

Auto Polishing – The Basics

Paint Types

- **Enamel** Early Enamel Paints from Autos coming on the scene

Early enamel paints were comprised of pigment, varnishes and solvents and were applied by brushes and later with spray guns. This paint generally has a very thick paint layer due to the high viscosity of the paint when applied. Scratches can be removed as long as the painted layer is not compromised.

- **Lacquer** 1950's to 1970's

Lacquer paints were pigments, vehicles and solvents and were designed to be sprayed and were much thinner and had a thinner viscosity and were usually applied in several coats to build up the paint layer required to get the hiding quality needed to achieve the end colour. Show Cars of the Day would sometimes get 40 coats of lacquer that was hand sanded after every few coats to achieve a glass smooth finish. Lacquer generally developed cracks and shrink issues after several years after the application. Scratches can be removed providing they have not exceeded the depth of the colour coated layer.

- **Single Stage Acrylic Enamel** 1960's to 1980's

Acrylic Enamel paint was applied by spray gun and generally had 3 coats of paint applied giving it the Single Stage name as it was one paint used to achieve the finished look. Based on Pigments, acrylic vehicles and Solvents it can produce an excellent and durable long lasting finish. As only one step was used the application had to be very accurate and required an excellent painter to achieve a show quality finish. Generally wet sanding was required to get a flawless finish. Minor scratches can be removed as long as they are not so deep as have reached the primer layer under the painted colour coat.

- **Base Coat Clear Coat** late 1980's to present

After primer is applied the Colour Coat is applied and it dries to a dull finish which has been formulated to represent the finished colour of the goal colour. After curing time the base colour is over coated with 3 Coats of Clear which gives the finished paint a high gloss finish. It also protects the base colour to some degree against permanent marring of the finish. If the scratch has gone deep enough to reach the base coat it cannot be polished out.

Determining Paint Type

Before polishing a simple way to determine the paint type is

- If original paint the year of the vehicle is a good starting point
- If repainted find and area that is not visible (behind the bumper etc.) take some Paint Correcting Polish or Blue Polishing compound and a Microfiber Cloth and apply some product to the cloth and with light pressure rub the paint.
- If it is lacquer, single Stage Enamel or Acrylic Enamel you should see some of the paint colour transferred to the cloth. This is also true of when the polisher is used the paint colour will transfer to the polishing pad.
- If the rub test is conducted and no colour is detected on the cloth it indicates it is Base Coat Clear Coats as the top layer of paint is clear and will not transfer any colour to the cloth or the polishing pad when contacting the painted surface.

Damaging the Paint - Surface Polishing Methods

Rotary Polishers

- Rotary Polishers have been used for years to polish the finished painted surface and with the proper level of expertise can produce an excellent finish. However without years of experience it is very easy to damage the painted surface. Rotary polishers develop a lot of heat during the polishing process which can damage the paint by Burning the paint from the surface of the cars body. To remove deep scratches a professional using a rotary can take the paint to the melting point and actually move it into the deep scratch and correcting the defect. During this delicate process it takes only a few seconds for the paint to burn and be completely removed from the surface you are trying to correct.
- Rotary Polisher also generates circular patterns from the pads used as they spin or rotate in a circular motion and replicates this pattern on the painted surface. These circles are called Swirls or Holograms and can be easily seen on a painted surface in the Sun particularly on Black or Dark Colours of automotive Finish.
- With a Rotary polisher it is extremely dangerous to polish over gaps or edges as there is less paint on the high spots in a panel or edge.

Random Orbital Polishers

A Random Orbital Polisher has no specific pattern and that eliminates the source of Swirls and Holograms in the paint finish.

Due to the motion of the polishing pad it does not generate heat to anywhere the same degree and almost removes the problem of burning through the paint as well.

As there is far less heat in the process polishing over edges and on the crown of a fender while not recommended for a Rotary Polisher is very acceptable for the Random Orbital Polisher with no masking tape required.

The Random Orbital polisher does not through polish like the Rotary either making the need for masking removed and makes for a much cleaner job and no polish being thrown onto unwanted areas of the vehicle being polished.

The Random Orbital Polishing process is much easier, quieter and less strain on wrists, hands etc.

Polishing Process

- Wash Vehicle to remove any accumulated foreign material from the paint
- Detail Spray and Clay Bar to remove imbedded particulate from the paint
- Test Section – select and area that is typical of the worst area on the vehicle
- Using a Blue Foam Pad and Blue Compound and some detail spray dab the pad on the area to be corrected. With the polishing pad flat and contacting the paint start the machine at speed #3 and slowly move the polisher to spread the polish over a 2 foot square area. Once the polish is spread increase the speed to #5 and with about 2 lbs downward on pressure on the polisher make slow passes over the painted area making the image in the polish spacing be about $\frac{1}{4}$ inch apart. Once one pass of the area has been completed move the polisher $\frac{1}{2}$ the width of the pad with a $\frac{1}{2}$ pad overlap of the completed area and continue. Once the polishing is completed polish the same area with a crosshatch pattern at 90 Degrees from the first passes. Continue until the polish becomes transparent and remove with a clean MF Towel.
- Change to a White Flat Profile Foam Pad and repeat with the Finishing Polish the same process as with the compound and remove the residue from the paint.
- Using a Low Angle Light Source look at the paint and evaluate the level of scratches that have been removed. If there are still scratches visible ‘Start with the Blue Compound and repeat.
- Evaluate the Surface and the level of Correcting to get to the finish you need.
- If satisfied then choose to either use Liquid Paint Sealant, Buttery Wax, Paste Wax, Ceramic Boost or Ceramic Liquid Polish or Ceramic Coating.
- It is very important to polish a test section to use as the basis for the entire job. If you select an area that represents the most damaged area on the paint it will let you know what it will take to remove the worst areas on the entire vehicle.
- Different vehicle manufacturers use a variety of different paint companies and paint types when finishing their vehicles and each one has its own characteristics and by running a test you can also learn what kind of pad or polishing product that will work best for that particular paint.

How do you fix orange peel?

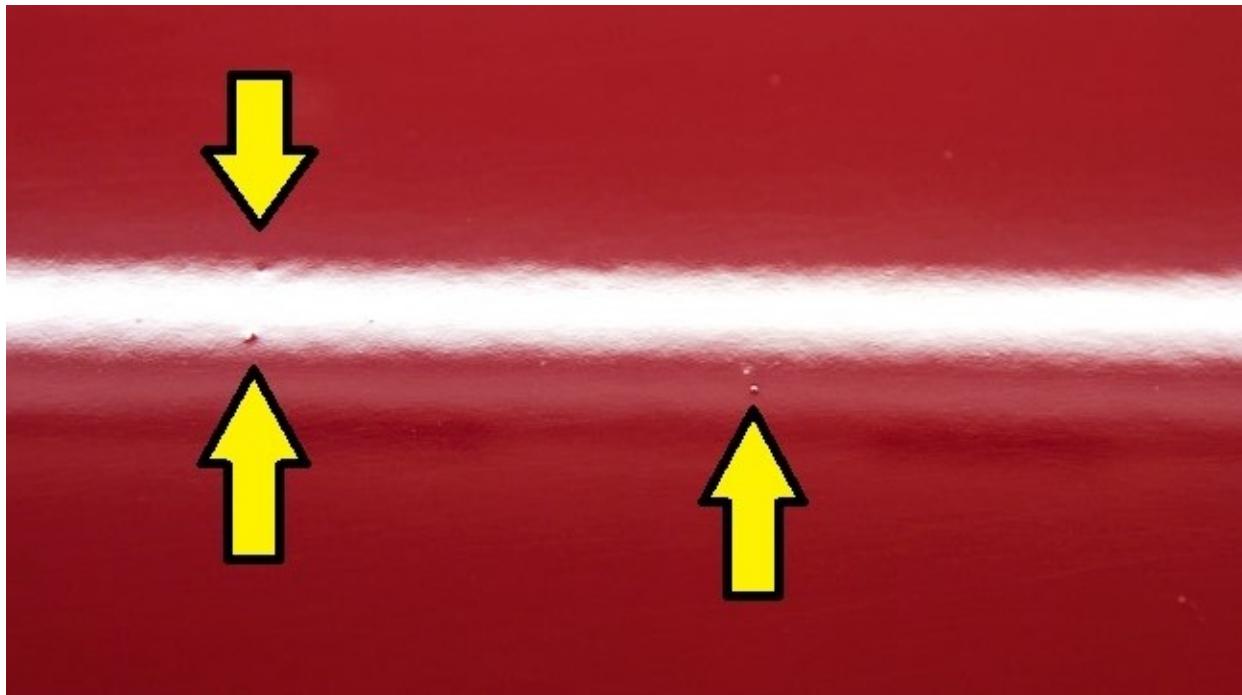
You need to wet sand if the orange peel is bad enough. Sherwin Williams (and Dr. Beasley's, for that matter) recommends starting with a [medium polish](#) to see if you can address the problem without being too abrasive at first. If that doesn't work, you should progressively get more aggressive as needed.

Wet sanding, of course, is the dive-right-in approach that is most commonly used, but this makes my teeth cringe. Basically you wet the surface and the sandpaper, and diminish the clear coat until the surface is smooth. Then you follow with a polishing procedure to further smooth out the scratches you have created with the sandpaper. Because correction is an abrasive process in which you are removing microns of clear coat, in no way does this restore the finish to factory quality or thickness.

If you want orange peel gone for good and your finish restored to factory-like condition (with a full clear coat), the area will have to be repainted. Hopefully it'll be by someone with enough knowledge to ensure orange peel isn't created a second time.



Dirt in Paint from Paint Booth



Typical Lacquer aged cracking

Solvent Popping

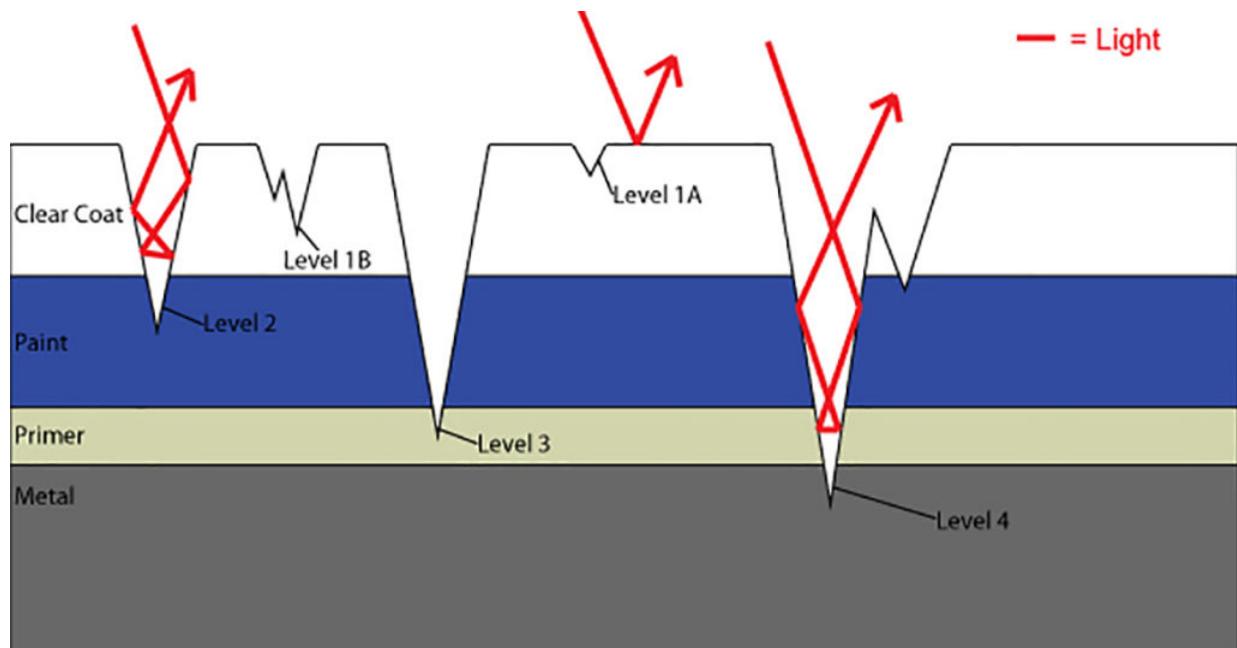


This cannot be corrected by polishing as the defect goes to the primer level and cannot be polished out.



If you can feel the scratch with your fingernail you will not be able to remove it by polishing as it has too deep as it has gone through the Clear and the Base Coat to the primer level.

Illustration of Scratch Depth in Paint



Buffer Holograms and Buffer Trails





Trunk Lid with swirls and Rotary Buffer Marks



Rear Fender Scratches and Burn Through – Rotary Polisher



Polished trunk Lid with Random Orbital Polisher



Polished Fender with Random Orbital Polisher – Adams PCP