

## Do you see what I see?

**Understanding basic “COLOR GEOMETRY ” can help you choose the right variant formulas.**

**Is it possible for two people, standing side by side in front of the same vehicle, to see a completely different color? Indeed it is!**

**Here’s why:**

Automotive colors—especially metallics and pearls—are angle dependent. Viewed from different heights, these colors will change in appearance, even when using the same pair of eyes. What does this mean to refinish technicians and painters? It means that variant selection must take into account something called “color geometry.” Color geometry is a fancy term for a simple concept: what you see depends upon the position from which you see it relative to the direction of the light source. Successful painters and technicians use their knowledge of color geometry to choose the best variant formula. In color geometry, the various angles or perspectives for viewing color are described with specific terms:

**Flash, Face and Flop.**

**Flash** is the viewing angle that is just off the reflection of the light source or gloss angle.

**Face** is the viewing angle that is roughly 45 degrees back from the reflection of the light source or gloss angle.

**Flop** is the viewing angle far away from the reflection of the light source or gloss angle roughly between 75 to 105 degrees off gloss.

The easiest way to know what angle you are seeing is to locate the gloss reflection and then shift your viewing angle backwards. To help refinishers select from available options, **PPG** designates variant formulas with the symbol “//” which means that the variant is best determined from the “flop perspective.” A variant description of //D means that the formula has a darker flop than prime; a designation of //L means lighter flop. In order to choose the most accurate variant chip or formula, you need to view the panel and variant chip using proper comparison techniques. In most cases, this means using a strong light source, like a 3M™ PPS™ Sun Gun™ or other natural light simulator, and comparing the variant chip(s) at the right angle. If you are a particularly tall person, you may need to move closer to the vehicle to view the color from the right perspective. It’s even possible to have differences in color depending upon where the vehicle repair is located. When the sun strikes the hood of the car, it will look differently than when it strikes a side panel.

Imagine it’s late morning, the sun is at your back and you are facing the side of a new Transition Blue Malibu with a damaged rear quarter panel. You have aligned yourself perfectly to our viewing geometry .

What you will see are three different “colors”—a blue-gray cast on the flop, a gray-silver cast on the face, and a bronze cast on the flash.

PPG’s variant descriptors provide the ability to “visualize” the color: (R//D) would indicate a redder face and darker flop; (Y//L) indicates a more yellow face and a lighter flop, etc. You’ll find these indicators on the chips themselves.

Once you understand the basics of color geometry, you will be able to make informed selections based on the direction of the light source, the angle at which the color is being viewed, and the color itself.

**The more accurate the color selection makes blending that much easier, which will save you time and money. And that makes geometry a course that’s definitely worth pursuing.**