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Color Match 101
Removing Variables for the Best Paint Job

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ST. PAUL, MN -- It may seem a bit odd for 3M to have a voice in an area that tends to receive ample input from all of the major paint companies. However, if we take a step back, it's easy to see that 3M touches the repair at every step prior to and after the painting process. This unique perspective has allowed 3M to objectively observe the day-to-day challenges that are facing today's paint departments.

In reviewing the current color match process, a battery of variant decks, sprayout cards, standard operating procedures, and opinions tend to influence how painters determine the best color to match the vehicle to be painted. Other outside influences also complicate the color match process, like previous repairs, blending within a panel, the OEM use of more vibrant colors, plastic and metal panels looking different, and the large number of variants due to color shift further. In addition, the large increase in the number of shops using a waterborne coating has eliminated the old "stick check" that many painters used during the beginning of their tinting process.

Each time a painter makes a sprayout card they create for themselves the best depiction of the paint formula selected. Some painters spray with low pressure, others prefer high pressure, some painters choose fast solvents while others lean towards slower solvents. All of these factors can lead to subtle color shift changes that may result in a difference in the variant chip selected versus the actual color sprayed. Additionally, not every color has a color chip, thus creating a need for painters to make their own "color chip" or sprayout card.

Five Tips from a Paint Pro on Achieving the Perfect Color Match

- Establish a proper light source
- Remove oxidation from the panel to be matched
- Create a well-documented sprayout card library
- Get a smarter sprayout card
- Establishing "best practices" is a must

The importance of this was illustrated to me a number of years ago. One of my body shop customers was experiencing terrible color match issues. During the exploration process we looked at all the usual causes – mis-mixes, old toners, application technique, among others. To try and eliminate variables, a new set of toners were installed but color match problems continued. A new painter was introduced into the mix as the previous painter had some health concerns that required a few months away from the shop. Interestingly enough, the color match problems went away. What was the silver bullet? He established a best practice for matching colors.

The new painter told me he worked smart not hard: He looked at the all the reasons colors do not match and worked to manage all the variables within his control. The light source he used in comparing colors was critical to his success. He also focused on matching to the correct panel, and not a panel on the opposite end of the car. Many times a painter will go to the back of the car to plaque a color because the front, the area they are painting, is all masked off. As simple as this sounds, many times a vehicle does not match panel to panel due to previous repairs, fading or other issues. He also shared that he had made it a habit to polish the area he will be matching to remove any oxidation as that obviously can affect the appearance of the color. Again, he had said the key to color match was removing as many of variables as he could to identify the correct color.

As any painter will attest, color match can be the toughest part of the job. The most successful painters have created a procedure that eliminates as many variables as they can. So what do they do?

Establish a proper light source: Colors, as we know, look significantly different outdoors than indoors. Making sure the painter has the ability to find a color-corrected light source for cloudy, rainy or snowy days is critical. Try to eliminate our human bias -- "If it is 20 degree below zero outside and having to plaque a color, you would be surprised how quickly a color can look great". For a variety of reasons the painter cannot depend on the sun and Mother Nature to help identify a color. Products such as a spray-booth outfitted with color correct bulbs or a 3M Sun Gun II™ Light Kit allow the painter to remove the lighting variable.

Remove oxidation from the panel to be matched: Many shops will buff-blend to minimize the appearance difference of a freshly painted panel next the existing oxidized panel. Many painters will also apply wax and grease remover to the adjacent panel when matching in lieu of taking the time to buff out the micro-scratches and haze that make color matching difficult. Even though this technique provides a glossy "look" at the color it does not provide the same appearance as a polished panel. Furthermore, the wax and grease remover can get the sprayout card wet, potentially causing other hassles as well. Using something as simple as a micro-fiber cloth and compound will remove the oxidation on the panel to be plaqued.

Create a well-documented sprayout card library: Making and keeping a sprayout card library with proper documentation, such as paint code, variant number and any tinting should be a best practice in all paint rooms. In many cases, painters will have the additional challenge of some panels having more or less paint coverage over the primer, thus shifting the color due to primer showing through the color, essentially making even regular basecoat color more like a tri-coat. Even in this case it will provide a better starting point than not having a documented color, as it will be one more variable that can be eliminated. Clearcoat should be applied to the sprayout card as the use of wax and grease remover does not allow "effect" pigments such as pearls and metallic flakes to look the same as they would when cleared. As an easy test to verify this common mis-belief, mask off half of a sprayout card and clearcoat it. After the clearcoat has dried, unmask to show the non-clearcoated portion and apply wax and grease remover. The side with clearcoat will be more vibrant and, in many colors, the side tone will appear cleaner.

Get a smarter sprayout card: When it comes to sprayout cards, the new 3M™ PPS™ Color Match Film allows the painter to apply the card directly to the panel. Think of sprayout card meets Post-it™ Note. The painter now has the ability to apply the card to the panel and view the color match from multiple angles at a distance greater than their own arm. Many times a color on a sprayout card looked great until the job was done and you could see the color at a distance. Due to the 3M PPS Color Match Film construction, it will contour and adhere to any panel, thus allowing better side-tone representation. This is especially critical when painting bumper covers. Now it will only take one person to review color- rather than one to hold the sprayout card and another to review it!

Establishing "Best Practices is a must": Science has proven we cannot accurately match color if variables are present, such as shadows and background colors. For further explanation look up the "Munker" white color illusion. It only makes sense for each painter and paint department to remove as many variables from their color matching practices as possible. For starters, create a Standard Operating Procedure that addresses a minimum of three easy to solve challenges; the availability and use of proper color corrected light source for those times when natural light is not an option, removing the oxidation from the panel prior to trying to match the color and lastly, creating a well-documented color library. As it has been said by many big hour painters - "work smarter- not harder".

For more information, contact 1-877-MMM-CARS, contact your local 3M Distributor or 3M Sales Representative or visit the website at www.3Mcollision.com. Follow 3M AAD on Facebook at www.facebook.com/3MCollision and on twitter @3M_Collision.

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Shawn Ryan has 20-plus years in the collision industry working in a variety of facets including jobber stores, small body shop, Iwata Spray Equipment and several years with PPG Industries. Currently working with 3M products and processes to improve Paint Department cycle time and profitability.