

This lesson focuses on long-lasting semi-permanent (demi-permanent) and permanent colors. There are basic color formulation guidelines to follow when using developers, fillers, concentrates, intensifiers, drabbers and lighteners.

# **EXPLORE**

Oxidative color products allow you the opportunity to change a client's existing natural hair color in a lasting way. Can you think of the advantages but also any risks of a long-lasting color change?

# **INSPIRE**

Oxidative colors are the foundation for color business in the salon. Mastering how they work allows you limitless creative expression with hair color services.

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# **ACHIEVE**



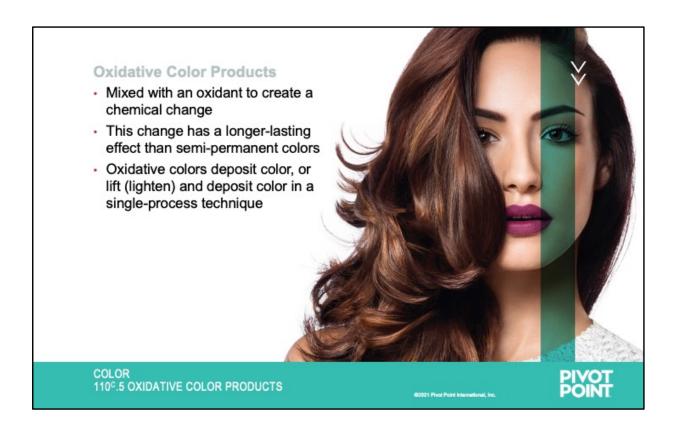


Following this lesson, you'll be able to:

- · Identify the two types of oxidative color products
- Explain the relationship of developer strength and levels of the desired color
- Describe the characteristics of fillers, concentrates, intensifiers and drabbers
- State the difference between on-the-scalp lighteners and off-thescalp lighteners
- Identify the 10 stages of decolorization
- · List four main steps in color formulation

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Oxidative hair colors permanently change a client's hair color. They are mixed with an developer (oxidant) to create a release of oxygen (chemical change)

It's a larger commitment from the client's side, but the range of color options available is limitless. Learning how to use oxidative color, sometimes on its own and sometimes in conjunction with nonoxidative color products provides the freedom to take creativity to the next level. Oxidative hair color products have become one of the most popular color products used in the salon, since they offer the colorist a wide range of color possibilities. The stylist or colorist can choose from many levels and tones to create an infinite number of hair color results.

# Oxidative colors without ammonia:

- Known as long-lasting semipermanent, which is also more commonly referred to as demipermanent hair color
- Designed to add tone or darken existing hair color



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POINT

Oxidative hair color products have become one of the most popular color products used in the salon, since they offer the colorist a wide range of color possibilities. The stylist or colorist can choose from many levels and tones to create an infinite number of hair color results.

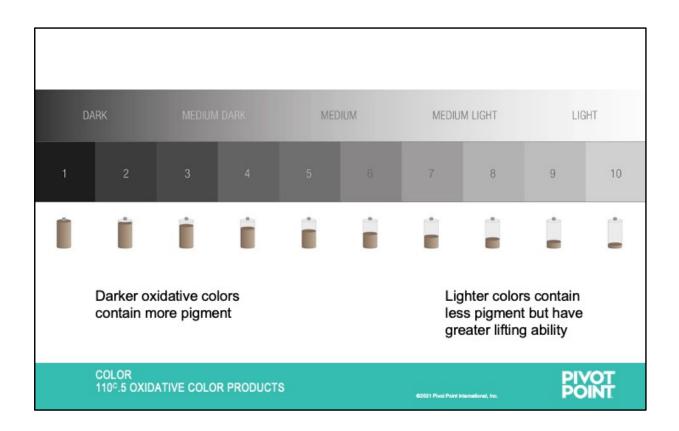
# Oxidative colors with ammonia:

- · Known as permanent hair color
- Designed to:
  - Add tone
  - Darken the existing level to achieve a darker result
  - Lighten and add tone to natural hair to achieve a lighter result in a single process



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Manufacturers label their products with the level system and descriptive words similar to the fields of color. Consider the fields of color to be a general classification and levels a more specific description of the lightness or darkness. Keep in mind, darker oxidative colors contain more pigment, while lighter colors contain less pigment but have greater lifting ability. The illustration visualizes the concentration of pigment in a hair color line that ranges on a level scale from 1-10. Understanding the reduced pigment concentration in lighter colors is especially important when formulating color for grey hair.



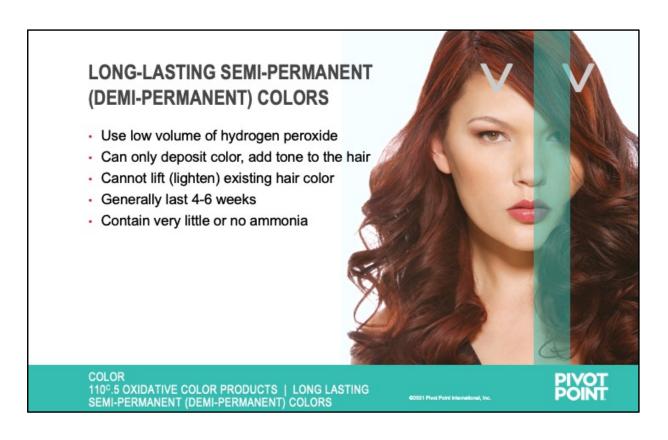


- · Oxidative colors are not designed to lift or lighten artificial pigments.
  - Color removers and dye solvents can be used to lighten or break down and remove artificial pigments.
- Nonoxidative colors and oxidative color formulas with low-volume developers are a good choice for clients who relax their hair.



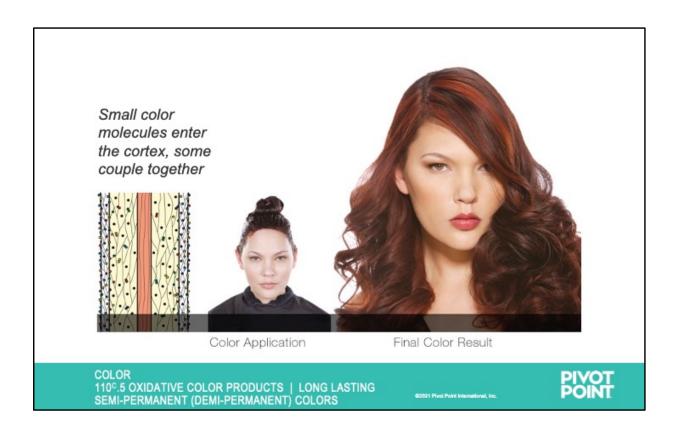


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A low volume of hydrogen peroxide will aid in color processing.

They contain small color molecules that penetrate the cortex, some of which join or link together. Semi-permanent colors also contain very little or no ammonia, which is why these products do not lighten the hair; they are referred to as deposit-only demi-permanent, or oxidative without ammonia color.





Also referred to as aniline derivative tints, permanent colors penetrate the cuticle and cortex and remain on the hair until they are removed by chemical means, or until the hair grows out and is cut off. Their primary ingredient is usually para-phenylenediamine or a related chemical.

Contain small colorless molecules that become colored when mixed with hydrogen peroxide

- After the initial application, the oxidative color swells the hairstrand.
- Small colorless molecules enter the hair with the aid of an alkaline substance such as ammonia.

 As they oxidize in the cuticle and cortex, they link or couple together to form permanent color.



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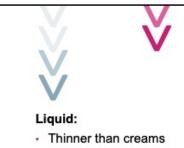
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High-lift tints are permanent colors designed to achieve lighter color and generally use 30 or 40 volume hydrogen peroxide. Products such as color removers or dye solvents can be used to remove unwanted artificial pigment. Once the unwanted pigment is removed, the hair can be recolored as desired.

Para-phenylenediamine (para-PHE-ni-line-i-DIA-min) and para-toluenediamine (para-tol-U-ene-i-DIA-min) are two types of dye intermediates, either one of which can be found in permanent tints. If the desired amount of lift can't be achieved with a single-process color (up to 4 levels lighter) prelightening may be required.

ALERT! Since permanent colors contain aniline derivatives, a predisposition test (patch test) is required 24-48 hours before the service.



- and gels
- · Generally applied with applicator bottle
- May contain fewer conditioning agents and greater ammonia
- Good penetration ability



### Cream:

- Generally mixed with cream developer
- Applied with a bowl-andbrush technique
- Have conditioners and thickening agents



### Gel:

- Consistency is somewhere between a liquid and a cream
- More penetrating than creams
- Fewer conditioning agents

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Permanent hair colors are mixed with various strengths of developer, depending on the desired amount of lift and/or deposit. High-lift tints are designed to achieve lighter colors and are generally mixed with a double amount of 30 volume (9%) or 40 volume (12%) hydrogen peroxide. When mixing permanent hair colors, be sure to follow the manufacturer's directions since the amount or volume of peroxide can affect the lift and deposit achieved.

# **DEVELOPERS**

- Developers come in a variety of strengths (volumes or percentages) and consistencies (liquids or creams).
- Lower strength developers are used for depositing, and higher strengths are used for greater lift.
- Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) is the most commonly used developer (oxidizing agent) in hair color products.

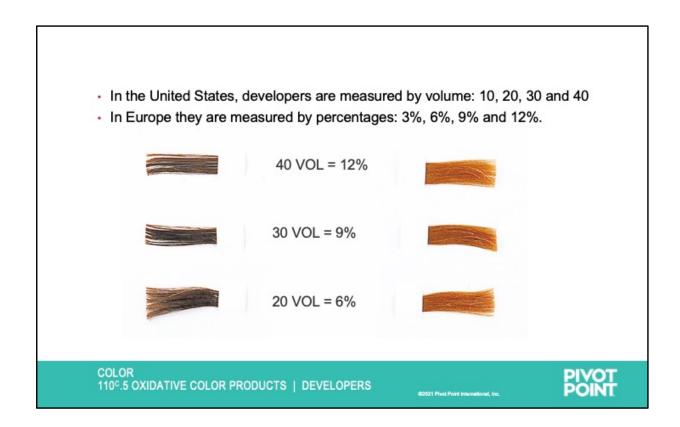
# ALERT:

Increasing the strength of hydrogen peroxide in a formula beyond manufacturer's recommendations may cause damage to hair and chemical burns to the skin and scalp.

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- Developers, with a pH of 2.5 to 4.5, are oxidizing agents used with demi-permanent and permanent colors, lighteners and toners.
- A developer may be referred to as a catalyst or conductor and needs to be mixed with ammonia or other alkaline compounds to become active.
- Follow the manufacturer's directions in selecting the strength and amount of developer to use with oxidative colors.
- A hydrometer is used to measure the strength (volume) of hydrogen peroxide. It tells the potency of
  the hydrogen peroxide and allows dilution of higher strengths to lower volumes. A hydrometer can
  also help determine if an old bottle of hydrogen peroxide is still potent. Manufacturers indicate shelf
  life (usually 3 years) and instruct that it be stored in a cool, dry place.



The lower the volume, the less lift will be achieved; the higher the volume, the more lift will be achieved. The greater the lift, the more the natural undertones will become visible in the hair. Depending on how much warmth is desired in the final result, add a complementary color to the formula to cancel out the warmth and maintain a more neutral tone.

# **DEVELOPER STRENGTHS**



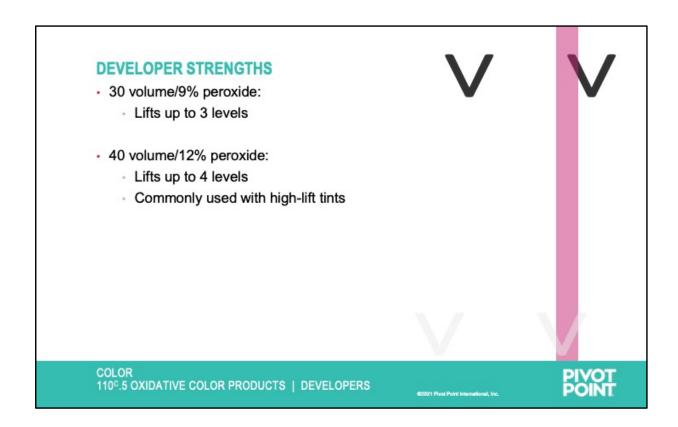


- 10 volume/3% peroxide or less:
  - Used for deposit and minimal lift
  - Used with demi-permanent colors
  - Most demi-permanent manufacturers have their own recommended developer of low-strength peroxide
- · 20 volume/6% peroxide:
  - · Lifts up to 2 levels
  - Ideal for gray coverage
  - Used with majority of hair coloring products

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Mixing hydrogen peroxide in a metal bowl will cause the formula to become weak. The metal's ions will have an adverse reaction with the hydrogen peroxide. Therefore, always mix the formula in a plastic or glass bowl.



Applying different manufacturers' oxidative products on different fields of color swatches allow you to analyze the results before working on clients. These products can add tone, darken the hair or lighten and tone the hair in a single process. The resulting color is a combination of the color applied and the existing hair color.

# FILLERS, CONCENTRATES, INTENSIFIERS AND DRABBERS

# V

# **FILLERS**

- Provide an even base color by filling in porous, damaged or abused areas
- · Equalize porosity of hair
- Deposit a base color in one application
- Designed to be used prior to or in conjunction with final color formulation
- · Come in a variety of colors
- · Generally, are used to replace the primary color

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# **FILLERS**

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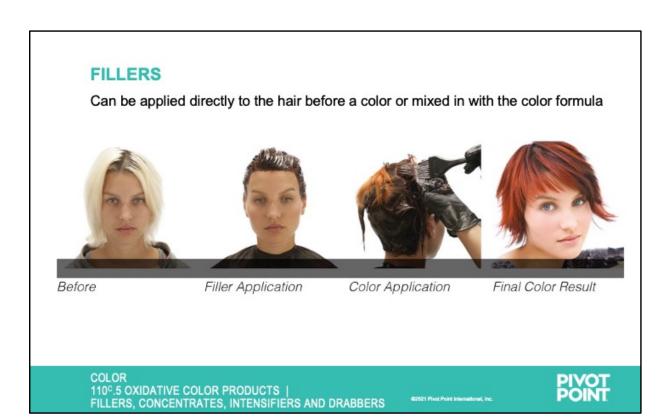
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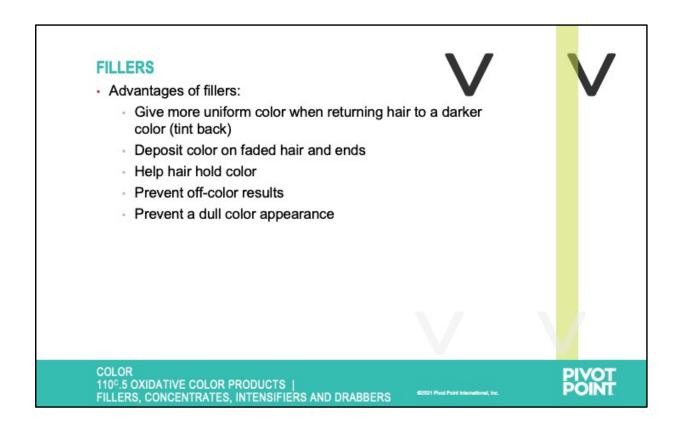
# Two types:

- Conditioning: Used to recondition damaged hair prior to color service; color is applied directly over the filler and processed simultaneously
- Color: Used on damaged hair such as porous hair and when there is a question about whether the color will hold

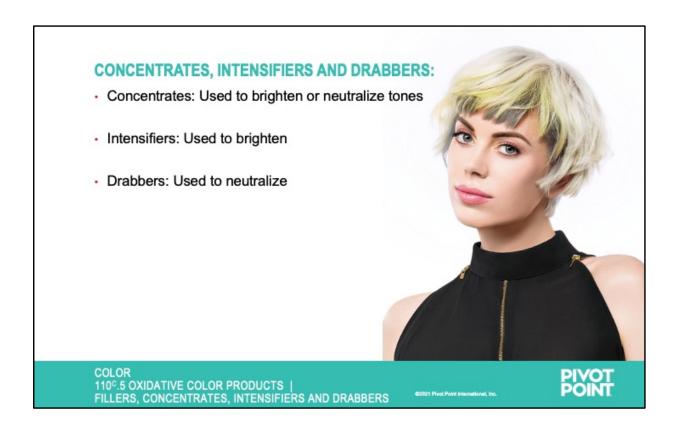
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Extremely damaged hair may absorb more color than normal, but it also has a hard time holding on to the color molecules.



Manufacturers offer a variety of products designed to increase vibrancy of a color or neutralize unwanted tones from contributing pigment.

They can be mixed into the color formula or applied directly to prelightened hair to create the desired effect.

They come in a variety of colors: yellow, red, blue, orange, violet, green, silver and ash.

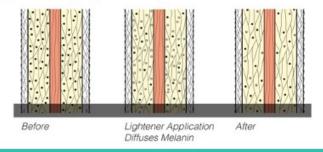
# LIGHTENERS Lighteners, also known as bleach: Used to decolorize, remove or diffuse pigment Utilize ingredients such as ammonia and peroxide to facilitate the oxidation process Penetrate cortex causing melanin or other pigment to break down before removing or diffusing the color

In hair lightening, ammonia or other alkalis are used to activate or raise hydrogen peroxide's pH, therefore making it more alkaline. Once activated by the higher pH substance, the peroxide can act as an oxidizer and lift or subtract hair color. Lightening or bleaching is one of the oldest methods used in a hair color service.

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# **LIGHTENERS**

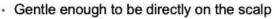
- · Always involve oxidation of the natural melanin in the hair
- Cause the hair to gradually lighten through several color changes as the pigment disperses
- · Generally applied to dry hair



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# On-the-scalp



- · Available in 2 forms:
  - · Oil lighteners: Use a certain amount of ammonia to give high lift
    - · Mild form of lightener because of the added oil
    - pH is around 9
  - Cream lighteners: Most popular form
    - Added conditioners make them gentler
    - Creamy consistency keeps them in place on hair, prevents running or dripping
    - Used directly on the scalp
    - pH is around 9

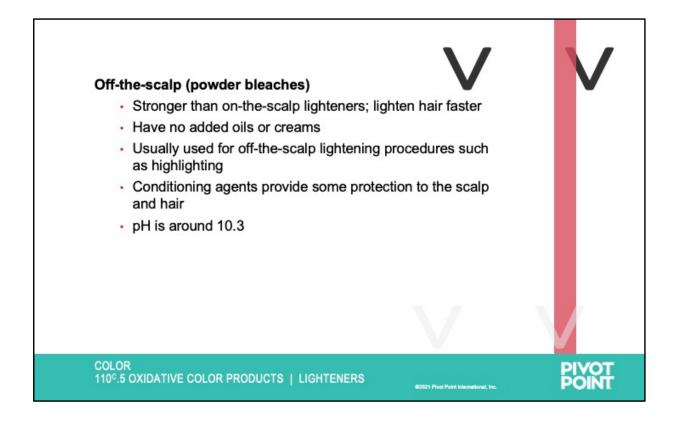
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The longer lightener remains wet and in contact with the hair, the more the melanin and pigments change.

Activators (accelerator or booster) can be added to oil or cream lighteners to boost strength, which increases the pH and speed of the oxidation process.



- Contain alkaline salts and a strong oxidizing agent that when mixed with peroxide, become a strong lightening product
- Can irritate the scalp causing burns and blisters
- Some powder lighteners have color pigments already included in their mixture and may be used to add desired tones or neutralize certain tones



As natural hair is lightened, the eumelanin and pheomelanin pigments are decolorized, and the hair goes through degrees of decolorization, or stages of lightening. Dark hair goes through approximately 10 stages or degrees of decolorization.

The main degrees to look for are:

- · Red-orange
- Orange
- Yellow-orange (gold)
- Yellow
- Pale yellow
- Palest yellow

# **DEGREES OF DECOLORIZATION**



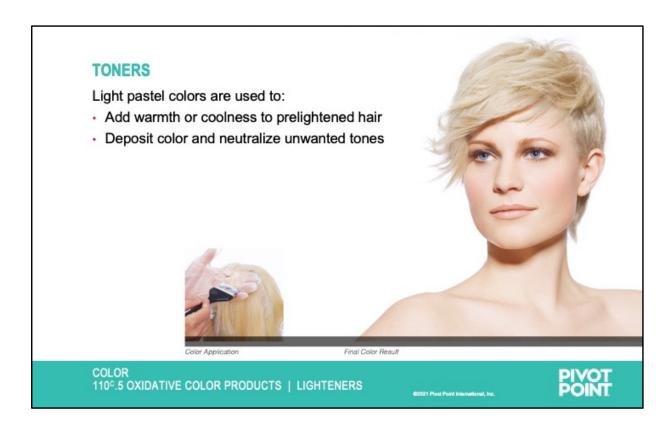


- Time for decolorization always varies with the individual client due to:
  - · Amount, size, type and distribution of natural pigment
  - Type and amount of artificial pigment
  - Texture and porosity

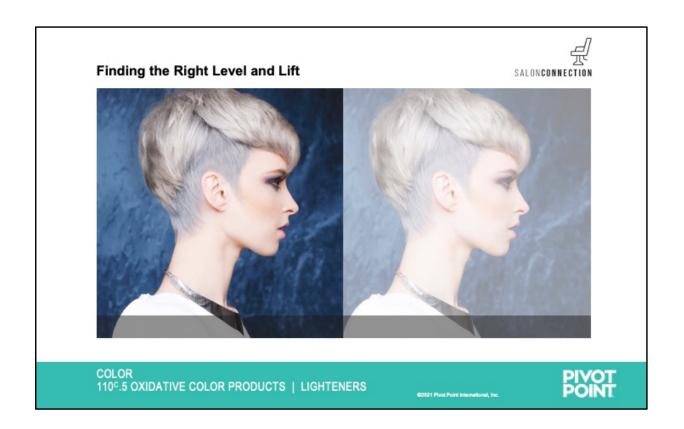
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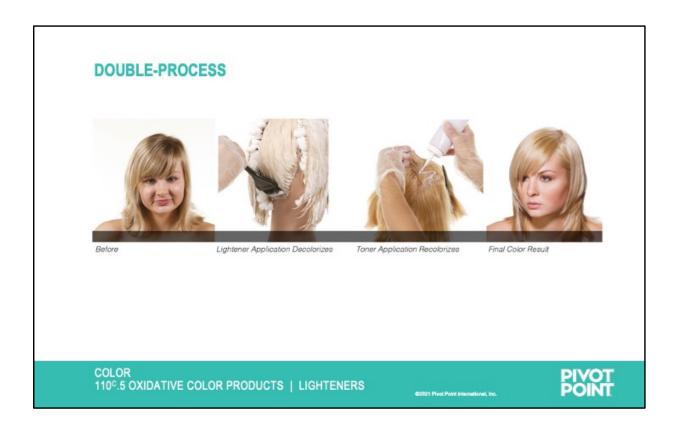




Complementary colors will neutralize one another. Perform a strand test in order to predict accurate results. Oxidative toners are mixed with low volumes of developer while nonoxidative toners are not mixed with developer. Since oxidative toners contain aniline derivatives, a predisposition test is required. Toners can also be used when there is a mixture of natural and prelightened hair, such as after a highlight service.



Developers work differently with lighteners than they do with color. With color, the developer affects how much lift or deposit your product is able to achieve. For example, if you use a 20 volume (6%) developer with level 9 color on hair that is an existing level 5, your hair will not lift to a level 9. The best you will get is a level 7. With lighteners, however, the developer affects the speed the hair will lighten. A 10 volume (3%) developer with lightener will lighten almost as high as a 40 volume (12%) developer will. The difference is, the 10 volume (3%) will take significantly longer. The benefits of lifting slowly are that you have more control over the product and you maintain the integrity of the hair.



The double-process technique is necessary to lighten hair more than three to four levels since permanent hair color cannot lift more than four levels.

Before starting the decolorizing (lightening) and recolorizing (adding the pigment back into the hair) process, know the desired color result. This helps determine the proper degree of decolorization without over lightening the hair. This will not only maintain the integrity of the hair, it will also allow for more predictable results when toning. A powder lightener without buffering agents and conditioner can NOT be used for a double-process blond procedure.

# **DOUBLE-PROCESS**

- The double-process technique involves 2 steps:
- · Decolorizing or lightening hair to desired degree
  - Lighten selected strands, areas within design
  - Lighten entire design
- Recolorizing or toning hair by applying oxidative or nonoxidative color to create final color result
  - Generally, toner is used to recolorize the hair
  - No additional lift can be achieved
  - Use a low-volume developer to achieve the most deposit on hair

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# **DECOLORIZING**

Applying lightener to several swatches of dark hair and watching the hair decolorize will give you a better understanding of the stages or degrees of lightening.



### RECOLORIZATION

Taking the process one step further by recolorizing the hair will enable you to see the role the contributing pigment plays on the final color result.



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# >>> BASIC COLOR FORMULATION GUIDELINES

# Step 1

Start with thorough analysis of level and tone of existing hair color(s).

### Remember to check for:

- · Different colors at the base than the lengths of the hair
- · Different colors in different areas of the head
- · Presence and percentage of any gray hair
- · Whether the existing color is natural, previously colored or a combination of both

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Formulating color requires an understanding of the law of color, the color wheel and underlying pigment that gets revealed when going lighter. No matter what color product line is being used, this knowledge is the foundation to changing, intensifying or neutralizing the client's existing hair color.



# Step 2:

- · Feel texture and porosity of hair
- · Consider client's individual characteristics
  - Eye color, skin tone
  - Personality

# Step 3:

- Identify level and tone of desired color(s)
- · Clearly identify:
  - Desired intensity of the tone
  - How many levels darker or lighter to choose proper developer strength
  - Whether warmth will need to be neutralized for more neutral or cool results

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Feel the texture and porosity of the hair in different areas of the head and along the strand. This will affect how well the color takes without turning out darker or more drab than intended.



### Step 4:

- Choose color product(s) and shade(s) as well as your developer(s)
- Always follow manufacturers' guidelines for mixing ratios and processing time.
- After application, set timer and remember to check periodically to make sure the color is processing correctly and evenly.

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In most cases the desired level matches the color product level.

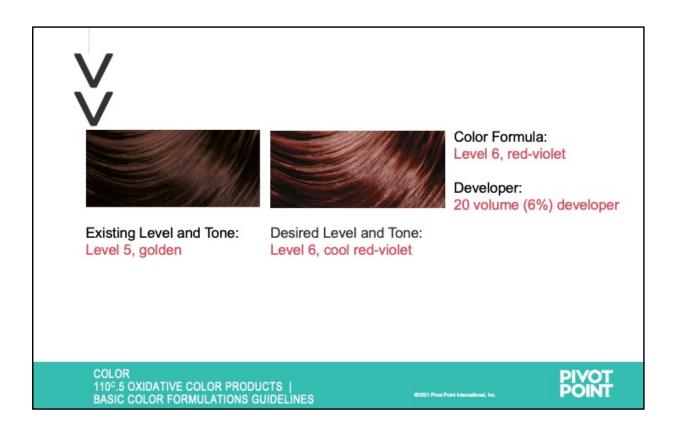
The color product shade will generally match the desired shade, unless it's necessary to compensate for warmth created from going lighter; in that case, neutralize with a cooler shade. Or, if the result is darker, add in any missing undertones to the formula so that the final color doesn't look ashy or drab.

When staying at the same level or going darker, choose a low developer strength.

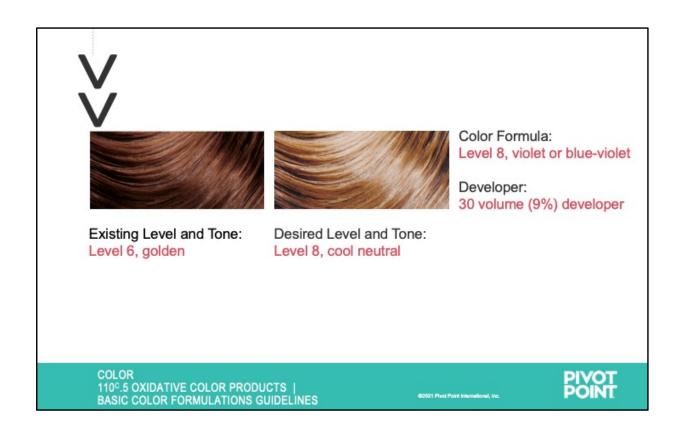
When going lighter, choose a stronger version.



Imagine you want to color a client's natural dark brown hair to become medium brown, with a neutral—not reddish—result. You will need to go two levels lighter. At that point, the underlying red pigment will be revealed. Subsequently, your formula needs to include a green pigment to counteract the red and achieve a neutral result.



The desired color has a cool red shade. Since one level of lift is needed and the desired level is a level 6, the contributing pigment is orange but only a small amount of orange pigment gets revealed. The formula can be just a little cooler than the target color and mixed with 20 volume (6%) developer.



The desired color is two levels lighter than the existing color. To achieve the needed two levels of lift, a 30 volume (9%) developer is used. The contributing pigment at the target color of a level 8 is yellow. Since the desired color is neutral, the warmth of this contributing pigment needs to be neutralized with a complementary pigment, which is violet. Many manufacturers might refer to such a color as ash, silver or cendré. Be sure to learn the actual neutralizing pigments (green, blue or violet) included in the colors used; color charts very often show this.





Existing Level and Tone:

Base: Natural level 4, ends faded level 7

Texture: Porous

Desired Level and Tone: Natural level 4 Color Formula: Level 4, natural gold Developer: 10 volume (3%) developer

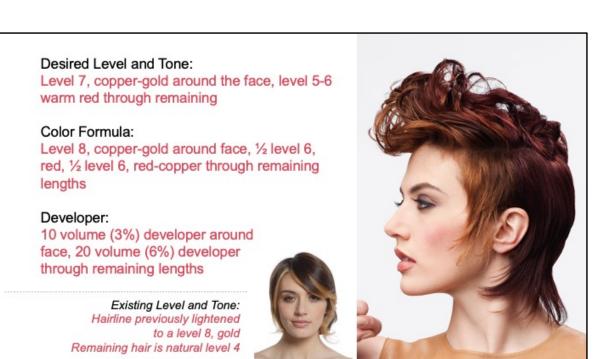
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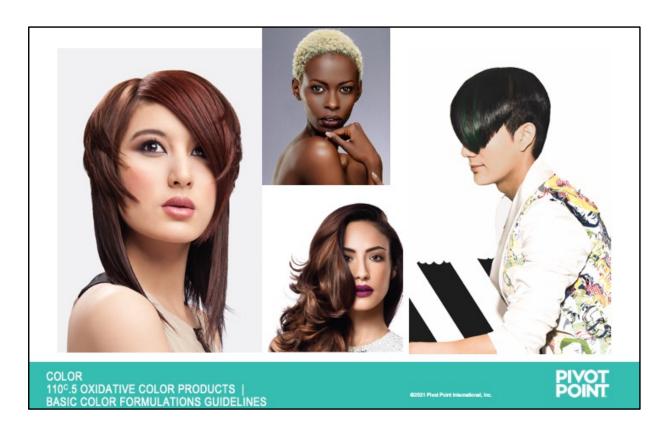
See how colors were formulated for more complex scenarios in the following examples. For multidimensional color results, color placement and pattern play a big role, and multiple desired shades need to be formulated and combined in the same look.

The desired color stays on the same level as the existing color while depositing most of the color onto the ends to achieve a richer result. The desired color is a natural brown shade. Since the color is depositing to a natural tone onto a porous texture, a gold is used in the formula to add back any missing undertones from the faded ends. This will prevent the ends from looking muddy or drab. A 10 volume (3%) developer is used to achieve deposit and shine.



The desired color around the hairline is slightly darker than the existing color with a tonal change. Depositing on hair that has been prelightened can cause the hair to pull darker because the lightener causes this hair to become more porous. A level one level lighter than the target color was chosen and mixed with a 10 volume (3%) developer so the formula could stay on the hair the full intended time to allow the copper-gold tones to fully penetrate without pulling too dark. The remaining lengths needed to lift 1-2 levels. A level 6, red, was mixed with a level 6, red-copper. Since the natural hair color is lifting, the warm undertones will become more visible, adding to the warm red tones. A 20 volume (6%) developer was used to achieve an equal amount of lift and deposit.

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Oxidative colors are the foundation for color business in the salon. Mastering how they work allows limitless creative expression with hair color services. Understanding how to work with oxidative colors will expand a salon professional's creative skills and help clients commit to a new look they will love.

<ol> <li>Hair colors mixed with hydrogen peroxide can be capable of both lifting natural pigment and depositing artificial pigment in one process are known as colors.</li> <li>As a general rule, a permanent hair color mixed with 20 volume developer will lift the hair color levels.</li> <li>The 2 forms of on-the-scalp lightener are oil and</li> </ol>	1.	TRUE FALSE Permanent colors allow you to lift and deposit in one step
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Check What You Know questions help affirm understanding of key points.

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5 When lightening heir the heir gape through degrees of decolorization. Page 67	4.	The 2 forms of on-the-scalp lightener are oil andcream Page 65
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Check What You Know questions help affirm understanding of key points.

### LONG LASTING, SEMI-PERMANENT (DEMI-PERMANENT COLORS)

 Two main categories of oxidative colors are demi-permanent (long lasting semi-permanent) and permanent colors

#### **DEVELOPERS**

 Lower strength developers are used for depositing color and higher strength developers are used for lifting color

# FILLERS, CONCENTRATES, INTENSIFIERS AND DRABBERS

 Fillers, concentrates, intensifiers and drabbers can be used to modify the intensity, tonality or lasting ability of hair colors

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### LIGHTENERS

- Lighteners applied directly to the scalp are generally mild with a cream or oil consistency
- Off-the-scalp lighteners are powder bleaches that contain alkaline salts; stronger and faster when lifting color from the hair

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#### LIGHTENERS

- Hair goes through up to 10 stages of decolorization, during which the underlying contributing pigment gets revealed:
  - Black
  - Dark red-brown
  - Red-brown
  - Red
  - Red-orange
  - Orange
  - Yellow-orange
  - Yellow
  - Pale yellow
  - Palest yellow

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### **BASIC COLOR FORMATION GUIDELINES**

- · The main steps in color formulation include:
  - Analyzing the existing hair color's level and tone
  - Identifying hair texture and porosity along the strand and in the various areas of the head
  - Identifying the desired color's level and tone
  - · Choosing color products, shades and developer strengths

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