



RESIN TERMS & DEFINITIONS

The resins listed below are the most common resin systems used in architectural and industrial maintenance coatings. These are general definitions and there are a variety of resins within the same category. Some coatings will employ a combination of resins to enhance certain performance properties. Always check the manufacturer's product data sheets for more detailed information.

WATER-BASED/LATEX RESIN SYSTEMS

Acrylic Crosslinking

Technologically advanced premium resins for paint. A crosslinking mechanism is built into the backbone of this resin. As the paint dries, the chemical structures of the resin crosslink together – like shutting a gate. The crosslinking gives the binder, and therefore the paint, a stronger film and makes it more chemical resistant. Crosslinking Acrylics have outstanding adhesion, durability, flexibility, and color and gloss retention.

100% Acrylic

Premium resins for latex paints. 100% Acrylic resins have excellent adhesion, durability, flexibility, color and gloss retention. These performance properties are the reason why 100% Acrylics are the dominant resin used in exterior paints. For interior paints, 100% Acrylics offer excellent adhesion and block resistance.

Acrylic Epoxies

Resins that crosslink to form extremely durable films which resemble that of solvent-borne epoxies at a significant cost saving. These films provide all the benefits of acrylics (adhesion, durability, flexibility), along with the chemical resistance of epoxy coatings. Acrylic Epoxies lower maintenance costs, reduce the need to relocate personnel during application, and have lower VOCs and odor than their solvent-borne counterparts. They can be recoated in a few hours instead of days due to their quick dry rates. Acrylic-epoxies will chalk and fade on exterior exposure.

Vinyl-Acrylic

Commonly used resins referred to as a PVA or just a "vinyl". Vinyl-Acrylic provides good adhesion, durability, color and gloss retention, but not as good as 100% Acrylic resins. Vinyl-Acrylics are primarily used for interior coatings, but also found in some exterior coatings.



100% Acrylic Elastomeric

Resins that exhibit unsurpassed elongation properties allowing them to bridge hairline cracks in masonry surfaces. Elastomerics are designed to go on in a very heavy film build (14 dry mils) and will not function properly if applied at the incorrect milage. Elastomerics have good gloss and color retention and, if properly applied, will not allow wind driven rain to enter a building.

OIL-BASED RESIN SYSTEMS

Alkyd

The resins most commonly used in oil-based paints. Alkyd resins can vary greatly in their characteristics. Some are brittle, hard, and dry very fast; while others are flexible and dry slower. Alkyd resins have excellent adhesion, hardness, and durability. Alkyd resins have superior flow and leveling, depth of gloss, and are water resistant. The primary disadvantages to alkyd resins are that they will yellow in interior white enamels and they do not have good exterior color and gloss retention.

Linseed Oil

Flexible, slow drying oil that is primarily used in coatings designed for wood. Linseed Oil is generally blended with alkyd resins to aid in the flexibility of the coating. Linseed Oil is also used in many interior and exterior wood stains because of its ability to penetrate deep into the pores of the wood. Linseed oil is a major food source for mildew and so it is not recommended in hot and humid climates.

Polyurethane (Oil-Modified)

Hard, durable resins that are used alone and/or added to alkyd resins in various coatings. Polyurethanes are exceptionally water and mar-resistant and have excellent depth of gloss. Polyurethanes are used primarily in varnishes and added to alkyd enamels to enhance hardness and mar-resistance.

Vinyl-Toluene

Hard, quick drying resins that are used alone and in combination with other resins. Vinyl-Toluene resins have good depth of gloss and water resistance. The primary advantage is their extremely fast dry time. The disadvantages are poor gloss and color retention on exterior exposure.

Phenolic (Modified)

A specialized resin that is primarily used in primers to make the primers "lift proof." The resin is quick drying and will not allow other coatings to lift itself from the substrate. This resin is also water and solvent resistant and is quite expensive. Due to the VOC AIM rule of 1998, these products cannot be specified for architectural jobs.



Chain-Stop (Alkyd)

A specialized class of alkyds that have good color and gloss retention and are quick drying. Chain-Stops are primarily used in industrial finishes where fast dry times and good gloss retention are required. They have a hard, durable film that is water resistant. The disadvantages are that coatings made with chain-stops leave an after-tack that may be undesirable, have over spray that can easily stick to other substrates, and may lift itself as well as some uncured primers. Due to the VOC AIM rule of 1998, these products cannot be specified for architectural jobs.

Epoxy

Available in many different types and forms. **Epoxy Ester** resins generally go into coatings that do not need to be catalyzed and are thus "single packaged". Most other epoxies are two-component materials that need to be catalyzed. The most common two package epoxy is a "**Polyamide Epoxy**". Epoxy resins have the best adhesion and chemical resistance of any resin. Epoxy resins produce a hard, durable film that holds up extremely well on interior applications. When exposed to ultra-violet light, epoxy resins will chalk heavily and lose their color and gloss. The epoxy ester resin is far superior to alkyds in adhesion and chemical resistance. Polyamide epoxy resins are even better than the epoxy ester resin.

Silicone Alkyd

A specialized combination of silicone and alkyd resins that produces a coating with excellent color and gloss retention; Silicone alkyds are preferred outside over regular alkyds. The coatings dry slowly to a hard finish and are capable of withstanding elevated temperatures. Silicone alkyds cost substantially more than conventional alkyds, but offer far superior color and gloss retention outside.

Solventborne Acrylic

A resin that is quite different from the water-based acrylic resins. It produces a coating that dries quickly to a hard, durable finish and has very good color and gloss retention. This resin has the unique ability of re-wetting itself when applied over itself and melts into one coating instead of two layers of the same coating. It is used predominantly in floor finishes.

Aliphatic Polyurethane

The best and most expensive of the solvent-borne coating systems. Also referred to as "two-package polyurethane" or "isocyanate-catalyzed polyurethane", these coatings have unsurpassed color and gloss retention. The coatings are also extremely hard, durable, water and solvent resistant. These coatings are used predominantly on cars, bridges, and other steel substrates that demand an exceptional coating.