

Expert Interview: Properties of Paint

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Interviewer: What are the properties of paint?

Expert: Look at it from the perspective of the person analyzing the property of the paint. If it's the consumer, if it's the person who is buying a car, they want that car to look nice. They want that car to hold up well over a period of time. And be a source of pride and enjoyment as well as something they just drive every day to get them around.

To the designer and to the engineer, they're concerned with protecting the materials of the car and making it more visible to prevent an accident and increasing the car's ability to resist weathering or salt on the road. They're concerned with the ability of the paint to resist damage that would come from rocks and debris on the roadway.

Paint has to be pretty tough. It has to be able to expand with temperature changes. And it has to be resistant to the environment.

You want paint to resist dings - those annoying little dents and damage that you get from cars parked nearby and people carelessly opening doors. You want it to resist shopping carts. You want it to resist children's toys such as a basketball and magic markers. All of those things!

Expert: So paint has to put up with a lot during the life of the vehicle. But these are things that are important and people who design paints use their knowledge and their skills to help make the paint better.

Interviewer: Describe the differences between house paint and one that would be suitable for cars?

Expert: Specialty cars use paints that require a great deal of labor to apply them. But for most passenger vehicles, the paints have to be suitable for mass production. The paints also have to be chosen to adhere to the surface of the primer which is first applied to the metal. So the paint that you use for a car is going to have a slightly different composition than the paint you're going to use in a house.

Paint sticks to something. But the how the paint sticks can be different. A mechanical bond builds on some sort of interface. If you have a porous surface you can let the paint

actually soak into that surface and form kind of a mechanical bond. This would be more an example of how you would paint wood for example. Because wood's very porous.

Vinyl siding has pigment mixed in with the vinyl. If you cut a cross section you'll see the same color throughout. Usually with metal you need to anodize the paint so that it will hold the paint. But you can paint aluminum. And you can paint vinyl. But in all those cases you have to be really careful that the paint that you select will adhere to what you're trying to get it to stick to.

One thing that car paints have to undergo that house paints do not is that there maybe a strong change in shape of the part. For example, the car paint may be able to stick to body parts and relatively non-changing sections, but if it's on a plastic bumper cover it may also have to be able to withstand large deformations and still spring back and not loose its paint.