Dr Beasley's™

OPTIMIZING CORRECTION FOR CERAMIC PROTECTION

JIM LAFEBER
CD-SV, RT

INTRODUCTION

At our Chicago detail shop, paintwork correction is one of the most involved services we offer. Over several hours, our detailers remove defects from a vehicle's paint finish until it shines like the customer desires.

There's an issue with paintwork correction, though:

It's destructive.

Many don't realize that paintwork correction doesn't just remove defects. To remove defects, **paintwork correction removes part of the paint's protection,** making it more vulnerable to total failure.

With this in mind, **we've developed an approach to paintwork that focuses on maximizing paint protection**, ensuring the health of the vehicle is maintained to the highest degree. This guide lays out this approach from start to finish, going over:

- *How paintwork correction works*
- *How correction prep affects coating bond*
- *Preserving protection during correction*
- *Building a coating foundation during correction*

And a lot more in-between, so let's get started.

TABLE OF CONTENTS

PROTECTION-FOCUSED PAINTWORK CORRECTION

Paintwork correction is the act of removing defects from automotive paintwork using abrasive technology. To remove defects, abrasives wear away at the paintwork's protective clear coat until the surface is leveled past the depth of the scratch. **When you remove a defect, you remove some protection**.

As detailers concerned with the health of the vehicle, the idea of removing some of the paint's protection, even to level out a defect, is concerning. **That's why we approach paintwork correction with preservation and protection in mind.** With that mindset, you're minimizing the amount of paint removed, while maximizing protective durability.

But why is removing protection so concerning in the first place? Is paint really that weak? Let's investigate.

THE FRAGILE NATURE OF CLEAR COAT

We're not advocates for paintwork preservation because we think paint should be kept original. **It's because automotive paintwork, specifically its protective clear coat, is impossibly thin.**

As a reminder, the clear coat is the top layer on most modern paintwork systems, and it protects the underlying color coat against the elements. **When the clear coat wears too thin,** clear coat failure can result, all but ensuring permanent damage to the paint.

FRAGILE NATURE OF CLEAR COAT (CONT'D)

Consider clear coat's thickness in relation to other thin objects:

HUMAN HAIR
95 MICRONS

STICKY NOTE
75 MICRONS

CLEAR COAT
25-50 MICRONS

Most OEMs advise against removing more than **7-10 microns** of clear coat.

The average paintwork correction, on the other hand, removes about **3 microns** of clear coat.

Now do the math.

With just two paintwork corrections, you're on the verge of clear coat failure.

For us, that's just a little too close for comfort. And that's not even considering the UV protection that you lose when removing clear coat defects.

That's right — **nearly all of the paintwork's UV protection is in the top layer of the clear coat**. Remove that protection, and your clear coat becomes far more susceptible to UV oxidation, which obscures the paint's gloss.

With all that in mind, it only makes sense to pursue paintwork correction with protection as the ultimate goal.

You remove the clear coat to remove scratches, then you restore that protection — replacing it with a more durable ceramic coating.

But why a ceramic coating? What makes them so much more durable than a wax, or sealant?

ORGANIC VS. INORGANIC

Ceramic coatings are durable because they're inorganic (they don't decay) and they form a semi-permanent crosslink bond. They can last for years on end, even decades with the right tech and installation.

Compare that to organic protection like wax, which even under the most ideal circumstances struggles to hold up longer than a few months.

So if inorganic protection is durable, and organic protection is not, then it only makes sense to go inorganic.

If you're protecting your paint, you should be doing it to the fullest extent possible.

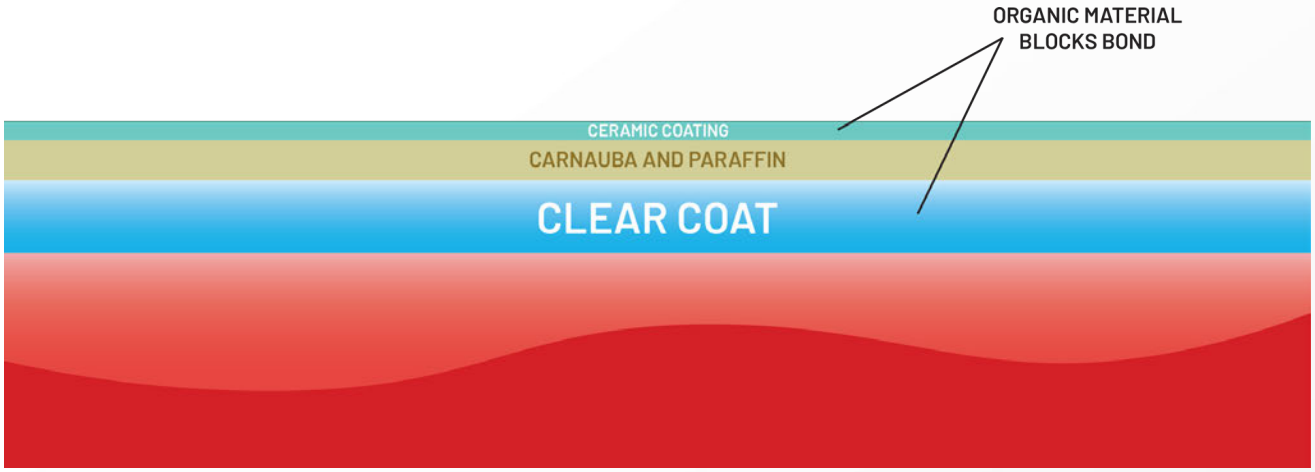
But having inorganic protection like a ceramic coating isn't enough to get long term durability.

Coatings form a strong crosslink bond with the clear coat, and that bond can't happen if organic material, like wax, is left behind on the surface.

ORGANIC VS. INORGANIC (CONT'D)

Why would wax be on the surface? Well, a surprising number of detailing products, from soaps to detail sprays, are formulated with organic ingredients like carnauba wax or paraffin.

Organic ingredients make for a fast shine, but if left behind they can prevent the coating from bonding:



You can try to remove the organic material, of course, but it's difficult to get everything. **Even a small amount of contamination can prevent a durable bond.** With that in mind, it just makes more sense to **stick with inorganic products** all the way, from the prep wash up and to the correction.

"SERVICE LIFE" PROTECTION

Our emphasis on coating durability, and vehicular health for that matter, come from our "Service Life" philosophy. **A vehicle's paintwork, when properly maintained and protected, can survive in perfect health for decades on end.**

This is why on some of our coatings we offer a “Service Life Warranty” — we know that with the right prep, installation, and care, our coatings can last 25 Years, at the very least.

So what level of preparation and proper installation do you need to get that durability? Let’s dig in.

PREP FOR CORRECTION, PREP FOR PROTECTION

If you consider paintwork correction a function of protection like we do, you understand that in prepping for the correction, you are also prepping for the protection. That being the case, **you should always be using products and techniques that will improve the coating applied at the very end**.

At the same time, **you should also be utilizing techniques that prevent damage to the finish**, being sure to use the least aggressive means possible to achieve the results you need. This guiding principle will ensure that each step taken on the way to protection builds towards durability.

THE PREP WASH – BEST PRACTICES FOR PROTECTION

Prepping for correction/protection requires you first to remove both surface and embedded contamination from the finish. Otherwise, you’ll be buffing gunk into the finish and causing more scratches than you began with.

THE PREP WASH — BEST PRACTICES FOR PROTECTION (CONT'D)

Washing is a relatively non-aggressive way to remove loose contaminants from the finish, so it's the perfect starting point when prepping. **You want to remove as many contaminants as you can with the least aggressive means possible before you get to more aggressive decontamination.**

Now to remove as many contaminants as possible in the wash, you need to be using a multi-stage procedure. The one we've perfected at our own detailing shop over the years looks something like this:

Pre-rinse
Pre-foam
Let sit
Rinse
Foam
Agitate
Rinse

Pre-rinsing and pre-foaming the vehicle removes loose contaminants, leaving less work for the wash pads.

Scratches come from touching the paint, so less pads on the paint -> less abrasion -> less scratches -> less correction -> thicker protection. It all trickles down!

The other major aspect of technique is the use of a **Grit Guard**. When you rub a wash pad against a Grit Guard liner in your rinse bucket, it traps the contaminants on the pad underneath the Guard, so they don't get reintroduced to the paint and cause scratches.

But what about contaminants that a wash just can't remove?

THE DECONTAMINATION — BEST PRACTICES FOR PROTECTION

You've done as much as you can with a wash, so now it's time to try some heavy duty cleaning: **decontamination**.

Decontamination works to **remove bonded contaminants as well as fallout embedded in the finish**. This is crucial for both correction and protection.

Surface contaminants, if buffed over during paintwork correction, will scratch the finish severely. **Embedded contaminants, if left behind when coating, can prevent a durable bond and even cause the paint to oxidize underneath the protection**.

Decontamination can be an aggressive procedure, however. While chemical decontaminants are relatively gentle on the finish, **mechanical decontaminants (clay bars, clay mitts, etc) remove grime through aggressive abrasion**.

Even with lubrication like Dr. Beasley's Clay Spray, **claying will inflict scratches on the finish**. The more scratches you inflict, the more you'll have to remove and the more clear coat thickness you'll lose. So if you're truly focused on protection in your correction, **you want to ensure you're claying as little as possible**.

To avoid over-claying the finish, we recommend first using a chemical decontaminant (specifically Dr. Beasley's Total Decon).

Because they can remove quite a bit of grime without much aggression, **using a chemical decontaminant before claying will reduce the amount of work the clay needs to do**.

Less clay, less scratches!

When claying, **you must absolutely use a lubricant** (like Clay Spray) to prevent the clay from rubbing against the finish too aggressively.

Also, be sure to **knead the clay** whenever it starts to look dirty, so as to only touch the finish with a clean clay surface.

THE INSPECTION - BEST PRACTICES FOR PROTECTION

Before you begin correcting defects in the finish, **you need to know what defects are there to start with**. Otherwise you could end up using more aggressive means than required, losing precious clear coat that could have otherwise been preserved.

To inspect the finish, we recommend use of a **high-powered LED light** as a way to expose fine scratches that are otherwise invisible to the naked eye. This will start to give you a sense of how aggressive you may need to be in order to correct the finish.

But an inspection alone can't tell you everything.

THE TEST PANEL — BEST PRACTICES FOR PROTECTION

Paints vary in hardness. This greatly affects the kind of product and pad you use. Use too harsh a pad or too harsh a product and you could remove more clear coat protection than was necessary.

This is why we advocate for using a test panel prior to selecting your pad/product combination. To conduct a test panel, section off a small area with paint (typically on the hood) and start with an unaggressive pad/product combo.

If the defects you wanted to remove remain, move up to a more aggressive pad or product. Continue until the results you're looking for have been achieved. Whatever combination (or series of combinations) got you to that point, you'll want to use that on the rest of the paintwork (if the rest of the paintwork is in a similar condition, of course).

CHOOSING PRODUCT — BEST PRACTICES FOR PROTECTION

The product you use to correct a finish is the most consequential choice you'll make when it comes to maximizing protection. It decides how much clear coat you remove and what gets left behind in the process. So you want to be sure you're using the right solution — and that's not polishes or compounds.

Why?

Polishes and compounds are designed for wax, not ceramic coatings.

Polishes and compounds were invented before the inorganic ceramic coating took over the industry. The kind of protection they were designed to work with was wax, an organic form of protection. For that reason, many polishes and compounds incorporated wax to improve wax protection.

CHOOSING PRODUCT - BEST PRACTICES FOR PROTECTION (CONT'D)

These products also tend to have filling oils like silicone to improve the appearance of the finish after correction. **These polishing oils only fill defects temporarily, and much like wax, they can prevent a ceramic coating from bonding.**

For this reason, you want to use a product that is free of organic components such as these. While there may be some polishes and compounds that fit this bill, they're missing one crucial aspect: **Priming**.

To prime is to optimize for ceramic coating. Products like Dr. Beasley's Nano Surface Primers optimize for coating in three ways:

1. They **eliminate organic ingredients**, ensuring a durable bond.
2. They lay down **anchor points for the coating to bond with**, ensuring an even more durable bond.
3. They replace the clear coat you've removed with a **thick ceramic foundation**, thereby extending the coating's protection even further.

Here are the Nano Surface Primers Dr. Beasley's offers:

HEAVY CUT PRIMER | **FINE CUT PRIMER** | **FINISHING PRIMER** | **ONE-STEP PRIMER & COATING**

NSP 150, 95 and 45 can work as a system to remove the deepest scratches, clean up oxidation, then finish to a perfect shine, all while building a foundation for the ceramic nanocoating to form a durable bond with.

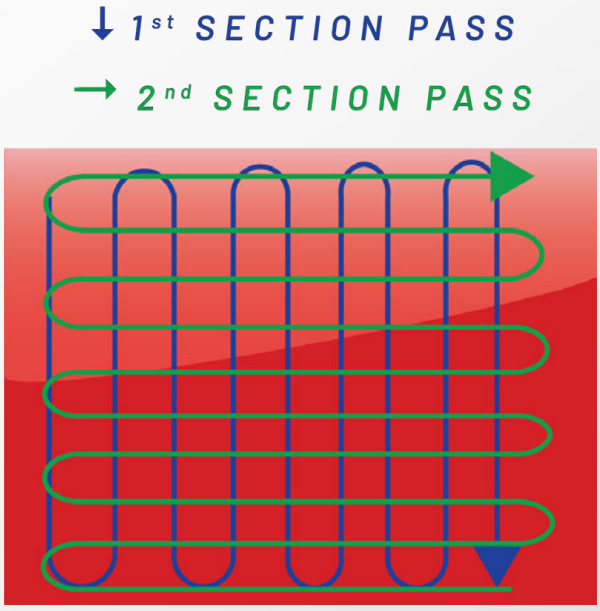
NSP Z1, alternatively, provides correction and protection at once, so there's no need to apply a ceramic coating after.

Regardless of the NSPs you use, however, **you can be absolutely positive primers are guaranteeing longterm protection** — something you can't quite get with outdated organic polishes.

OPTIMIZING CORRECTION TECHNIQUE FOR PROTECTION

Before beginning the correction process, tape off any sensitive areas, if desired. While NSPs don't stain or dust, masking sensitive areas is always a good precaution to take.

Generally speaking the best way to approach paintwork correction is to **begin with a small working area** to keep the work manageable. When working a section, be sure to achieve even coverage, **overlapping each pass**, as seen in the diagram:



So, per the diagram, once you've moved the buffer over the full working area with horizontal passes, you've completed one "**section pass**". Then, move the buffer over the area with vertical passes. This will be your second "section pass".

Continue until your desired results are achieved — generally this will be anywhere from **5-7 section passes**. When you complete your section passes in the first working area, **use a powerful LED light and a soft microfiber towel to wipe away the remaining product and inspect the results**. If the desired results were achieved, move on! If not, regroup and try again.

Do not skip this step.

Otherwise, you could tackle the entire vehicle only to discover the swirls are still there when you're done!

OPTIMIZING COATING APPLICATION FOR DURABILITY

Now for the part we've been prepping for this whole time — **protecting the primed and corrected paintwork with a durable ceramic nanocoating**.

If you had corrected the paintwork with a polish or compound, at this point you would need to remove any residue remaining from the surface. Otherwise, like we said earlier, the coating may not bond correctly. Thankfully that's not the case!

If you did for whatever reason use a polish or compound with organic residue, **do not use an isopropyl alcohol (IPA) dilution to remove**. IPA, while effective in a pinch, is not entirely reliable for removing this sort of contaminant. Instead, use a dedicated solution like **Dr. Beasley's Panel Prime**.

OPTIMIZING COATING APPLICATION FOR DURABILITY

Now let's talk about ceramic coatings themselves. Because we emphasize protection so strongly, our ceramic coatings are engineered with durability in mind. Flexible durability, specifically — we've found through testing that **coating flexibility has a stronger correlation with scratch resistance than hardness**.

Dr. Beasley's Nano-Resin Pro, for example, features a thick, elastomer-based nanostructure that has incredible longevity and even self-heals fine scratches. **Once the coating is applied, cured and bonded to the finish, protection becomes largely a matter of maintenance**.

But what if you used a one-step primer, such as NSP Z1? Because Z1 integrates protection, priming and correction into a single step, following with additional protection is not necessary.

OPTIMIZING COATING MAINTENANCE FOR DURABILITY

A well-engineered coating that's maintained regularly can last for decades on end. Keep the coating in good enough condition and it's possible your clear coat will never see a buffer again in its life.

From a preservation standpoint, there's nothing better than that! **So what does maintenance look like?** We've got another e-book on the subject, if you're interested. But for the most part it comes down to regular washing, vigilant spot cleaning, quarterly reinforcement treatments and thorough annual inspections.

CONCLUDING THOUGHTS

We've written this guide not to say that others are approaching paintwork correction incorrectly, or that certain products are not effective. Instead we hope to show that **protection focused correction preserves the health of the vehicle to the greatest degree**.

Do you have questions about the Dr. Beasley's protection-focused approach?

Want to share your own tips towards achieving a more durable finish?

Contact us by phone or by e-mail:

(773) 404-1600
myteam@drbeasleys.com

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