

THE SCIENCE OF SHINE

Helping to understand which car care products to use and why

By Allan K. Botbyl

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Mustang owners wonder what qualities they should look for when trying to select car care products. Understanding the car's finish and what causes that finish to deteriorate should make that decision a lot easier.

A car's finish is a sophisticated coating system intended to serve two purposes — protection and decoration. The protective aspect is intended to save the underlying body from corrosion. The decorative aspect refers to the aesthetic beauty, which is of considerable importance to Mustang owners.

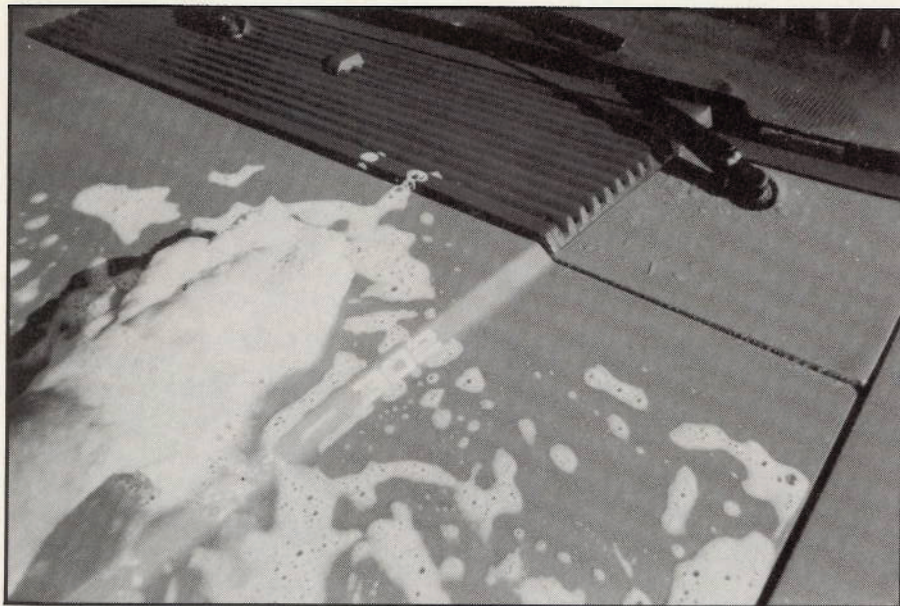
Typical car finishes are made up of four major components. The first being the substrate or body of the car. For years the substrate was made solely of steel, but today manufacturers also build Mustangs utilizing aluminum, rigid

plastic and rubber. The second component is the primer coating. The primer serves two basic functions in that it helps to prevent corrosion of the substrate, and it acts as an adhesive to bind the substrate and the paint film together. On many cars, the final component of the finish is the top coat or paint color which is visible on the car. This top coat may consist of three components including the pigment, metallic flakes (sometimes), and most importantly a binder or "vehicle." The vehicle is a hard plastic, such as acrylic, which holds the paint together and gives it a smooth consistent quality. Pigments are finely divided highly-colored particles which give color to the finish. Finally the metallic flakes are aluminum leaflets which are added to the paint to contribute to the aesthetic beauty of the top coat. Many of the cars manufactured in

recent years utilize a fourth component of the finish called the clear coat. This addition gives the finish a longer-lasting and a more lustrous shine.

It is an unfortunate reality that as soon as six months after a new car leaves the showroom floor, an unattended finish begins to lose its luster and develops a flat, dull appearance. The principle factors that cause this undesirable look are the soiling of the surface and weathering of the paint film.

Soiling of the car's surface entails three main types of dirt deposits — particulate dirt, road film and stains. Particulate dirt is the solid material, such as dust and mud, which can be readily washed off with the use of a high-quality car wash product. Road film is a mixture of asphalt, hydrocarbons and exhaust materials which forms a grayish-black look over the finish. Stains from mate-



rials such as oil, tar, gasoline or tree sap are the third form of soiling. A well formulated tar remover will help safely remove these other sources of surface deterioration.

Weathering of the paint film's surface is also responsible for a great deal of the deterioration of the car's finish. Heat, air, water, pollutants and the ultraviolet rays from the sun are all factors that will contribute to a gradual decomposition of the film binder and pigments. This process is accelerated in the "sunbelt" and industrial areas where these factors are extreme.

Deterioration of a car's paint film generally manifests itself in one of two ways — cracking or chalking. A "chalked" finish is caused by the erosion of the binder and pigments leaving behind a rough surface which exhibits a hazy whitened appearance. Paint film cracking is the result of the same factors, but the degree of damage extends all the way down to the substrate. This deterioration, if not severe, generally requires only the use of a good quality car wax to restore the finish to its original sheen.

With this brief description of car finishes in mind, you should be able to address the following questions when considering the purchase of car care products:

1. What is the basic function of car waxes?
2. What are the most important appearance functions of these products?
3. What are the most important performance qualities of car wax in terms of your needs?

To address the first question, it is

important to realize that many of today's car wax products are truly what we would refer to as "cleaner/waxes." These products serve three basic purposes — to clean the surface, to enhance its appearance and to protect the finish. In terms of appearance, there are four criteria through which a car's finish should be judged — the trueness and brightness of the color, the reflective capabilities of the gloss, the sharpness and clarity of surface reflections and the uniformity of these characteristics over the entire surface of the car.

In regard to the second question there are two functions which a car wax must perform to enhance the appearance of a finish. It must uniformly clean away the soils and stains on the surface and it must smooth and flatten rough spots.

Cleaner/waxes utilize mild polishing agents such as silica or special grades of clay, hydrocarbon solvents like naphtha or kerosene, and surfactants (surface acting agents) or detergents to dissolve and polish away road film, stains and chalked surface material. These polishing agents also help to smooth out the surface and remove oxidized paint. The result is an appearance that is more uniform, with a higher gloss and brighter color. The wax also provides a film over the surface which makes it water repellent. This effect is not only aesthetically pleasing, but also provides protective value to the painted surface. Car waxes that contain high-quality ingredients will produce water beading even after many car washes.

Most people use three criteria to differentiate between car wax products — ease of use, appearance and durability. The first two of these criteria are fairly



self-explanatory. Most are not willing to sacrifice a whole day of their weekend in a laborious session of waxing, so they want a product that will provide desired results with a minimum of effort. It is also easy to generalize that most are principally concerned with restoring their Mustang's finish and that's the main reason they wax.

Concern about durability of a wax centers around the amount of time each waxing lasts before they have to wax again. Waterbeading is the chief criteria used to judge the durability. That is when the surface no longer beads water, the wax is no longer acting effectively.

If a high-quality car wax is applied three to four times a year the finish will retain most of its "showroom-like appearance" for many years. This means that the car's owner will not only enjoy the benefits of a good-looking car, but will receive a higher value for it when ready to sell it.

With these car care considerations in mind, you should be able to select the highest quality car care products to clean your car's surface effectively, restore its finish to a beautiful high luster, and last a reasonable amount of time between waxings. (Ed: Mr. Botbyl is with the Car Products Division of the Borden Co.)

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