

TECHNICAL Feature



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Color Sand and Buff EXPLAINED

In this month's article, we will attempt to explain the process of buffing and polishing a refinished vehicle and explore some of the misinterpretations and misconceptions that go along with that process. First, we would like to explain that this article is not intended to teach the procedures on how to buff and polish a vehicle's finish. The purpose of this feature is to explain those procedures and processes that are used for writing an accurate damage report (estimate).

Buffing utilizes a multi-step paint polish or compound (generally an abrasive lotion or cream) used to remove small amounts of the clear coat or paint's surface. The cutting ability (grit rating) of the polish/compound will determine the amount of surface material removed with each hand stroke or each revolution of a buffer, as well as the final appearance of the finish. A fine polish will create a bright, smooth and glass-like finish; conversely, a coarse polish may cloud the finish surface. Polish is designed for a specific purpose, such as repairing, cleaning or refining a surface, and can be applied by hand, machine or in combination.

Let's look at some of the products used for buffing. (These definitions will be added to www.collisionpedia.org in the near future.):

Abrasive paper: Ultra-fine grades of sandpaper (1,000 to 3,000-grit) are used to level the paint's finish and remove imperfections. General recommendations are to start with the least-aggressive grit and work your way up to finer grits. Generally, start with 1,500 and then move to 2,000, then 2,500, finishing with 3000-grit paper. Keep in mind that it is next to impossible to remove all of the surface texture (orange peel) without breaching the clear coat. Orange peel is created and controlled in the spraybooth during the painting and clear-coating process. It is important to remember that some OEMs produce a near-flat surface with little to no variations in texture (orange peel), while others will produce a very textured surface. It is important that the refinish technician applies the coatings correctly to obtain the best matching texture.

Fresh Water: Water is used as a lubricant for the sandpaper and polish; additionally, it is used to wash away any sludge created during sanding. The water should be supplied from a hose or squeeze-type or spray-type bottle, as using a bucket may cause particles removed from the vehicle surface or particles in the bucket to be accidentally re-applied to the painted surface during the rinsing process.

Compound: Compound, generally called rubbing or buffing compound, is a cutting polish designed to remove heavy oxidation, some common forms of light surface damage, paint defects and the light scratches created by fine sandpaper. Fifteen to 20 years ago when we were still applying lacquer clear coats, compound polish was very aggressive. Remember the orange and black compound? This type of compound would abrade today's urethane clear coats too deeply and most likely ruin the paint finish. Today's compounds are generally mild to medium grit and designed not to abrade the surface too deeply. If used properly, the compounds will not damage the clear coat.

Polish: This is a specially-formulated blend of components designed to remove minor scratches, surface imperfections, water spots, acid rain spots, light oxidation and the swirl marks created by compounding with a machine. Polish is applied after compounding (buffing) freshly-refinished panels, generally to remove swirl marks and leave a glossy or high-shine appearance.

Glaze: Glaze is a very fine polish. Most glazes in a body shop are safe to use on fresh paint, as they do not create a barrier or seal over the finish. Glazes that seal will suffocate the paint, causing dulling of the finish. A glaze does not have enough cutting power to remove imperfections, but will increase surface gloss. Generally, glaze is applied after compounding and polishing either by hand or machine.

Pre-wax cleaner: This polish contains chemical cleaners to help remove minor surface contamination and dirt not handled by normal washing or claying; it should not be used on freshly refinished surfaces. Pre-wax cleaner should be used on adjacent non-refinished panels prior to the application of a hand glaze or wax to those panels.

Wax: Generally, specially-formulated microencapsulated polymers that form a chemical bond to protect the vehicle's surface. Wax should never be applied to freshly-painted surfaces, as it will suffocate the finish. Paint manufacturers will provide a specified amount of time before the refinished components may be waxed. Generally, this wait time will be 60 to 90 days after refinishing. Wax should be applied to adjacent non-refinished panels.

Detailing clay: Detailing clay is an abrasive suspended in a clay or elastic-based soft, pliable block. Its purpose is to remove particles from the paint's surface, but not from the paint itself. Most collision repairers utilize clay to either detail or to remove light surface overspray from adjacent non-refinished panels prior to waxing.

Damage assessors must understand that it is unlikely that a refinish repair can be performed that would be completely free of surface defects. Defects occur at the OEM level during the painting process of the vehicle, and will generally occur at the collision repair facility as well. OEMs anticipate defects and utilize high-intensity lighting to detect flaws during the quality-checking process after the vehicle is

painted. When defects are located, they are finesse polished from the surface. In some rare cases, if the defects are severe, the vehicle may be rejected after repair attempts and sent back to be refinished. OEMs are less susceptible to defects and flaws because they paint clean body shells in dedicated, highly environmentally-controlled and specialized paint facilities with advanced air filtration systems. Another process utilized to reduce defects and flaws is robotic applications of the paint material. Although some select high-end exotic vehicles are still manually painted, the spray areas are highly controlled for foreign particles.

Remember, OEMs are painting vehicles that have never been exposed to the roadways and elements. Try to remember that OEMs paint vehicles (first-time application), and collision repair facilities are generally repainting vehicles which have dirt embedded into hard-to-access crevices. Another issue is the chemical difference between OEM and aftermarket (collision repair) paint products. Many OEMs are utilizing a power-coating process for color application with a 1K or one-part clear coat that is cured through a baking process at or above temperatures of 250°F. Conversely, collision repairers are using either urethane or waterborne color coats and 2K or two-part clear coats that cure at temperatures at or below 140°F. Buffing and polishing finish defects are a normal and necessary operation for both the OEM and collision repair facilities. Additionally, buffing and polishing refinished components adds to the overall visual appearance of the finish and assists in making adjacent non-refinished components appear to have the same shine and luster of the freshly-refinished components.

All three of the database system providers explain the calculations for the sanding and buffing process in a similar manner. Let's look at their definitions and calculations.

The following is taken directly from the P-Pages obtained through the Database Enhancement Gateway via www.degweb.org:

Audatex: Color sand and buff can be estimated at 30 percent of the Audatex single-stage refinish labor (not including final wash and detailing). This process, which may or may not be required, is defined as wet sanding the entire panel by compounding buffing and mechanical or hand polishing. Color sand and buff is further defined as all of the above steps performed to the finished surface for any reason, plus cleanup.

Audatex: Nib Sanding/De-nib is defined as the removal of isolated dirt and dust particles, and polishing the affected area(s). Audatex's formula for Color Sand and Buff does not apply to this operation. Additional steps of processes that may be required should be considered during the estimate preparation.

Mitchell: Finish Sand & Buff. A labor time formula is provided should it be necessary to perform this operation. This procedure included the removal of orange peel and any blemishes that affect paint texture in order to produce a smooth finish to the entire panel surface. This process is not limited to "nib sanding" or "finessing," which is the

removal of isolated dirt/dust particles only. The performance of this operation is NOT INCLUDED in the Mitchell refinish labor time. The finish sand and buff formula is intended to be calculated as a percentage of the base refinish hours excluding overlap and clear coat. It DOES NOT APPLY to edges, jams and undersides. For blended panels, the formula should be applied to the full panel refinish time. No deduction for refinish overlap should be taken. Finish sand and buff outside surface area(s): Allow 0.3 per refinish hour (30 percent) to finish buff each surface area(s).

Mitchell: De-nib & Finesse. A labor time formula is provided should it be necessary to perform this operation. This procedure includes the removal of small isolated dust particles (nibs) and the application of a finishing glaze. The performance of this operation is **NOT INCLUDED** in the Mitchell refinish labor time. The de-nib and finesse formula is intended to be calculated as a percentage of the base refinish hours excluding overlap and clear coat. It **DOES NOT APPLY** to edges, jams and undersides. For blended panels, the formula should be applied to the full panel refinish time. No deduction for refinish overlap should be taken. De-nib and finesse outside surface area(s): Allow 0.2 per refinish hour (20 percent) to de-nib and finesse each surface area(s).

MOTOR: Wet/Dry Sand, Rub-Out & Buff. **SPECIAL NOTATION:** Refinished panels may or may not require a varying amount of wet sanding, compound rub-out or buffing operations in order to match original finish texture. The clear coat contains ultraviolet screeners and reducing the clear coat thickness (mils) may result in early paint failure. Follow manufacturer's recommendations when performing this type of repair. Calculations should be based upon the outer surface only and should not include additions for clear coat, underside, inside or edges. Base refinish time does not include deduction for refinish overlap. (In the event that this type of operation will be performed, MOTOR suggests the following formula be considered:

Refinished panels may or may not require a varying amount of wet sanding, compound rub-out or buffing operations. In the event this type of operation will be performed, MOTOR suggests the following formula be considered.

Each panel requiring wet sand, rub-out and/or buff (refinish or blend), add 30 percent of full base refinish time.)

INCLUDED: Panel outer surface only, wet sand full panel as required, compound, buff and/or polish as required.

DOES NOT INCLUDE: Acid rain damage, overspray removal, removal of residual material from recessed edges and jams if required, wash, clean, wax or detail entire vehicle prior to delivery if required.

MOTOR: De-nib & Polish. **SPECIAL NOTATION:** Refinished panels may or may not require a varying amount of de-nibbing, a process

used to remove small particles in final finish surface. The clear coat contains ultraviolet screeners and reducing the clear coat thickness (mils) may result in early paint failure. Follow vehicle manufacturer's recommendations when performing this type of repair. Calculations should be based upon the base refinish time outer surface only and should not include additions for clear coat, underside, inside or edges. In the event that this type of operation will be performed, MOTOR suggests the following formula be considered:

Each panel requiring de-nibbing (refinish or blend):

HOOD, ROOF, TRUNK LID, SPOILER

First panel add up to 20 percent of full base refinish time, each additional panel add up to 10 percent.

FENDER, DOOR, QUARTER PANEL, BUMPER COVER

First panel, add up to 10 percent of full base refinish time, each additional panel add up to five percent.

INCLUDED: Panel outer surface only, Paint nib removal as required (spot only), Spot polish only.

DOES NOT INCLUDE: Acid rain damage, full panel polish, overspray removal, removal of residual material from recessed edges and jambs if required, scratch damage, wash, clean, wax or detail entire vehicle prior to delivery if required, wet sand full panel.

Audatex, Mitchell and Motor all calculate color sand and buff as 30 percent of the base refinish hours for refinished and blended panels. Conversely, Audatex defines Nib/Sanding but provides no calculation for the process. Mitchell defines De-nib and Finesse and provides a calculation as 20 percent of the base refinish hours with the application of a finishing glaze. Mitchell defines De-nib and Polish and provides a specific calculation with basically a deduction for overlap. But Mitchell does define that the calculation is only for spot polishing. As you can see, this can be confusing and open to a lot of interpretation based on the definitions versus the actual procedures that may be required.

CONCLUSION

As we all know, no shop "spot buffs" a panel, and there should be no reason to fully sand a panel flat if you keep your booth cleaned, maintain your filters and follow the proper refinishing procedures – unless you are refinishing a high-end exotic vehicle. After some careful consideration and time test studies, we have concluded the following definitions and equations for De-nib, Buff, Glaze and Polish procedures:

Definitions:

De-nib: The removal of isolated dirt and dust particles (nibs) with ultra-fine sandpaper, buffing the affected area(s) and machine glazing the entire panel(s).

Included Procedures:

- Panel outer surface only
- Paint nib removal as required (spot only)
- Spot buffing only
- Machine glaze entire panel(s)

Not Included Procedures:

- Acid rain damage
- Full panel hand polish
- Overspray removal
- Removal of residual material from recessed edges and jambs, if required
- Buffing of recessed edges, jambs and undersides
- Scratch damage
- Wash, clean, wax or detail entire vehicle prior to delivery, if required.
- Wet sand full panel, if required (calculation would then be 30 percent of refinish hours)

Buff: The application of a rubbing compound and spot polishing of the compound with a machine for the removal of ultra-fine sandpaper scratches.

Glaze: The application of a fine polish with a machine for the purpose to remove swirl marks and increase surface gloss and shine to outer buffed surfaces.

Polish: The application of a very fine polish by hand for the purpose to increase surface gloss, shine and sheen to outer surfaces, inside edges, jambs and undersides.

SPECIAL NOTATION: Refinished panels may or may not require a varying amount of de-nib. The clear coat contains ultraviolet screeners, and reducing the clear coat thickness (mils) may result in early paint failure. Follow vehicle and/or paint manufacturer's recommendations when performing this type of repair. Calculations should be based upon the full base refinish time for refinished and/or blended outer surface(s) only and should not include additions for clear coat, underside, inside or edges. No deduction for refinish overlap should be taken. In the event that this type of operation will be performed, we suggest the following formula be considered:

De-nib, buff and panel machine glaze outside surface

area(s): Allow 0.25 per refinish hour (25 percent) for each refinished and/or blend surface area(s). For inside surfaces, jambs and undersides, allow 0.1 per refinish hour (10 percent).

Hand polish of panel(s): Allow 0.2 hours of labor (12 minutes) per panel.

Buff and Machine Polish adjacent non-refinished panel(s): Allow 0.2 hours of labor (12 minutes) per panel. Hand polish is not included.

We hope this article has helped the industry to better understand the definitions and procedures for buffing and polishing vehicles. Feel free to contact us if you have any questions.



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Executive Director's Thoughts

Understanding processes and procedures (as well as definitions for operations like the ones discussed in this feature) is the key to writing more accurate estimates. We appreciate the detail that Larry and Jeff go into in helping our industry comprehend how to correlate operations to estimating.

- Jordan Hendler

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