

WHAT EVERY DETAILER NEEDS TO KNOW ABOUT WAXES AND PAINT SEALANTS

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Waxes have been around for millions of years but it was not until man learned to use them that the real story of wax begins.

Early on, there were only natural waxes. But as research and development increased more natural waxes were discovered and more waxes were produced by a variety of methods of extraction and chemical reaction.

With this came, of course, new uses for waxes, including the use on motor vehicle surfaces for protection and shine.

Both the chemical and physical properties of waxes differ. How waxes are gathered, produced and refined has a major affect on the properties and composition. Also, properties of true waxes are affected by other products that might be used in the formulation. As a result, the term wax has been erroneously and carelessly used over years, especially in the detail chemical business.

Waxes have many, many physical and chemical characteristics which, in the case of an automotive wax product, will effect it's color, texture and appearance. Nothing magic, just basic chemistry.

Various Kinds of Waxes

There are a number of different waxes available that would meet the needs for a good automotive wax products:

- Vegetable Waxes such as carnuaba
- Animal Waxes such as bees-wax
- Petroleum Waxes such as paraffin & microcrystalline
- Mineral-Fossil Waxes such as montan
- Synthetic Waxes such as ethylene polymers

The "specifications" that are important in formulating a good automotive wax are:

- Hardeners
- Melting Point
- Water Repellency
- Resistence to Breakdown

What is a Automotive Wax?

An automotive wax product is one formulated to be used on a painted surface to enhance appearance and provide some depth and shine. This is done by smoothing out the surface and hiding imperfections.

NOTE: When we speak of waxes from this point on we can, and do include "paint sealants" too which are nothing more than an evolution of automotive wax technology.

What Are the Ingredients in Waxes?

Contrary to what some salesmen might like you to think, waxes are simply basic chemistry, no magic, no razzle-dazzle, just a combination of ingredients to make a product that performs a function.

They include the following: water, solvents, oils, silicone fluids, wax, color and at times fragrance that are held in suspension by emulsifiers. It is the combination of these ingredients that gives a wax its form (whether paste; creme or liquid), shine, durability and depth.

A properly formulated wax will provide shine to a painted surface and some temporary protection. The protection is obtained by creating a buffer surface between the paint and the environment.

Waxes in themselves, and the silicone in the formulation, will resist many environmental contaminants only for a period of time, not like the sales would have you believe for 1,2 or 3 years without a re-application.

How Long Will They Last?

The length of time a wax/sealant lasts depends on what the formulator was trying to do. But a standard wax will last about 30 to 45 days tops. On the other hand, what we call a paint sealant can last up to 6 months, under the best conditions.

It is the inclusion of what are called, "amino-functional" silicone fluids that give us a paint sealant, rather than a wax. The standard wax product contains silicone fluids which are not as durable as the amino-functional silicone which will be explained later.

What is the Best Wax?

According to most chemists, when it comes to a wax/sealant product there is no advantage between pastes, cremes or liquids. Which form a product comes in has to do with what the formulator is trying to achieve, which is usually dictated by the sales department.

Often form has to do with cost; ease of application; ease of removal; emulsification ease; protection; gloss.

There is really no difference between hard pastes, cremes or liquids when you are speaking about a true automotive wax/sealant. Given the formula has a high percentage of wax, the form does not effect the product's performance. (there is normally no more than 15% to 20% wax content in a product).

However, there are some spray waxes and "fast" waxes on the market that do have a very small quantity of wax and silicone in them and as a result these products offer very little in the way of protection and durability.

Most retail, off-the-shelf products have very little wax in them and are loaded with what we call "fillers" to fill the bottle, diamacetaneous earth. This is evidenced by the large amount of powdery residue left on the car when it dries.

Understanding Paint Sealants!

Ever since the term paint sealant was coined there has been a great deal of misinformation disseminated on the subject. Some, intentionally by many of the manufacturers and/or marketers of paint sealant protection products.

It Began with Polyglycoat

One of the first big names in the paint sealant field was a product marketed under the name of Polyglycoat, a paint sealant that producers claimed to have fantastic protective properties, better than anything else on the market. Their impact on the

market was so great that many of the "BIG" names in automotive chemical products followed suit and produced their own versions of paint sealants.

Sealants vs Waxes

In order detail business operators to provide customers with honest information a full understanding of the differences between waxes and sealants is necessary. Further, it also helps them to sell their own services better, having this knowledge to counteract the car salesman's admonishment to his customer, "your car has a clear-coat finish, it never needs any kind of waxing." Or, "you have purchase a lifetime paint sealant protection, your car never needs to be waxed."

By simple definition is paint sealant is something that seals. But, does not a wax seal? So is it not a sealant too? Technically speaking you are correct. But typically automotive waxes are not thought of as a sealing product.

Sealants may have wax in the formulation but they are more than just a wax because they contain, as mentioned earlier, amino-functional silicone fluids in them. If a wax contained amino-functional silicones then it properly speaking is not a wax by our definition, but a paint sealant.

There are waxes on the market that are formulated with amino-functional silicones and are marketed as having a longer life than other waxes. This is done because the marketing department feels that it needs to market a wax to compete with other products, but needs a wax, that has longer durability. It has nothing to do with the chemistry of the product, just what is included and what the selling company chooses to call it.

A paint sealant for all intents and purposes contains as a key ingredient, amino-functional silicone fluids which form a cross-linking film over the surface of the paint that forms a durable barrier on the paint that will, in fact, last longer than wax, sitting on the surface of the paint.

Sealants, like waxes, contain: water, solvents, oils, wax, color, fragrance held together by emulsifiers. They are usually available in liquid or cremes, but not in paste form, which I suspect has to do with marketing more than anything else. Often on the label of the sealant product or in marketing material you will see terms such as "polymers and resins". These are really nothing but marketing buzz words intended to make their products sound better, when in fact, all products have polymers and resins in them.

What you must understand is what a POLMER and a RESIN are to be completely knowledgeable.

A Polymer

Comes from the Greek, "poly" meaning "many" and the word "mer" meaning "units." Chemically it is a macro-molecule formed by the chemical union of 5 or more identical combining units called, monomers.

Silicones and resins can be generalized then, as "polymers."

And, the list of polymers available to the chemical formulator is practically endless.

Examples of polymers include: polyethylene, polyurethane or polytetrafluoroethylene. These products start with "poly" followed by another word.

So what you have, for example, are many units of ethylene.

In the detail business the word polymer is the single most abused word in the English language. For example, most of the thickeners used in waxes and sealants are polymers. So the marketing people can "honestly" say in their marketing and put on the label that "this product contains space-age polymers."

A Resin

This is a semi-solid complex mix of organic compounds that are animal, vegetable or synthetic (man-made).

Because the term is so broadly used it would best to restrict its application to natural organic-soluble, hydro-carbon products coming from trees and shrubs.

The chemical dictionary definition is so broad that it has almost become meaningless. It has become a catchall term. To be specific, a resin is a polymer that melts or is soluble in specific solvents. In some cases the material is used to make a plastic is a resin. If you see the term resin on the label of a wax or sealant how do you know what it really means? You do not.

What a resin does for a wax or paint sealant is really anybody's guess. In short, the use of the term resin, polymer, etc is nothing but marketing jargon.

There are some polymers that can have a positive effect on the quality of a paint sealant and/or wax, these are amino-functional silicones which will be discussed in depth further on.

Silicone Fluids

A silicone fluid is a relatively short chain inorganic polymer called "polydimethyl siloxane". Technically a silicone is a polymer. So to see the word polymer on a wax or sealant label could mean anything as the definition becomes clear to you.

The properties of silicone fluids range from very thin, volatile liquids that look and feel like petroleum solvents to a very thick and heavy liquid that look like clear honey. The only difference between a thin and thick silicone fluid is the number of units in the dimethyl siloxane chain.

Almost all waxes have some type of silicone fluids in them to provide shine and durability.

Amino-Functional Silicone Fluids

This is a silicone fluid that has been slightly modified. The polymer content is different. The amino portion of the amino-functional silicone is what causes the silicone to crosslink and physically attach to the paint surface. This cross linking capability is what makes a paint sealant more durable than a typical wax. As mentioned, waxes usually only contain standard silicone fluids that do not crosslink, so are not as durable as a paint sealant.

What About Teflon?

Teflon is a trademark of the DuPont Company for a polymer called "Polytetrafluoroethylene (PTFE)". In spite of what some detail chemical companies might say, Teflon is a polymer that is not well suited for use in a paint sealant or wax because of several properties that are unrelated to its durable slippery nature.

Teflon is a powder that melts at 600 degrees F or dissolves in fluorinated solvents such as freon. Those are the only known ways to liquify Teflon. If it cannot be made into a liquid it cannot stay on a surface.

There is a letter floating around the detail industry from the, general manager of the Automotive Products division of DuPont that unequivocally states that Teflon has no known capabilities to enhance the shine or durability of a automotive wax or paint sealant.

What About Form

As discussed in the wax section whether a sealant is a liquid or creme has no bearing on its performance. Sealants can be, and are formulated in several different ways

and these do not necessarily show up in the physical state of the product so there is really no physical advantage of one over the other, that is, liquid or creme.

Can You Wax Over a Sealant?

Yes you can, if you have allowed the sealant to cure as per the manufacturer's recommendations which can be from a few hours to 48 hours. This allows the crosslinking molecules of the amino-functional silicone to form.

But the question is, "why do it?"

The only benefit would possibly be to fill the spider-scratches on the finish or to increase the depth of shine on darker cars. Not much protection benefit.

Conclusion

The purpose of this article was to arm you with knowledge that you can use to inform your customers as to the truth about paint protection products be they waxes or sealants.

Which is better? From a durability point of view a sealant is better hands down.

Remember, the best wax will last about 45 to 60 days, some cheaper waxes less than 2 weeks. A sealant on the other hand can last up to 6 months, but in most cases they will last about 3 to 4 months before another application is necessary.

From a shine point of view a wax might provide a deeper shine on a dark car because of the greater oil content. This is not to say a sealant will not shine a dark car as well, it just depends on the product. Some sealants are formulated for shine whereas some are formulated for durability.

In conclusion, you can see based on what was presented that a sealant is a better product to use than a wax in almost all instances, but remember they are not indestructible. So your car wash customers who have purchased a new car protection package must know that they do have to reapply the sealant at least in 6 months. In fact, in most instances the small print on the contract states that for the warranty to be valid the sealant must be reapplied in 6 months. Which should indicate that the vehicle needs to be protected regularly. And, what better place to do this than at your carwash.

If you can absorb this information and develop your own presentation based on this information you will have a great means of countering comments like, "I don't need a wax I have a paint sealant on my car."

Questions?

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