

The Breakdown on Nano Coatings

The perfect shine is the Holy Grail of the automotive appearance industry. For over a century, professionals have sought a magical solution—a long-lasting shine product that repels dirt, environmental contaminants, and rain so the vehicle's paintwork has the best protection available. Something that would uphold a new car shine longer than waxes while saving razor-thin clear coats from needing to be buffed. The solution? Ceramic coatings, aka nano coatings.

What are Nano Coatings?

Nano coatings, or ceramic coatings as they're commonly known, are liquids which, when applied to a vehicle's paintwork, fuse with the surface to form a glossy, long-lasting barrier that repels water, contaminants and often UV rays. Their purpose is to preserve, protect and enhance the appearance of an unblemished finish.

Nano coatings bond with paint's clear coat, becoming literally part of the surface.

Polymers are collections of bonded molecules. These polymers crosslink to form the nanostructure that makes up a nano coating. Through the transfer of particles, nano coatings bond with paint's clear coat, becoming literally part of the surface.

Some of these bonds are so durable, the coating needs to be machine wet sanded to be removed. Less durable coatings, on the other hand, can be removed with a strong solvent or buffing machine.

What's on the Market Now?

Brands often describe their coatings as "ceramic", "glass" or "quartz". Obviously, people aren't coating their cars in porcelain, so what do people mean by these terms? Well, glass and quartz are usually marketing terms to refer to ceramic coatings. And what does the "ceramic" in ceramic coating mean?

"Ceramic" refers to "nanoceramics", ceramics made from nanoparticles. Nanoceramics don't have the same rigidity or brittleness of macroscale ceramics. These nanoparticles are what forms the nanostructure of a ceramic coating.

A decade ago, ceramic coatings couldn't last more than a few years due to the limitations of SiO₂. But with the introduction of incredibly durable silicon carbide coatings, coatings can now last well over a decade. Often coatings will be made of a mix of ceramic nanoparticles rather than just one to achieve unique protective qualities.

New on the market are self-healing ceramic coatings. The mechanics behind them vary; some self-heal fine scratches with the help of heat (supplied by heat guns or hot water) while others self-heal naturally over time in a process called auto-mechanical self-healing. And technology only continues to evolve, so who knows what will be available in the future.

What are the Benefits of one of these Coatings?

Their durability is impressive. They last a long time and protect your paint from naturally acidic contaminants, oxidation, UV damage, and add a little cushion room in terms of light scratches.

Ceramic coatings are thicker, so they better protect against micro-marring and etching.

In a sense, ceramic coatings take the benefits of a poly sealant and amplify them to a massive degree.

Ceramic coatings are thicker, so they better protect against micro-marring and etching. Their water repellency exceeds poly sealants exponentially, literally sheeting water off. They also block oxidation and inhibit UV rays in ways poly sealants just can't. And the gloss they produce is in a category of its own.

One other benefit is in how amazing they make your car look. Many of these coatings require an authorised detailer to apply them for you. That means that they have experience in prepping the paint for application.

This is a huge bonus for car lovers. Your paint may never look that good again because of how much work goes into preparing the car for one of these coatings.

And once the coating is on, the already insane level of gloss produced by the surface prep is amplified by the coating. As mentioned above, this is a level of gloss no wax or poly sealant can reproduce; it's wholly unique to ceramic coatings.

What are Some Downsides?

For the enthusiast applying a coating themselves, much of the downside comes from just how hard coatings are to prep for.

Before you can even apply the coating, the surface has to be 100% free of surface blemishes. A multi-stage paint correction involves washing the car, claying any contamination and buffing. You'll also need to keep the paint pristine while applying the coating, which is difficult for anyone who isn't working in a clean indoor facility.

But the application itself can be difficult, too. Uneven coating can result in high spots that must be buffed out to be corrected. And as mentioned above, working indoors in a well-ventilated area is strongly recommended, as many coatings have solvents with foul-smelling fumes that can make you lightheaded. 100% solids coatings like 9H LDC Pro and 9H LDC Extreme, on the other hand, have no solvent, so there's no awful odour lurking in the bottle.