

Liquid &

This last in a series of articles on paint ingredients examines the liquid and additive portions of paint.

In previous issues of *Professional Painter*, we took a look at pigments, the finely ground particles that provide paint with its color and hiding, and the binder, the “glue” that holds paint together and provides adhesion to the painted surface.

In this, the final installment of the series, we’ll look at the other ingredients in paint: the liquid that acts as the paint’s “carrier,” and the additives that provide or enhance certain paint properties.

The liquid portion of paint provides the means of “carrying” the pigment and binder in a consistency such that it can be conveniently stored and applied to the surface that is being painted.

The most common liquid used in oil-based and alkyd paints is paint thinner, a combustible solvent made primarily of mineral spirits. Water is the primary liquid in latex paints, although some solvents are usually added to the formulation to enhance properties. (See “Co-solvents” later in this article.)

Ratio of Solids to Liquid Important

All paints consist of a solids portion, essentially comprised of the pigments and binder, and a liquid portion. After the liquid portion evaporates and a coating dries, it is the solids that remain on the surface.

The proportion of solids to liquid determines how thick the paint film will be after it dries. The greater the percentage of solids to liquid, the thicker the paint film will be at a given spread rate. This translates into better hiding, durability and protection of the painted surface.

(For more information on spread rate and its effect on paint properties, see the Spring 2001 issue of *Professional Painter*.)

Top quality paints usually have a higher percentage of solids – and a smaller percentage of liquid – than economy paints. For example, an economy latex paint may contain

about 25% solids by volume and 75% liquid, while a top quality latex paint might have 30 to 40% solids and only 60 to 70% liquid.

Because they contain a greater amount of solids, top quality paints generally cost more, but the result is a better quality coating with longer lasting performance. That’s because if a top quality latex paint and an ordinary latex paint are applied at equal wet thickness, the higher quality paint – because of its higher solids content – will dry to a thicker, more protective film. (See illustration, at right.)

Additives Provide Desirable Properties

The remaining component of paint is additives, which are ingredients generally used at low levels in paint formulations to provide desirable properties that the paint might otherwise lack. They are added in the factory as part of the formulation, not by the painter in the field.

Listed below are additives commonly used in the manufacture of latex paints and a description of how they affect the properties of those paints.

Thickeners and rheology modifiers are used to improve application properties and appearance. Without thickeners, the prescribed amounts of pigment, binder and liquid would result in a mixture too thin to be practical for most applications. Thickeners provide the consistency and viscosity so that the paint may be applied properly. They also impact flow and leveling and enhance film build, which improves hiding and durability.

Rheology modifiers are modern thickeners that provide the benefits of traditional thickeners, plus better flow and leveling and better resistance to spattering, which means less cleanup. And because these additives are synthetic, paints made with rheology modifiers are more resistant to spoilage.

Surfactants stabilize the paint so that it will not separate, settle or become too thick to use. They also keep pigments dispersed for maximum gloss and hiding; and they help “wet” the surface being painted so the

Additives

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paint won't "crawl" when it is applied. Surfactants also provide compatibility between tinting colorants and bases so that the correct color will be obtained.

Biocides used in latex paints are usually of two types. The first is a *preservative* to help keep bacteria from growing in the liquid paint. This is especially important for paint stored in containers that are repeatedly opened and closed, because contamination can occur.

The second is a *mildewcide* to inhibit the growth of mildew on the surface of the paint after it has been applied. These are used mainly in exterior paints, although some interior paints designed for use in damp areas contain a mildewcide. High quality exterior paints usually contain higher levels of mildewcide than economy paints.

Defoamers break bubbles that are formed in paint during mixing in the factory, during shipping and handling, when it is put on the shaker or stirred, and/or is applied to the surface (especially important when rolling).

Some contractors like to add a "shot" of paint thinner to latex paints to minimize foaming. While this may immediately serve the purpose, be aware that this practice can have an adverse effect on color development and the storability of paint, and is not recommended.

Co-solvents are additional liquids, other than water, in latex paint. One common type is a coalescent. This additive temporarily softens latex binder particles so that they fuse readily, even if the paint is applied at its minimum recommended application temperature. It often is the coalescent that is the source of residual odor after painting a room. Another type of co-solvent provides a measure of freeze/thaw stability to help paint resist damage if frozen during storage.

Contractors sometimes like to supplement the paint they purchase by mixing additives in themselves. Remember, paint formulators work hard to attain a proper balance of properties. The addition of a new material to improve one property can throw this balance off and affect other properties.

So, if you must use an additive, make sure you never exceed the recommended level and be sure the paint manufacturer does not prohibit it. Otherwise, the paint's warranty may be voided.

Convey the Quality Message

In this and previous articles, we have broken paint down to its basics and described the role each ingredient plays. By doing so, we hope you now find it easier to understand what sets quality paint apart from ordinary paint, and why paints differ in their properties. Share this knowledge with your customer, and it will help you become the "expert" your customer relies on when it comes to paint and painting. ■



TOP QUALITY LATEX PAINT



ORDINARY LATEX PAINT



Wet Paint Film



Dry Paint Thickness



* Percent Solids By Volume