyde

How to mix Acid Catalysed

Acid-Catalysed Paint requires an acid catalyst hardener. When spraying paints you must use a hardener with the paint to activate the first coat. Not using a hardener with this coating may cause issues after use. The AC hardener can be mixed with a ratio of 10:1.



The Advantages and Disadvantages of using Pre-Catalysed

This is a coating that dries by evaporation but then cures by the reaction of the catalyst that is in the product. Previously nitrocellulose was used which was also a very fast evaporating product, but it didn't go through the curing process and could be dissolved again in the same solvent. The Pre-Catalysed material does provide a more durable finish than nitro cellulose: and is ideal for occasional furniture that will not face heavy traffic, or for display stands and shopfitting equipment that will have a short life span. Pre-Catalysed finishes are easy to apply, repair and are economical in price.

The Advantages of using Pre-Catalysed coatings

Pre-catalysed Coatings are easy to use, fast drying and have high opacity. They are durable enough for a short-term, low-budget refurbishment. For example, if a client wants to revamp existing kitchen units with a view to replacing them in the near future.

Nitrocellulose wood finishes were popular for a long time because of their quick drying times. But, because they don't go through the curing process, they can dissolve when exposed to solvents. Pre-Catalysed coatings are more durable. They share the same fast drying time as nitrocellulose, but also contain a hardening agent, so the product cures.

Pre-Catalysed coatings are easy to apply and repair, and they are cost effective too.



The Advantages and Disadvantages of using Pre-Catalysed

The Disadvantage to using Pre-Catalysed Coatings

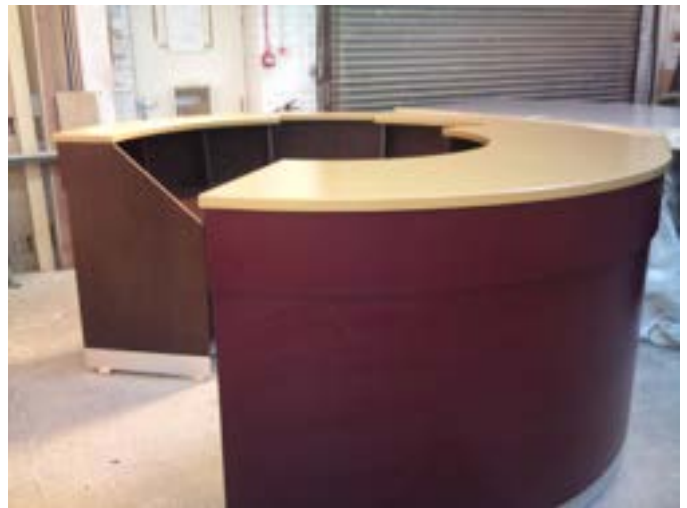
There are certainly more robust paints on the market than pre-cats. They are not tough enough to withstand the day-to-day wear and tear that kitchen units face, and they are not resistant to chemicals and heat. Pre-Cats will also yellow over time, although some manufacturers have managed to slow this process with UV additives.

Pre-Catalysed coatings are solvent-based, which means they emit volatile organic compounds (VOCs).

Exposure to VOCs can cause both short-term and long-term health issues. Sprayers should, therefore, wear a suitable full-face respirator and mask when working with pre-cats.

How to mix Pre-Catalysed Coatings

Pre-Catalysed Coatings do not require any hardeners as they are ready-to-use coatings, although thinners can be used if necessary.



The Advantages and Disadvantages of using Acrylic

Acrylic coatings have excellent corrosion resistant properties and fantastic colour/gloss retention. This makes them perfect for a coating that needs to perform in harsh environments. Some can have a primer built into the coating which means they can be applied direct to metal without the need of a primer. This makes the painting operation twice as fast.

Acrylic coatings exhibit complete transparency, good build and smoothness particularly suitable for applications that require high yellowing resistance.

Acrylic resin has high hardness, full coating film, good heat resistance, water resistance, solvent resistance, chemical resistance, and good weather resistance, good gloss and colour retention. Acrylic coatings are mainly used for topcoats with high decorative and high weather resistance. They are widely used in the automotive industry and machinery industries. They are also important topcoats in steel structure heavy-duty anti corrosion systems. Acrylic coatings modified with epoxy have good recoating properties, acrylic coatings modified with silicone have good heat resistance, resistance to high and low-temperature changes, water repellent, stain resistance and chalking resistance.

Where to Use Acrylic Coatings

Areas with heavy traffic

Not all floors are created equal. Places such as airplane hangers, garages and warehouses only need to be built to bear more. Acrylic coatings can withstand heavy loads of cars, planes and industrial machinery

Surfaces exposed to extreme high and low temperatures

When it comes to driveways exposed to snow and concrete or asphalt in tropical sunlight, the magic of acrylic coatings is that they expand and contract with changing weather conditions. This means that for cold winters and hot summers, your acrylic will bend and 'breathe' to adapt to changes. In addition, the acrylic component prevents ultraviolet rays from weakening the chemical composition of the coating. This also has the benefit of protecting the colour of the paint. If acrylic is not used, ultraviolet light can turn even the strongest coatings yellow.

Acrylic coatings form a barrier to resist harsh external factors, including intermittent exposure to water, salt spray, and moisture. Some are designed to provide excellent corrosion and flash rust protection. This makes them ideal choices for offshore oil rigs, water treatment plants, marine structures and storage tanks.



The Advantages and Disadvantages of using Acrylic

Acrylic Coatings Vs. Polyurethane Coatings

Acrylic paint has good gloss and colour retention and mostly used on outdoor iron and steel surface and is less costly. Polyurethane paint is more durable and better performance on weather resistance, used on higher anti-corrosion requirements.

Acrylic paint goes soft if heated past 65 degrees so not ideal for areas that will be subjected to high temperatures.

Acrylic paint is often used as line marking paint due to its colour retention properties and quick drying nature as well as the fact it is very weather resistant.





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