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Automotive Refinish Technology
Color Tinting Study Guide

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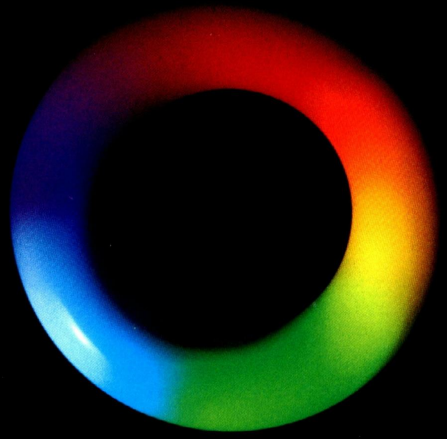


SkillsUSA, is providing this Color Tinting Study Guide to assist Automotive Refinish Technology contestants an opportunity to get familiar with the theory and tools that they will be using during the contest. Please use this study guide to your advantage, those who have a good understanding of the content within this presentation will do well during the contest.

During this competition, Safety glasses are required at all times. Not wearing your safety glasses will cost you five points. You will be allowed 1.5 hours to complete five exercises, two solid colors, two metallic colors, and one basecoat/clearcoat pearl color (not three stage). Don't rush through the exercises, you have plenty of time to complete the entire Color Tinting Competition.

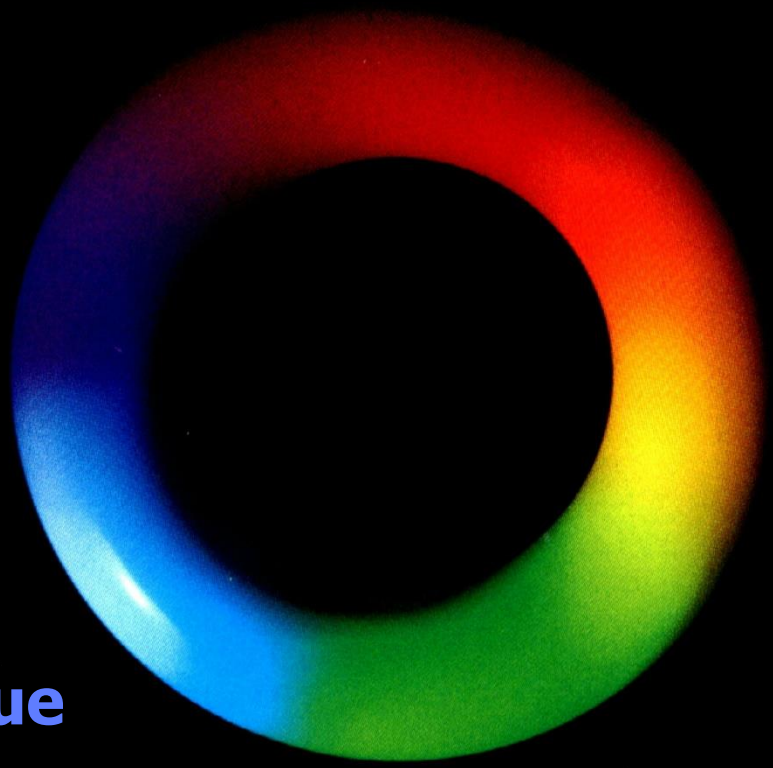
Good Luck!

When the colors of the spectrum are put into a circle the "Color Wheel" is formed.

The Color Wheel has three "Primary" colors.

Primary colors can not be made by combining other colors.

Red



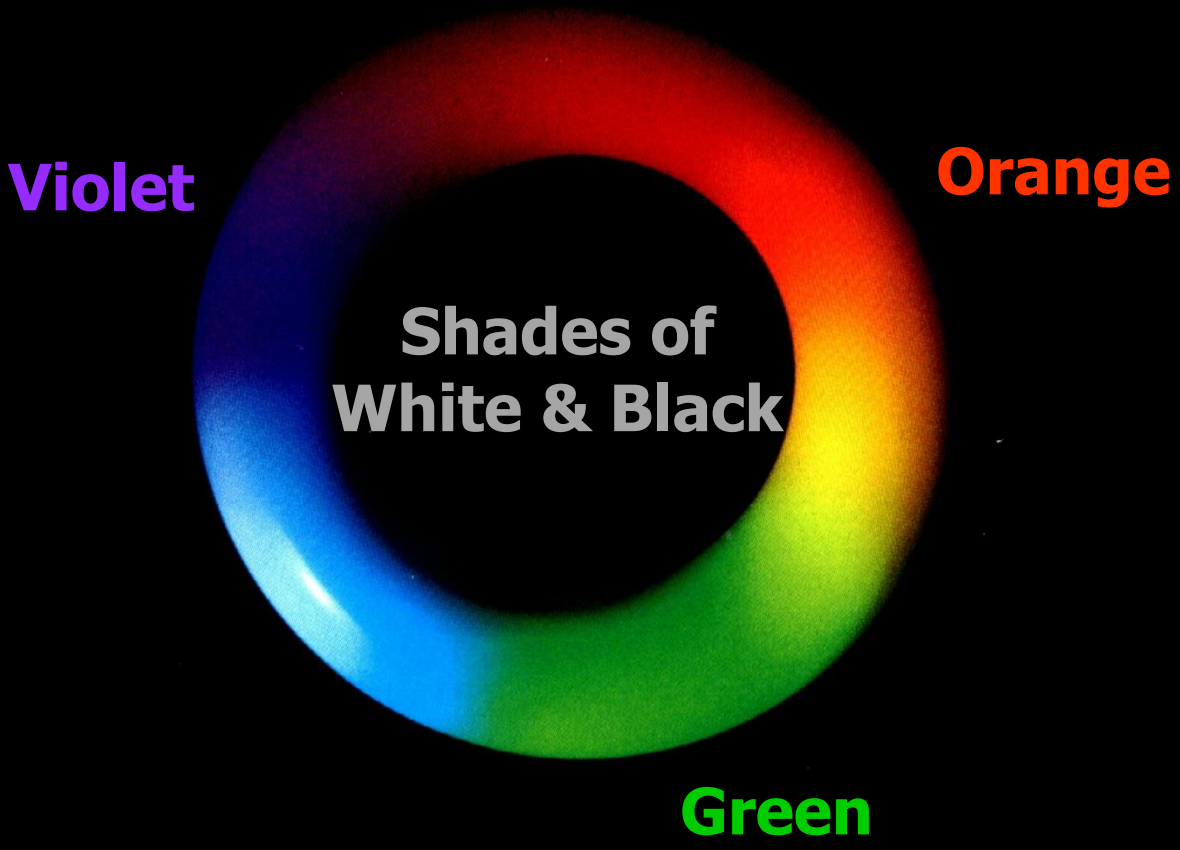
Yellow

Blue

The Color wheel also has three “Secondary” colors.

Secondary colors are made by combining primary colors.

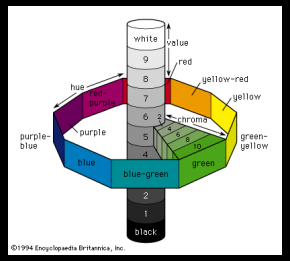
Center or Neutral colors are also possibilities.

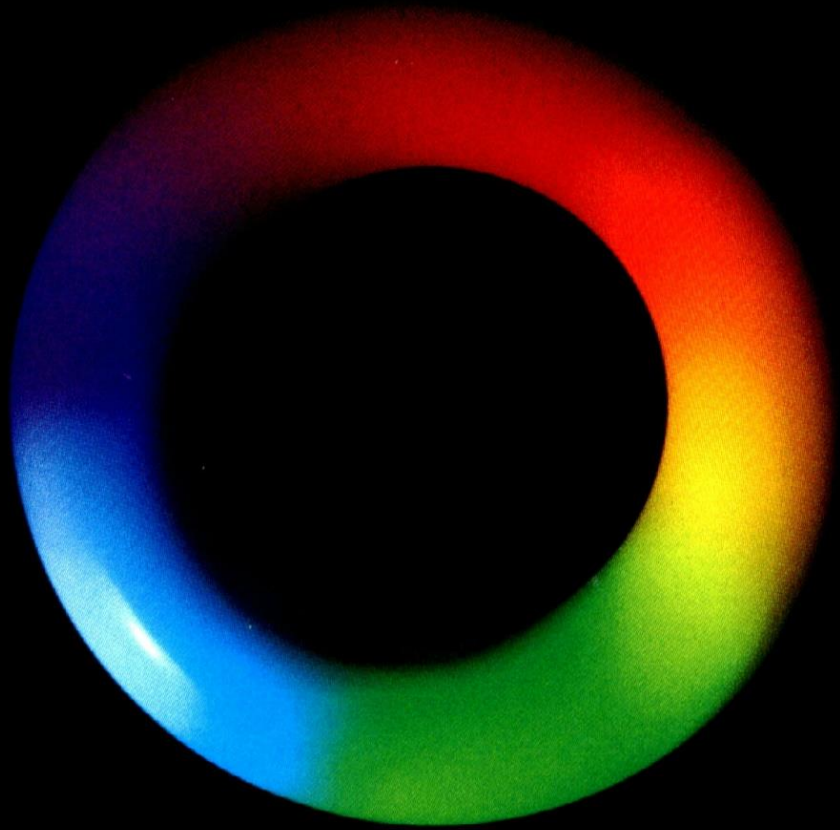


In addition to solid colors, there are also metallic and pearl colors. However, the descriptions are the same. Examples of color groups are listed:

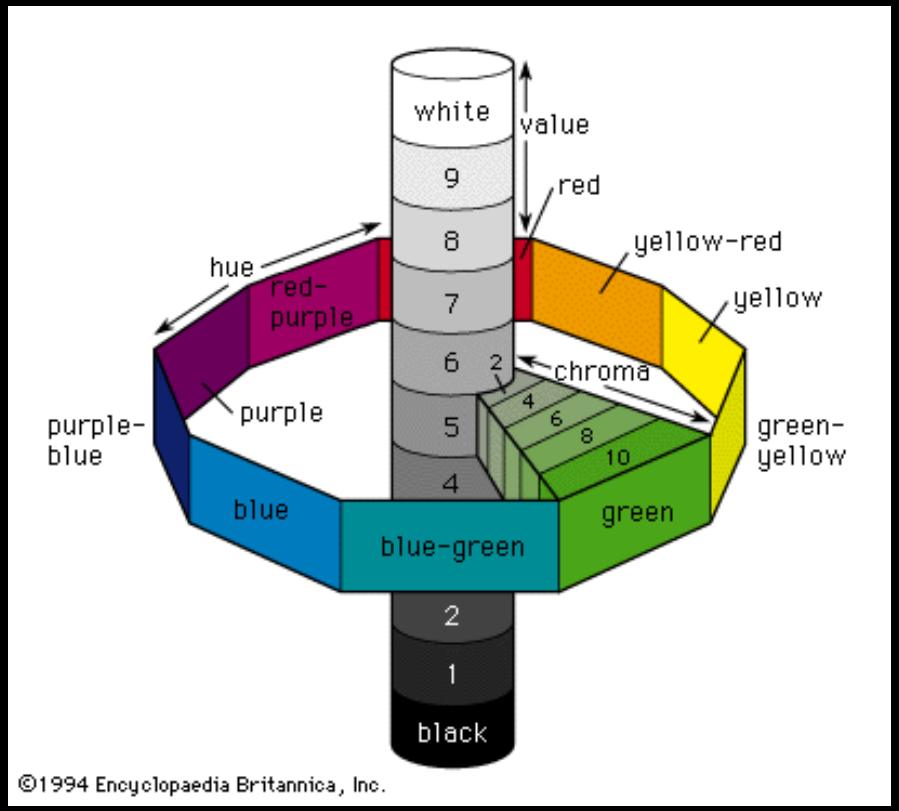
Obvious red colors are described as:	RED
Obvious orange colors are described as:	Orange
Obvious yellow colors are described as:	Yellow
Gold metallic colors are described as:	Yellow
Obvious green colors are described as:	Green
Obvious blue colors are described as	Blue
Obvious Violet colors are described as:	Violet

The other color is group known as Center or Neutral colors. Solid colors such as white, black, or gray are center/neutral colors. Metallic colors such as silver or gray are center/neutral colors.





Two dimensional color wheel to the left.
Munsell, three dimensional color wheel below.



Center/Neutral colors get their name from the location of black, white, and gray in the center of Munsell color wheel.

Color adjustment plan

Describe the differences of the sprayout and the car color.

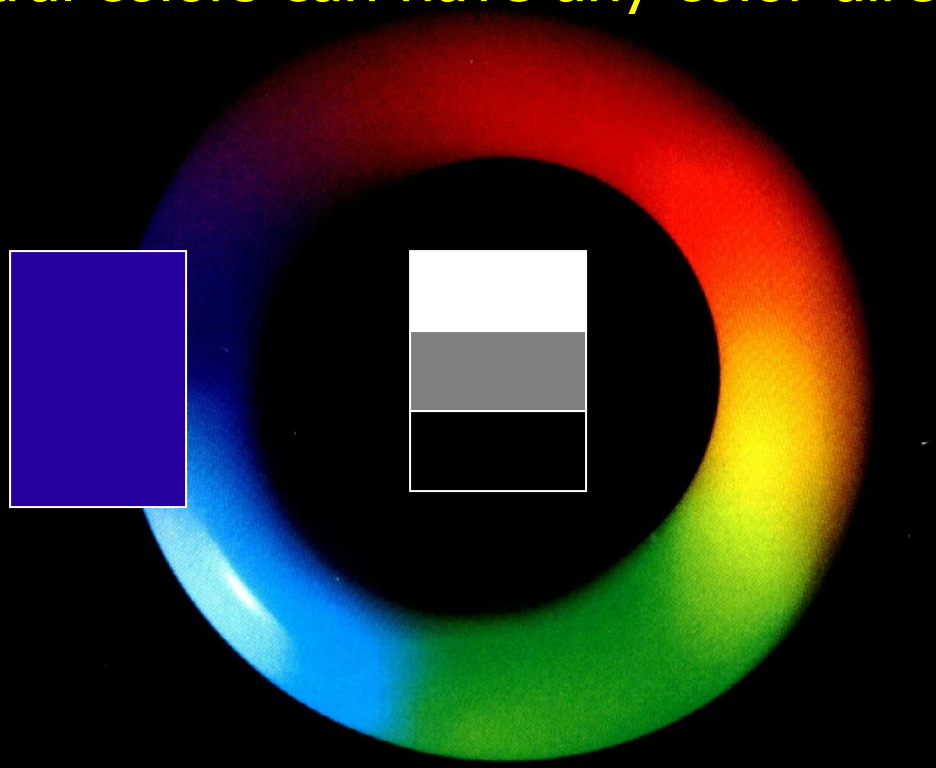
Look for possible mixing color solutions.

Choose the most probable correction.

Record the process.

There are seven color groups.

Red, Orange, Yellow, Green, Blue, Violet, and Center/Neutral.
Colors are positioned by placing them in a color group.
White Gray and Black are center/neutral colors.
Color direction or Hue is determined by the closest neighbor.
Center/Neutral colors can have any color direction/hue.

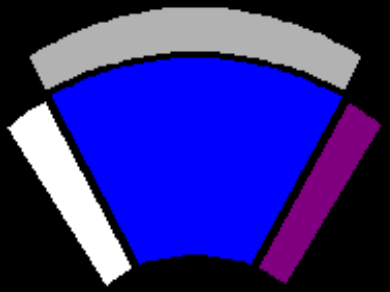


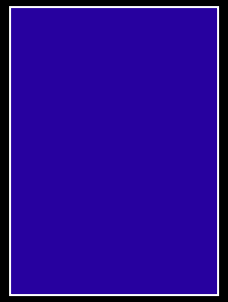
How to describe/analyze the color difference

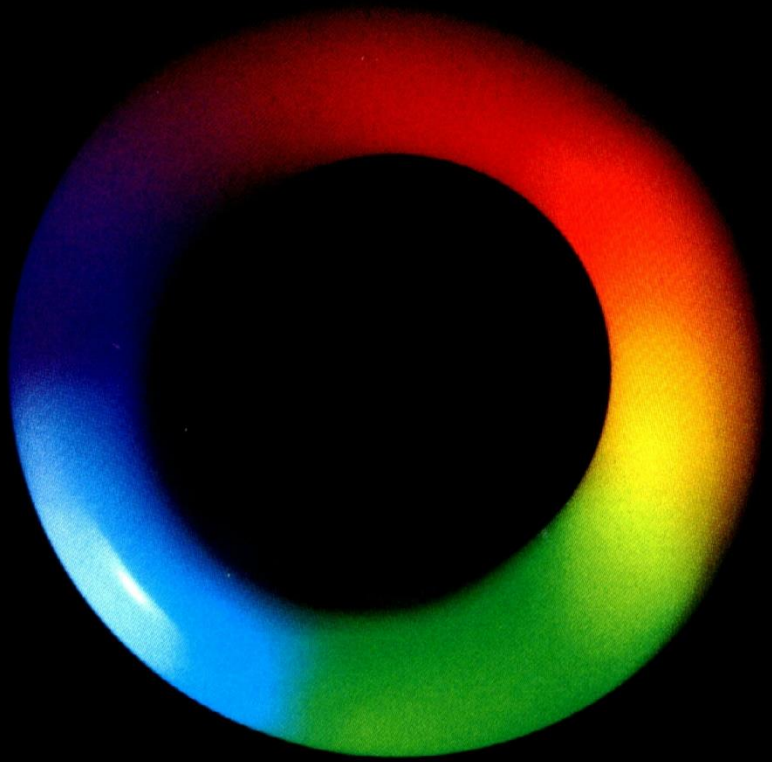
What is the color **GROUP/COLOR?** **Blue**

What is the color **DIRECTION/HUE?** **Bluer, Slightly Violet**

What is the color **PURITY/CHROMA?**

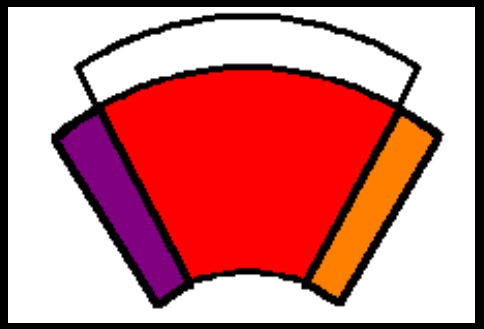






Example: The car is?

Red colors can be . . .



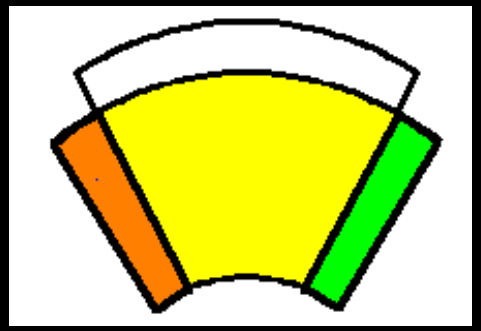
- Redder
- Redder, Slightly Bluer
- Redder, Slightly Yellower

To the Extreme
- Bluer
- Yellower

Also, is the car . . .
- Cleaner
- Slightly dirty or
- Dirty

Example: The car is?

Yellow colors can be . . .



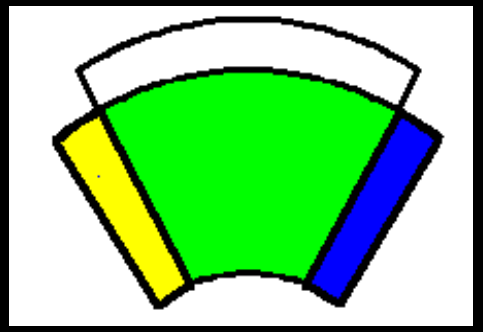
Yellower
- Yellower, Slightly Redder
- Yellower, Slightly Greener

To the extreme
- Redder
- Greener

Also, is the car . . .
- Cleaner
- Slightly dirty or
- Dirty

Example: The car is?

Green colors can be . .



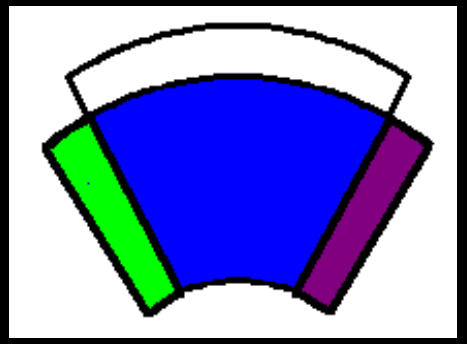
- Greener
- Greener, Slightly Yellower
- Greener, Slightly Bluer

To the extreme
- Yellower
- Bluer

Also, is the car . . .
- Cleaner
- Slightly dirty or
- Dirty

Example: The car is?

Blue colors can be . . .



- Bluer
- Bluer, Slightly Greener
- Bluer, Slightly Redder

To the extreme
- Greener
- Redder

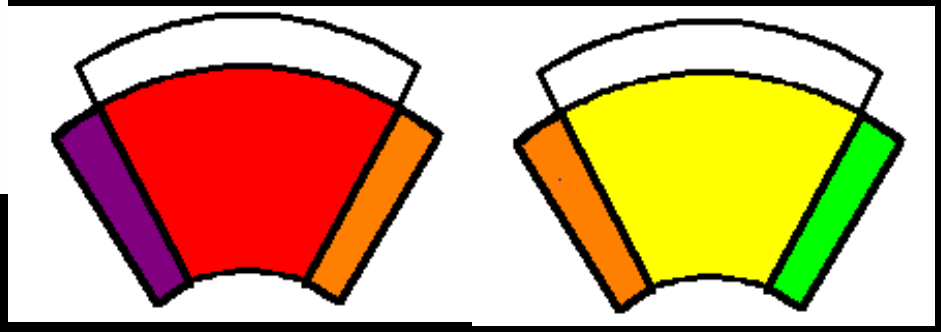
Also, is the car . . .
- Cleaner
- Slightly dirty or
- Dirty

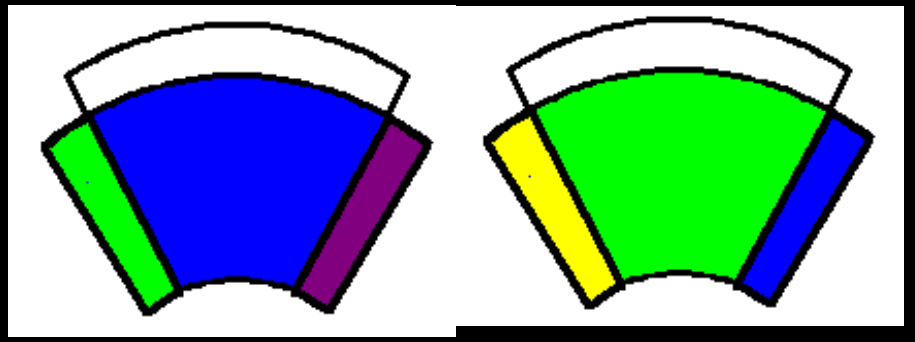
Example: The car is?

- Shades of Gray
- Shades of Brown
- Shades of Silver
- Shades of Gold

Plot these colors in a color group to better describe the color direction.

Center colors can be . . .

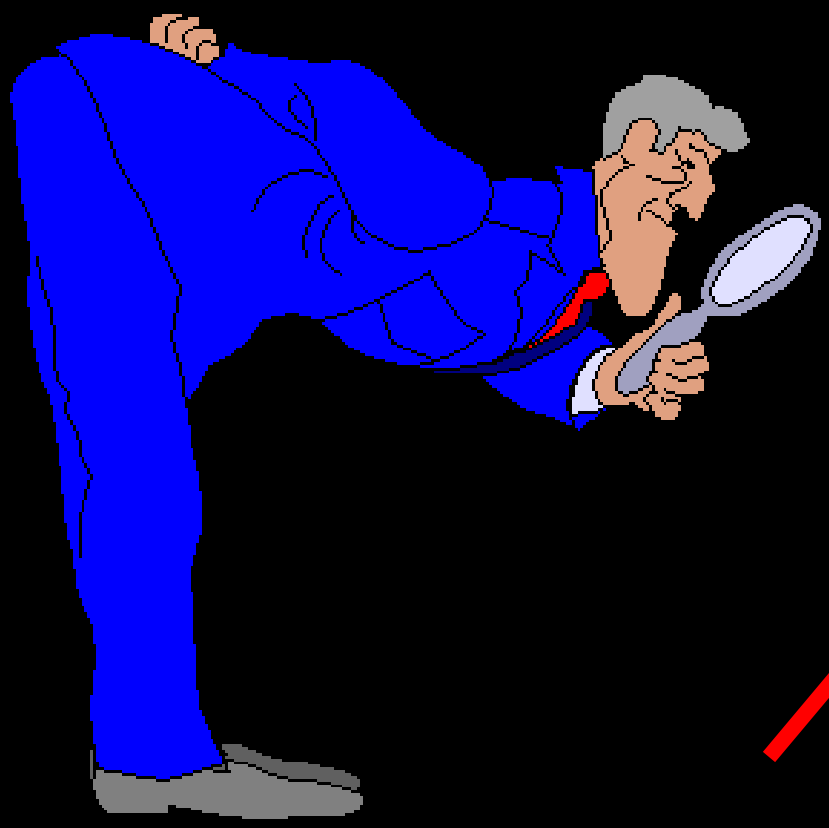




In any color group.

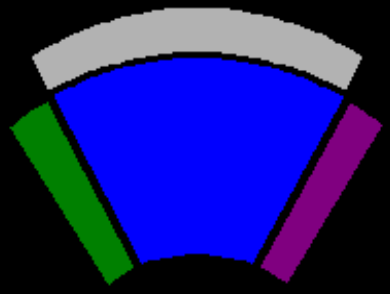
Face Tone

What we see when looking at a panel from a 90° angle.



Describe

- Color Group
- Color Direction
- Color Purity



The Mixing Color Symbol

Color Group

Color Direction

Purity / Chroma

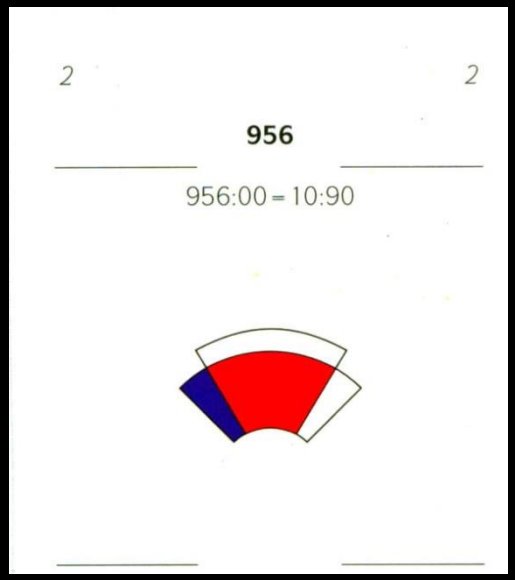
Clean

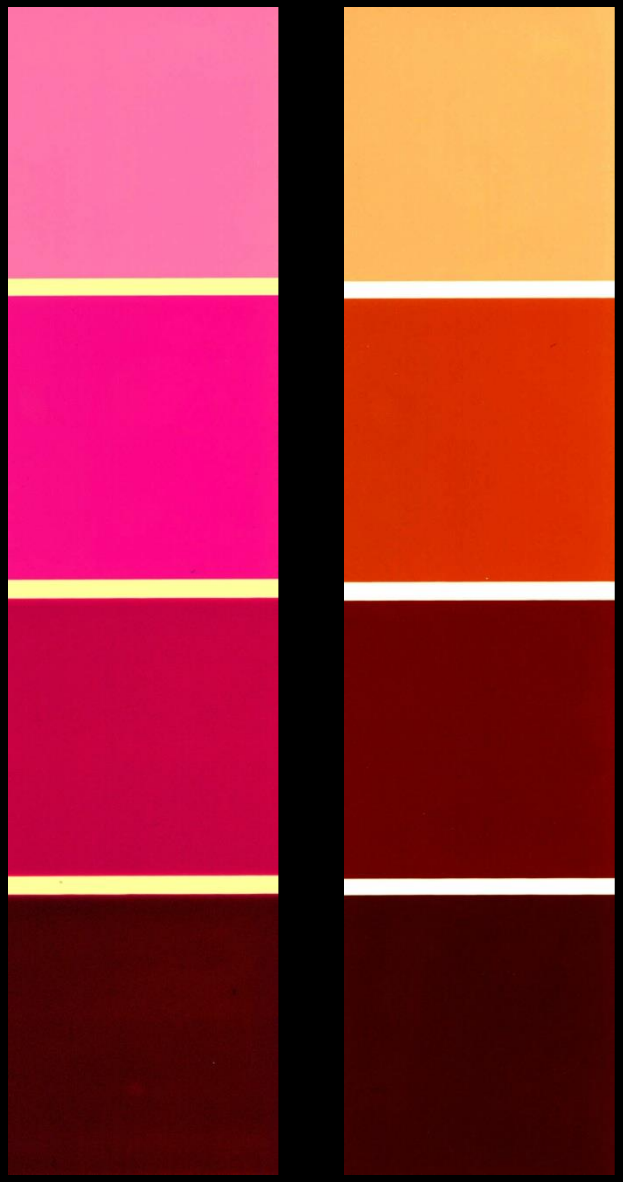
Slightly Dirty

Dirty

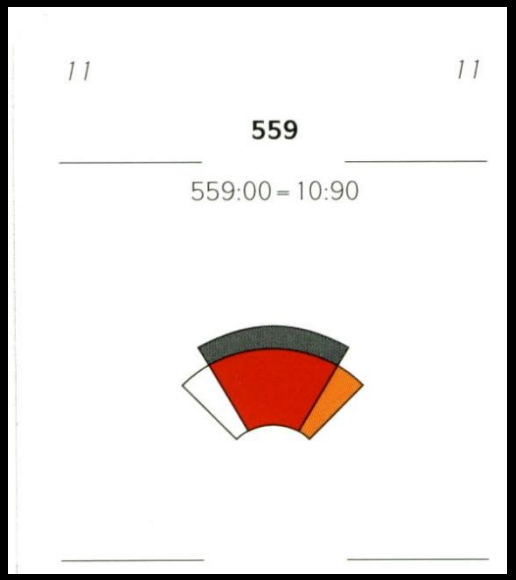
How to read the toner (tinting swatch) characteristics?

- Red Color Group
- Slightly Blue Color Direction
- Clean Purity



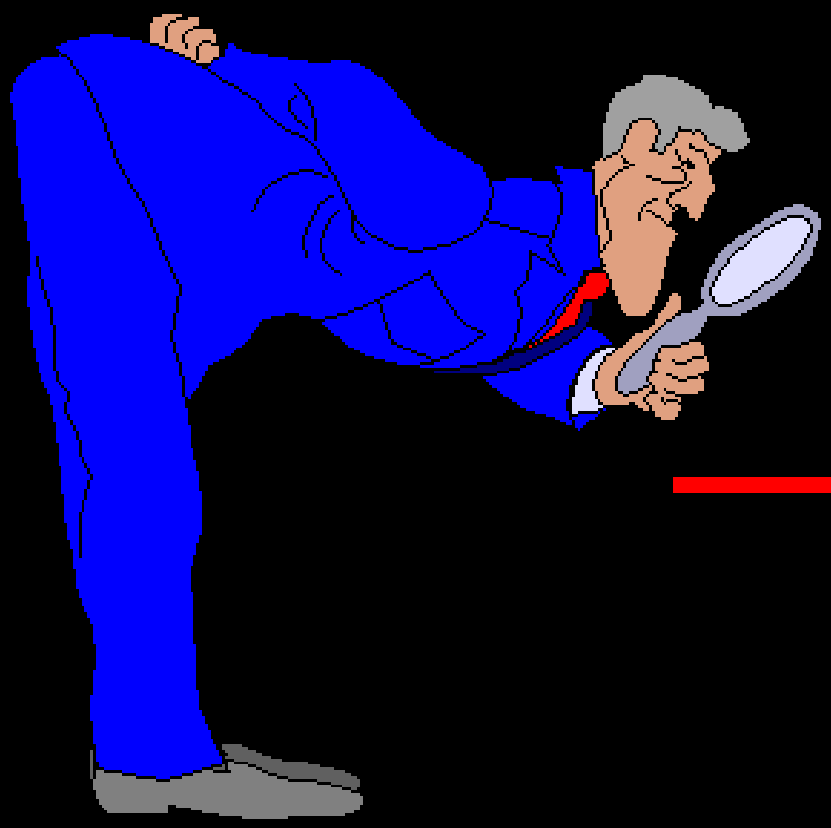


- Red Color Group
- Slightly Yellow Color Direction
- Dirty Purity



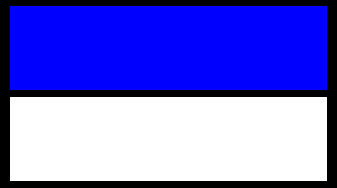
Flip Tone

What we see when looking at a panel from the greatest angle.

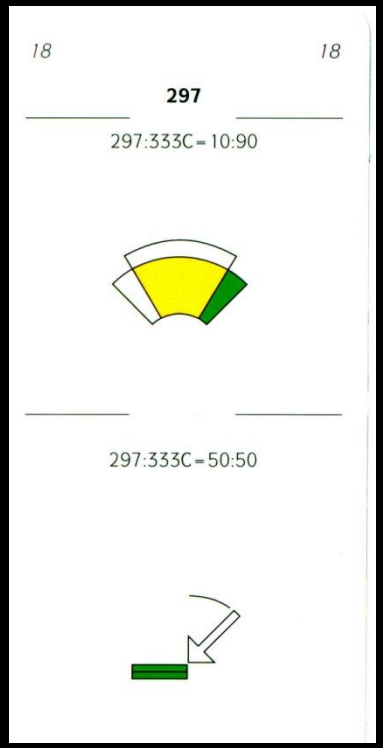


Describe

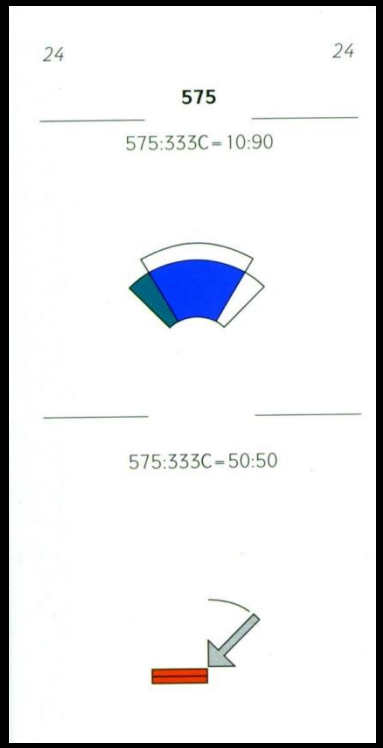
- Brightness Flip
- Color Flip



How to read the toner (tinting swatch) characteristics?



- Yellow Color Group
- Slightly Green Color Direction
- Clean Purity
- Light Brightness Flip
- Green Color Flip



- Blue Color Group
- Slightly Green Color Direction
- Clean Purity
- Slightly Dark Brightness Flip
- Red Color Flip

The Brightness Flip Symbol

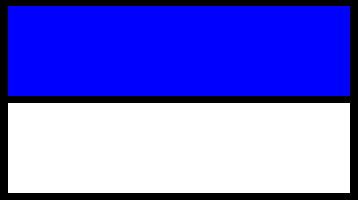
Light
Brightness Flip

Slightly Dark
Brightness Flip

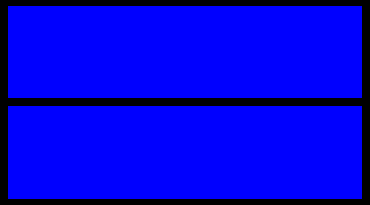
Dark
Brightness Flip

The Color Flip Symbol

No Color Change



Slight Color Change

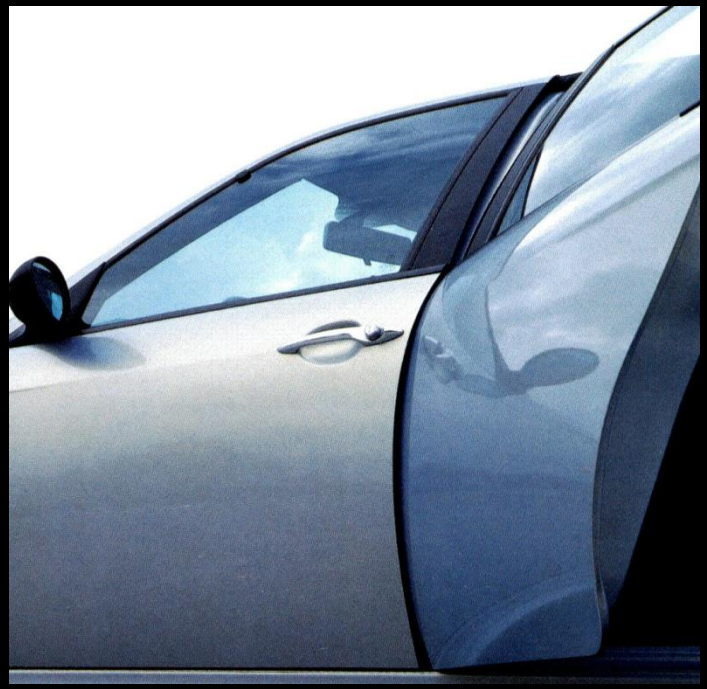


Strong Color Change

Block color indicates color flip group.

Below is an example of brightness flip and color flip.

- When the rear door is opened, the brightness of the paint appears darker. This is described as brightness flip.
- When open, the rear door also looks bluer, this is described as color flip.
- These effects must be considered with metallic colors.



Example: Compared to the rest of the car, The door is?

- Color Group: Center
- Color Direction/Hue: Equal
- Purity/Chroma: Dirtier
- Brightness Flip: Lighter
- Color Flip: Equal

In this case, the difference is only in the metallic effect, there is no true color difference .

Example: The car is?

Center colors can be . . .

- Shades of Gray
- Shades of Brown
- Shades of Silver
- Shades of Gold

- Redder
- More Orange
- Yellower
- Greener
- Bluer
- More Violet

Also, is the car . . .

- Cleaner
- Slightly dirty or
- Dirty

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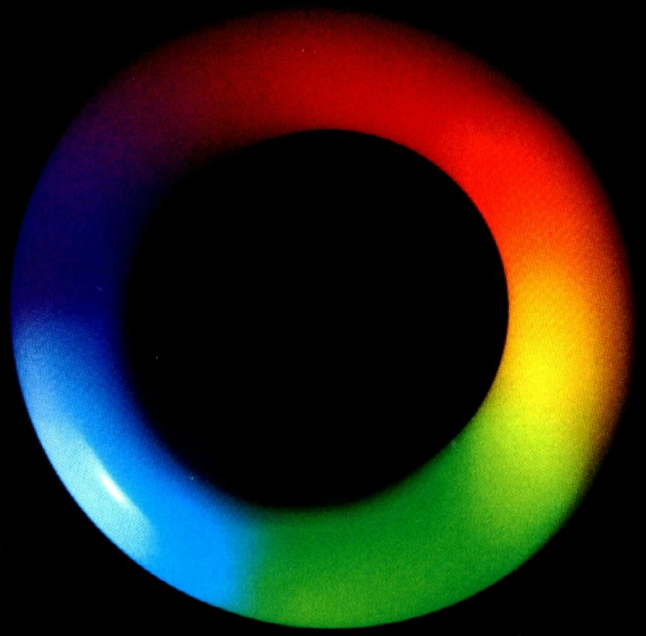

Solid Color - Exercise # Sample

1) *Color / Color Group:* ***Red***

Face			*Flip / Flop* (Metallic Only)	
2) *Value = Lightness / Darkness*	3) *Hue = Color Direction*	4) *Chroma = Purity*	5) *Value = Lightness / Darkness*	6) *Hue = Color Direction*
Lighter	Red	Clean+	Not an Option (on solids)	Not an Option (on solids)

7) *Selected Toner:* ***Q231***

The car is what when compared to the spray out?

Formula

Q231	509.3
Q160	8.8
Q110	72.8
Q725	94.2
Q065	228.4

Spray out Car

Color / Color Group: Description of Color [Red (R), Yellow (Y), Blue (B), Green (G) and Neutral (N) = White, Black, Gray and Silver]
Value = Lightness/Darkness: Description of difference in Lightness or brightness [Lighter (L), Darker (D) or Equal (E)]
Hue = Color Direction: Description of difference in color (hue). [Blue (B) or Violet (V) or Red (R) or Orange (O) or Yellow (Y) or Green (G) or Equal / Even (E)]
Chroma = Purity: Description of difference in Cleaner or Dirtier color.(Muddier). [Clean (+), Dirtier (–) or Equal / Even (E)]