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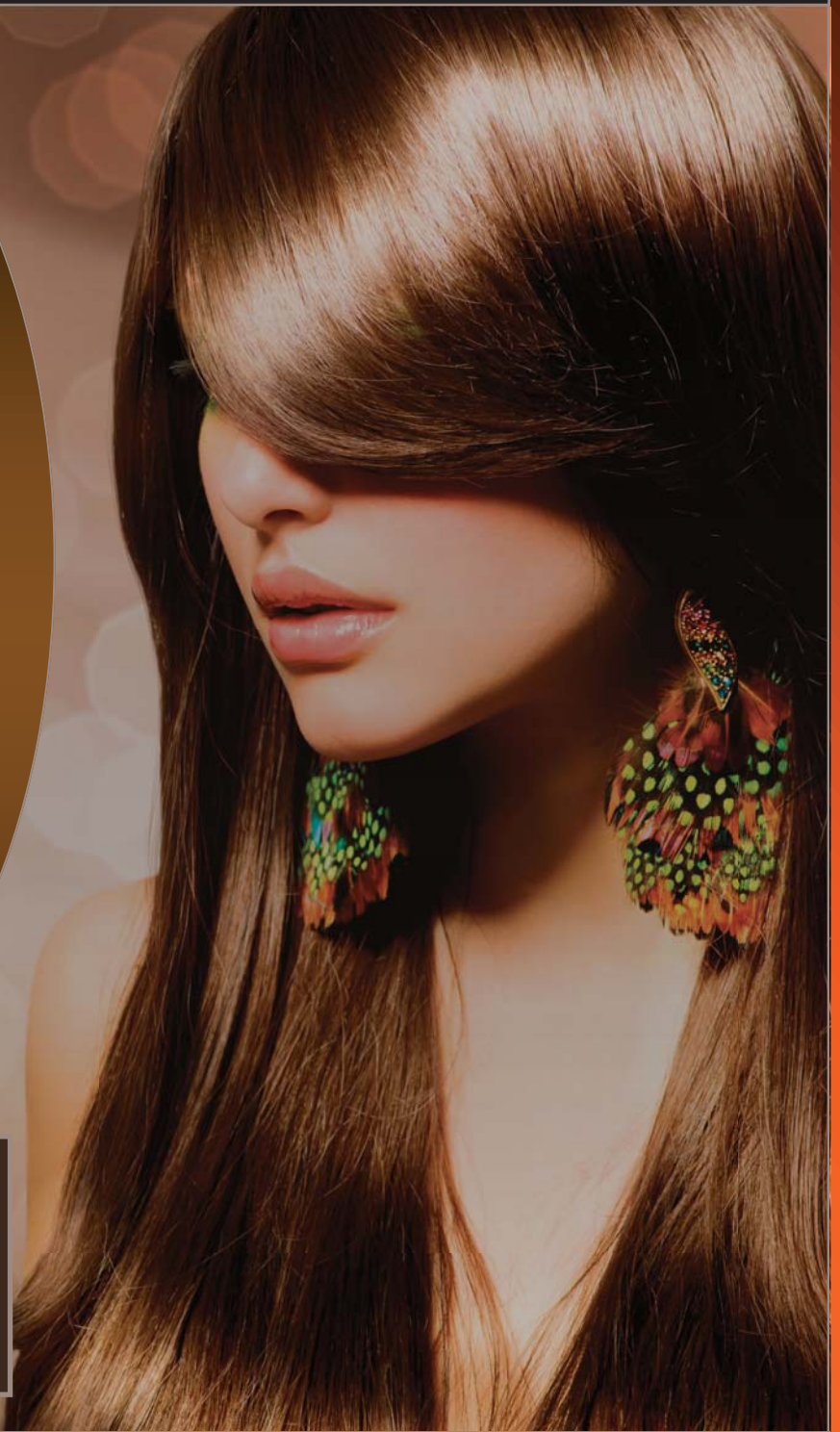
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Why am I receiving this booklet?

Our records show that you need 24 CE hours to renew your license by October 1st

24 HR HAIRCOLOR AND HAIRCUTTING TECH.(201888)

You can take all of your hours through this home study booklet or Online at www.ceuapproved.com

This 24 HR. Package Booklet includes:

- 8 HRS. HAIRCOLOR CHEMISTRY :CE 20181 Page 2– 11**
- 4 HRS. HAIRCUTTING REFERENCE :CE 20182.....Page 12— 20**
- 12 HRS. COSMETOLOGIST COMPOSITION : CE 20183..... Page 21- 29**

***Test Questions can be found on Page 30**

***Course Participation and Test Answer sheet can be found at the bottom of page 31**

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24 HR. HAIR COLOR

TECHNIQUES AND TIPS



SEGMENT OUTLINE:

HAIRCOLOR TECHNIQUES AND TIPS

- Understanding the chemistry of haircolor
- Hair Color Relationship
- Color level system
- Hair Color Chemistry
- Hair Coloring products
- Color Categories

SEGMENT OBJECTIVES:

Upon completion of this course the student will be able to:

1. Understanding color relationships
2. Recognize and define the color level system
3. Comprehending the chemistry of haircolor
4. Have knowledgeable of hair coloring products
5. Distinguish the color category
6. Apprehend Client Consultation
7. Identify with haircoloring Techniques
8. Interpret what you need to know when formulating haircolor
9. Illustrate how to use foil packets when lightening selected strands of hair to keep the strands isolated
10. Be aware of hair color safety tips

Hair Color Chemistry

Since the very beginning of hair color usage the most threatening burden to hair color market growth were chemical ingredients. Being harmful to the hair, these ingredients lead to the need for scientific research. Research was necessary to replace harmful ingredients and/or minimize their hazards. New discoveries in coloring chemistry have led to significant advances in hair coloring products and possibilities, reducing the trade-offs in hair health. Researchers have developed a new hair coloring technologies that optimize color intensity, minimize the amount of damage in the coloring process, speed processing time, and improve the appearance and health of colored hair.

Hair coloring has also allowed formulators to create better tools such as post-coloring conditioners that help improve hair health at a microscopic level to achieve brilliant, long-lasting color and shine.

INTRODUCTION:

Did you know that qualified hair colorists make more money and are in more demand than any other specialists in the field of cosmetology? It's also been determined that 7 out of 10 professionals claim that they are least comfortable with haircoloring of all the services they provide. In order for cosmetologist to completing this continuing education course, cosmetologist will be able to deliver these lucrative services with enthusiasm and excitement. Think about how much more detail the client's face has after the hair has been colored; the eyes stand out more, the cheekbones are more defined, and the complexion appears more radiant. That's a lot to become enthused about.

Haircoloring is logically and systematically performed; it is not trial and error, even though it was considered to have been so in the past. It is both a science and an art. Fine-tuning your skills and performing this service with honesty and clarity will serve you well as a professional cosmetologist. Haircoloring includes the processes of:

1. Depositing color on natural hair color.
2. Depositing color on previously colored hair.
3. Depositing color on hair that has been lightened.
4. Lightening and depositing color known as double process coloring

Hair lightening or decolorizing involves diffusing natural or artificial color from the hair. Hair lightening involves decolorizing the natural pigment to prepare the hair for final color and decolorizing natural or artificial pigment to the desired color.

You will find it interesting to know that statistics show that clients who just have haircuts, only stay with their stylist for an average of 2 years, while clients who receive color services stay with their stylist for 8 years! Loyal clients mean higher and steady income.

Before you begin to practice your skill, it's important for you to understand some underlying principles of the chemistry of color, color wheel, color theory, and color levels. These important elements will be discussed in this course.

Common Hair Colorant Ingredients & Their Functions		
Component	Function	Sample Ingredients
Solvent	Dye vehicle	Water, Propylene glycol, Ethanol, Glycerin
Surfactant	Foaming, thickening	Sodium lauryl sulfate, Ceteareth-25, Cocamide MEA, Oleth-5
Alkali	Swell hair, bleaching	Ammonia, Monoethanolamine
Buffer	Stabilize, reproducible	Disodium phosphate, Citric acid
Dye precursors	Impart color	P-Aminophenol, 1-Naphthol, P-Phenylenediamine, 4-Amino-2-hydroxytoluene
Fatty alcohols	Emollients	Glyceryl stearate, Cetearyl alcohol
Quaternary compounds	Conditioning	Polyquaternium, Cetrimonium chloride
Peroxide	Oxidant, bleaching	Hydrogen peroxide

Permanent and demi-permanent hair colors consist of two ingredients: precursor-coupler base and oxidizing base.

“The precursor-coupler base consists of surfactants, alkaline, reducing agent, precursors, couplers, and water. The oxidizing base consists of an oxidizing agent (e.g. peroxide), stabilizer for the peroxide, and surfactants. Since the peroxide is unstable in alkaline solution, the precursor-coupler base and the oxidizing base have to be formulated separately for product storage” (Munshi, 4)

ponents are mixed together, resulting in a much thicker mixture.” (Munshi, 4)

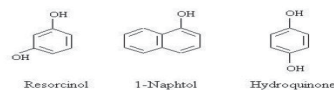
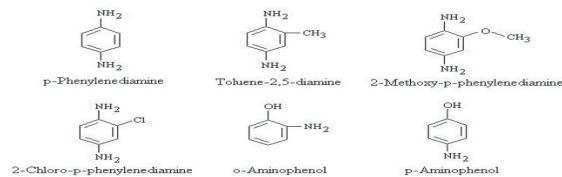
Ingredient	Weight % of ingredient for desired hair color			
	Dark brown	Light brown	Red	Black
Dodecyl benzene Sulfonate (50%)	14.0	14.0	14.0	14.0
Cocodiethanolamide	9.0	9.0	9.0	9.0
Neodol 91-2.5	6.0	6.0	6.0	6.0
Ammonium hydroxide	6.0	6.0	6.0	6.0
Sodium sulfite	0.3	0.3	0.3	0.3
<i>p</i> -Phenylenediamine	0.4	-	-	0.4
<i>o</i> -Aminophenol	0.3	0.4	-	0.2
<i>p</i> -Aminophenol	-	0.4	0.4	-
4-Methyl-5-aminophenol	-	-	0.4	-
<i>m</i> -Aminophenol	-	-	-	0.2
Water	64.0	63.9	63.9	63.9

Table 1: Sample precursor-coupler base ingredients

Additionally every ingredient used will have a significant role on the hair color features and harmfulness.

“Surfactants are used to help dissolve the precursors and couplers, to assist in spreading the dye evenly over the hair, and to thicken the product so it does not drip easily while applying the product. Alkaline is required to facilitate the oxidation reaction, and the reducing agent to inhibit oxidation of precursors by air. The surfactant in the oxidizing base works as a thickener by the surfactants precipitating on dilution when the two com-

different dye precursors and dye couplers gives different coloring affect.



Ingredient	Weight %
Hydrogen peroxide (30%)	50.0
Dodecyl benzene Sulfonate (50%)	33.0
Phosphoric acid	1.0
Water	16.0

Table 2: Sample Oxidizer base ingredients.

On the other hand, varying from one category to another, ingredients will change. Semi- permanent hair coloring does not have peroxide or mixing. It includes surfactants, amide, solvents, fragrance and either acid or alkali.

Ingredient	Weight % of ingredient for desired hair color		
	Light brown	Dark brown	Red-auburn
Cocodiethanolamide	10.0	10.0	10.0
Sodium dodecyl benzene sulfonate (52%)	4.0	4.0	4.0
Neodol 91-2.5	6.0	6.0	6.0
Sodium lauryl sulfate	2.5	2.5	2.5
2-nitro- <i>p</i> -phenylenediamine	0.4	0.4	0.4
HC Red No. 3	0.2	0.2	-
HC Yellow No. 2	0.2	0.2	0.2
HC Blue No. 2	-	0.1	-
Water	76.7	76.6	76.9

Table 3: Sample semi-permanent hair coloring product ingredients*.

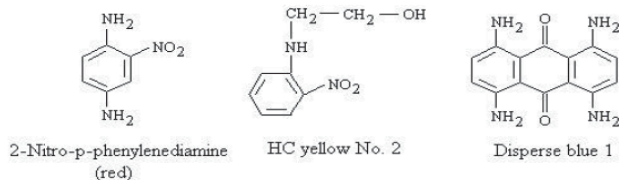


Figure 4: Example of semi-permanent dyes. [2]

“The types of dyes used are neutral aromatic amine, nitro aromatic amine, or anthraquinone derivatives. The dyes can be classified as mono-, di-, or trinuclear (ring) dyes. Studies have shown that small mononuclear hair dyes have a higher rate of rinsing out. Larger dyes are able to reach more hindered position in the hair shaft and therefore the hair color lasts longer” (Munshi, 8)

Additionally heading to the temporary coloring, this product is displayed as rinses, gels, mousses and sprays. Moreover this is a mixture of color additives, surfactant and either acid or alkaline.

Ingredient	Weight % of ingredient for desired hair color		
	Brown	Red	White
Nonoxynol-9	1.0	1.0	1.0
Hydroxyethylcellulose (HHR)	0.7	0.7	0.7
Cetyltrimonium chloride	0.6	0.6	0.6
Neodol 91-2.5	0.5	0.5	0.5
Citric acid trihydrate	0.5	-	0.5
Trisodium phosphate	-	0.3	-
Direct black 51	0.05	0.01	-
Acid violet 43	0.04	0.03	-
Direct red 80	0.03	0.05	-
Acid orange 24	0.04	0.02	-
External D&C Violet 2	-	-	0.03
D&C Red 33	-	-	0.01
FD&C Yellow 6	-	-	0.005
D&C Yellow 10	-	-	0.005
Water	96.54	96.79	96.65

Table 4: Sample temporary hair coloring product ingredient. [2]

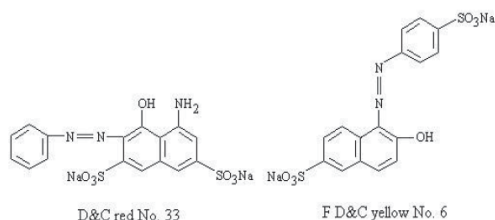
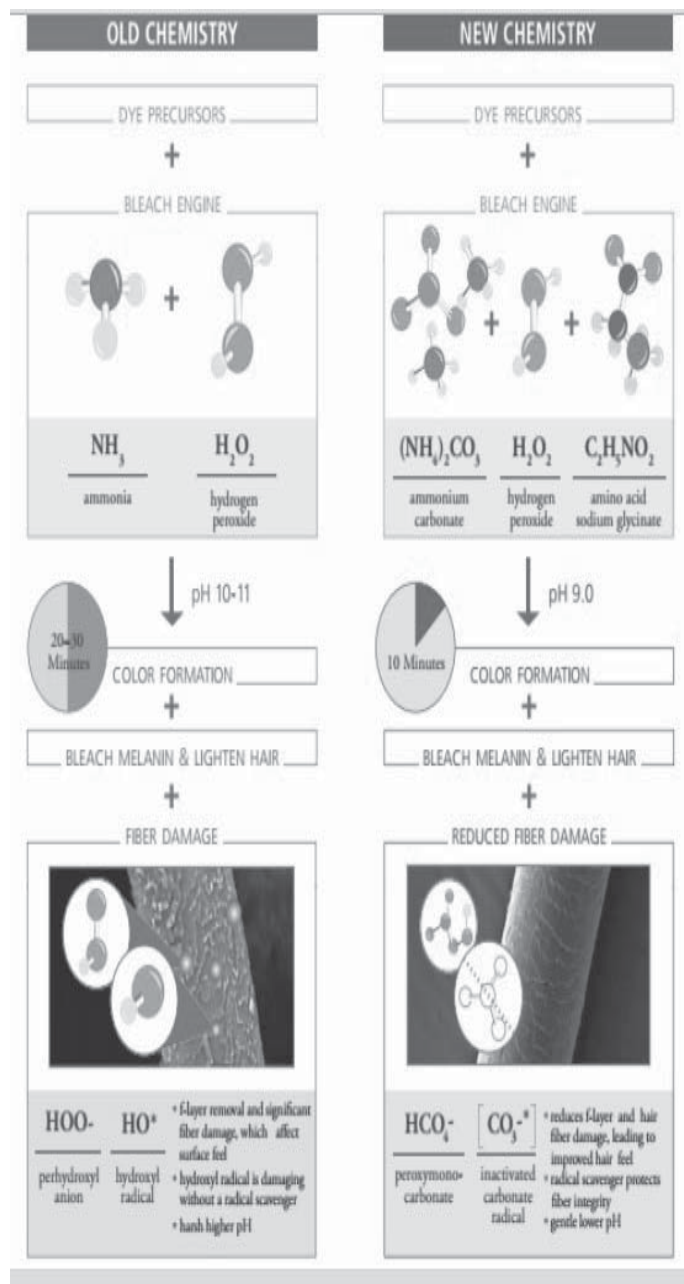


Figure 5: Example of cationic basic dyes used in temporary hair coloring products. [2]

Cationic basic dyes are often used in the formulations. Figure 5 shows some sample cationic basic dyes. Several different kinds of dyes are used for one formulation



Understanding Color Relationships

Color is the aspect of things that is caused by differing qualities of light being reflected or emitted by them.

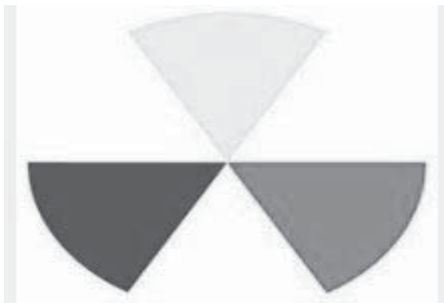
Color is a form of light energy, to see color, you have to have light. When light shines on an object some colors bounce off the object and others are absorbed by it. Our eyes only see the colors that are bounced off or reflected.

Color Wheel and Theory

When mixing and combining colors, you will always get the same result from the same combination, for example: if you mix equal parts of yellow with equal parts of blue it will always make green. Because this theory has been tested over and over, it has been proven to be true and that makes this theory the law of color.

Primary Color

Primary colors are not mixed or adulterated with any other substance or material and cannot be achieved from a mixture. All other colors are created from these three colors: Yellow Blue and Red



Blue: is the darkest of the primary color and is considered a cool color. Blue brings depth or darkness to any color to which it is added

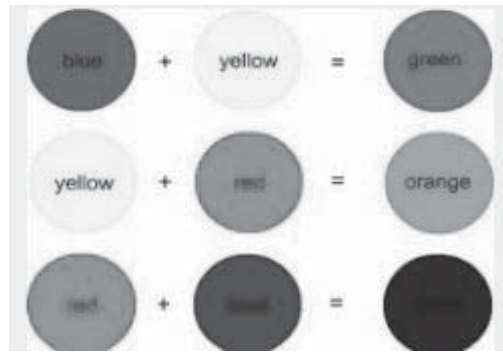
Red: is the medium primary color, when red is added to blue based colors it will cause them to appear lighter

Yellow: is the lightest of the primary colors, when yellow is added to other contrasting colors, the resulting color is lighter and brighter in appearance.

Secondary Color

A secondary color is obtained by mixing equal parts of two primary colors, example:

- When equal parts of **blue** is mixed with equal parts of **yellow** the secondary color is green.
- When equal parts of **yellow** is mixed with equal parts of **red** the secondary color is orange.
- When equal parts of **red** is mixed with equal parts of **blue** the secondary color is violet.



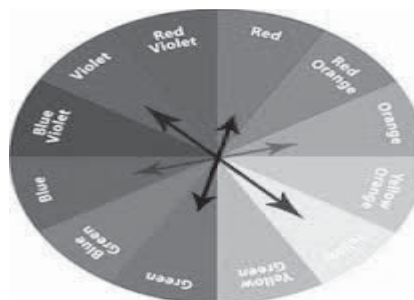
Tertiary Color

Tertiary color is achieved by mixing a secondary color with its neighboring primary color on the color wheel. For example

- Primary color: yellow mixed with Secondary color orange will give a Tertiary color yellow orange.
- Primary color yellow mixed with secondary color green will give a Tertiary color of yellow green.
- Primary color: blue mixed with Secondary color green will give a Tertiary color of blue-green.
- Primary color: blue mixed with Secondary color violet will give a Tertiary color of blue-violet
- Primary color: red mixed with Secondary color violet will give a Tertiary color of red-violet
- Primary color: red mixed with Secondary color orange will give a Tertiary color of red-orange

Complementary Colors

Complementary colors are primary and secondary color positioned opposite of each other on the color wheel that complement each other. Complementary colors can be used to tone down a color or refine unwanted tones in the hair.



A base color is the predominant tonality of an existing color. The base color is the color that influences the final color outcome. For example a violet base color will deliver cool results and will help minimize unwanted yellow tones. A blue base color will provide the coolest result and will help minimize orange tones in the hair.

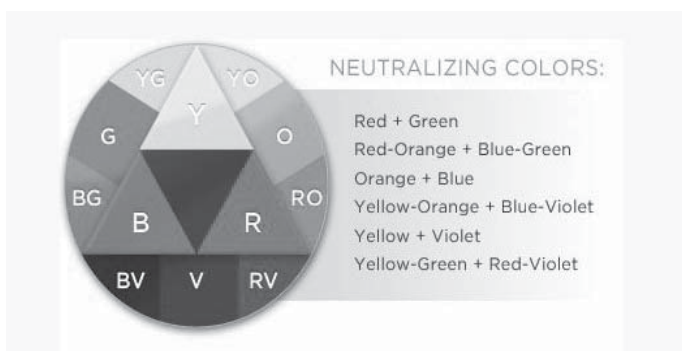
Brassy tones after bleaching hair are caused by the chemicals processing the hair and removing its natural pigment. Depending on the darkness of the hair, bleaching may first turn the hair red, orange then yellow. After bleaching the hair can be left with some orange or yellow deposit known as brassiness, this brassiness can be easily be toned down by using color neutralization.

To neutralize in haircoloring means to cancel it out. Hair color neutralization works by adding the neutralized color to the unwanted haircolor tone to cancel it out.

unwanted tone		neutralize
orange	opposite of the color wheel	blue
Green	Opposite of the color wheel	Red
Violet	Opposite of the color wheel	yellow

Hair Color Charts and Shades

For Clients looking to enhance their hair color or change the entire color, a hair color chart is more than useful to determine which one of the shades to choose. Naturally, there are four hair colors: blonde, brunette, black and red. These four colors can be combined and changed slightly in tone to create a different color/appearance. Additionally, in order to find the client's preferred hair color, the color combination process is applied to all shades.



The hair color chart shows tones from blonde to black. There are three different tones used: cool, warm and neutral. This makes it easier and convenient to find a color in a particular range. Charts are determined by leading hair coloring companies, and they are an excellent way to find the appropriate and desired hair color.

Light Ash Blonde: The palest of blondes that has hints of ash, or a whitish tint with pale green and blue undertones, and suits ladies with pale skin tones well. If you have a client with rosy undertones to their skin, ash will be even better, as the green and blue undertones in the ash hair will neutralize the rosy undertones in the skin.

Light Blonde: True light blonde hair is the kind of blonde many girls have when they are young, before their hair gets dark. Falling right between ash and golden blondes, light blonde color works with light skin and a medium eye color, like hazel or blue.

Light Golden Blonde: Golden blonde, or the closest to yellow-blonde as you can get, is ideal for light skin.

Beeline Honey: The warmest of the blondes, beeline honey hair is a rich tone that is great for warm skin tones. By nature, the honey hair color tends to be extra lustrous because of its dimensional color.

Medium Champagne: Skin with pink or rosy undertones works well with the beige tones of medium champagne hair. The green and blue tints in the champagne color will counteract the pink undertones of the skin.

Butterscotch: A light brown with blonde dimensions, butterscotch hair color works for medium, warm skin tones.

Cool Brown: This medium brown hair color with cool undertones is great for clients with cool skin tones.

Light Brown: Light brown hair typically looks one-dimensional and natural, and works for medium skin tones both cool and warm.

Light Golden Brown: this color is a nice way to warm up brown hair for summer, light golden brown hair looks wonderful on warmer skin tones

Chocolate Brown: A rich, true brown hair tone, chocolate brown works for medium and olive skin tones, as well as those with hazel and brown eyes.

Dark Golden Brown: Deeper skin tones or olive skin tones can go for a dark golden brown, which has just subtle hints of a warm honey gold in the brown color range.

Medium Ash Brown: Ideal for cool, medium skin tones with pink undertones, medium ash brown has the tints of green and blue underneath that come with ash.

Espresso: A rich espresso brown color is gorgeous for medium and darker skin tones and darker eye colors. If the client is fair skinned, espresso may look a bit unnatural on the client

Jet Black: Jet black hair is one of the most striking colors, and it typically works best on darker skin tones, unless of course you're client is going for a real statement. In that case, lighter skin tones can make jet black work, too. Steer clear of the black hair color with blue undertones.

Reddish Blonde: Commonly referred to as strawberry blonde, this warm color works for warm skin tones and lighter eye colors.

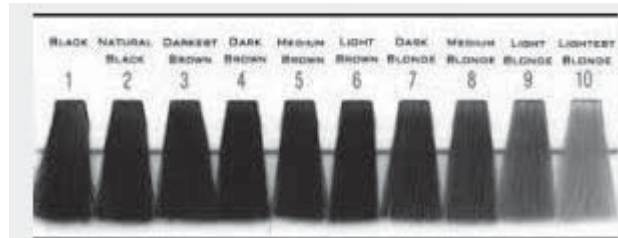
Light Auburn: Light auburn is the closest color to naturally red hair, and it works best on super fair skin tones with light eye colors.

Medium Auburn: A great color for light to medium skin tone, medium auburn hair has a gorgeous rich hue. As with the light auburn color, be cautious of your clients eyebrows when you are coloring the hair medium auburn. A lighter copper eyebrow typically works best.

Reddish Cinnamon: Reddish cinnamon hair works on cool skin tones. Be extra careful with this color, because it can fade quickly. Be sure to use color treated shampoo, and try to shampoo the hair as little as possible to keep the color vibrant.

The color level System

The level is used to identify the lightness or darkness of a color. Colorist uses the level system to analyze the lightness or darkness of the clients hair color.



One thing to remember the darker the color, the smaller the number. This may vary depending on the manufacturer. Some start with #0, others with #1. The same variance can be found on the other end of the scale. Some manufacturers choose to use #10 as the lightest haircolor, while others choose to use #12. Permanent haircolor contains ingredients which create lift and color deposit.

- The lift/deposit ratio in a container of haircolor :
The more parts lift the higher the level.
- A haircolor product with a low number is indicating a small amount of lift and a corresponding greater amount of deposit.
- The level system is one tool the hair colorist can use to determine what color to choose when formulating for a client. If there are a greater number of levels in a line of haircolor, there is a smaller difference between those levels. In some of the high lift colors there could be as little as one tenth of 1% color deposit.

Another way of looking at haircolor is the concentration of color deposit as seen in this prop. The level 10 haircolor has the least amount of color deposit. As the numbers decrease, there is a greater concentration of color deposit.

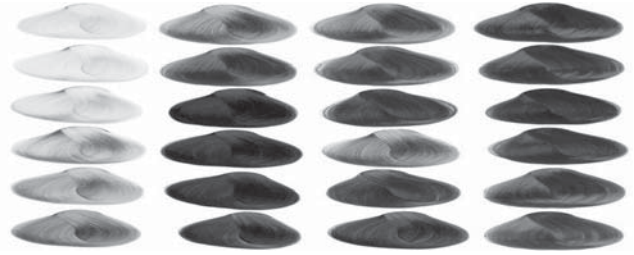


Permanent (lift/deposit) haircolor contains dye, alkaline substances, conditioners, stabilizers, fragrance, detergents and emulsifiers. These are all utilized in various proportions to create the vast numbers of haircolors that are available to the hair colorist. The advantage of professional haircoloring over mass marketing haircoloring is greater selection, professional formulation and professional application techniques.



The level system only indicates lift/deposit ratio. The tone or shade defines the actual color and is generally listed on the product. Manufacturers often add a letter or series of numbers to identify level and indicate tone. While this information is provided to help the hair colorist determine formulation, the final color is determined by a number of factors that the colorist must consider: Category of natural haircolor, presence/amount of gray hair, porosity and condition of the hair. The colorist cannot rely on level and tone indicators from a manufacturer alone to accurately predict the final color.

A variety of terms are used to describe the tone of a haircolor. Neutral, natural, drab, gold, ash, smoky, red, and auburn red; to mention a few. It is important to know the degree of concentration of the tone. For example: The color identified as gold could be a very intense yellow gold, or have slightly more gold than a neutral. Working with the color and making swatches will help the hair colorist recognize the actual color.



HAIRCOLORING PRODUCTS

There are many different types of haircoloring products available and to choose from. They include pigmented shampoos, weekly rinses, semi-permanent, permanent lift and deposit-only haircolor.



The weekly rinse or temporary haircolor is primarily used to add color to gray hair, faded blondes or brassy hair. Rinses or temporary haircolor is not generally used to cover gray nor does it have the ability to lighten hair. These types of haircoloring products are applied at the shampoo bowl or working station and left in the hair. The stylist should be mindful when applying these product. The products will rub off if applied excessively.



Semi-permanent haircolor is not mixed with peroxide, it is simple to use because the color you see is the color you get. It is a direct dye and does not require oxidation for the color to stain the hair. In areas where the hair is more porous, this type of color will show greater intensity. Caution must be exercised when utilizing a Semi-permanent haircolor on porous hair; it can stain the hair permanently.



Deposit-only haircolor utilizes oxidative and direct dyes, and requires peroxide. The peroxide is generally a low volume oxidative solution. Deposit-only /Demi-permanent haircolor is similar in nature to semi-permanent haircolor but is longer lasting. It is formulated to deposit but not lift color.



Permanent (lift/deposit) haircolors are available in a variety of forms: Gels, liquids and creams. They are packaged in tubes, as well as bottles. The majority utilize equal parts of peroxide, although some utilize a one-to-two ratio of haircolor to peroxide. Permanent haircolor works in basically the same manner; they create a certain degree of lift and deposit. Permanent haircolors are the only haircolors that are formulated to lighten hair.



Color Categories

Temporary Color:

- Create fun, bold results that easily shampoo from the hair
- Helps neutralize yellow hair

Semi-permanent color:

- Introduces a client to haircolor services
- Adds subtle color results
- Tones pre-lightened hair.

Demi-permanent color:

- Blends gray hair
- Enhances natural color
- Tones pre-lightened hair
- Refreshes faded color
- Color filler in color correction

Permanent Haircolor

- Changes existing haircolor
- Covers Gray
- Creates bright or natural looking hair color changes

Alkaline substances

When alkaline substances are mixed with hydrogen peroxide they react and cause oxidation, but can also cause heat, and in extreme cases, chemical burns. Clients must be monitored the entire time a chemical is in contact with their hair and scalp. Inquire often to client comfort, or discomfort. If the client experiences any discomfort, take action immediately. Remove the product, and rinse thoroughly with tepid to cool water, and then use a soothing rinse.



Hydrogen peroxide is the catalyst that causes permanent haircolor to work. A qualified hair colorist should be able to utilize various volumes of peroxides. Twenty volumes (20) peroxide is the typical developer used in most cases. Clients with sensitive scalps may not be able to withstand additional activity from the higher volume peroxide.



Here's a guide that you can follow to help you decide what volume to choose:

20 volume - for blonde, or severely damaged hair

30 volume - for medium brown to blonde, or damaged hair

40 volume- for dark brown or black hair

Higher volumes of peroxide are utilized when a greater degree of lift is desired. As the volume of peroxide increases, the color deposit diminishes. The opposite occurs when the volume of peroxide is lowered.

When haircolor is mixed with peroxide, a chemical action takes place. The higher the level of color (more lifting action), or the higher the volume of peroxide, the more aggressive the chemical reaction. The lower the level of color (more color deposit), or the lower the volume of peroxide, the less aggressive the chemical reaction. When first mixed, the chemical reaction is most active. When the formula is applied to hair, the peroxide and ammonia begin to dissipate. The color remaining in the bowl or applicator bottle is oxidized at a slower rate than the product applied to the head.



Hydrogen peroxide affects the lifting and depositing cycle of the haircolor process. The majority of the lifting occurs during the initial stages of the application and will continue to a lesser degree during the entire haircoloring process.

The amount of color deposit is attributed to the amount of color in the formula. If coverage of gray hair is desired and does not occur, it is possible the level of color being used does not contain enough color deposit. There isn't enough color in the higher level of tints to cover gray hair completely. The level of color being used should be the first consideration when gray coverage is poor. If there is ample color in the formula and the gray hair is still not being covered, the hair itself would be considered resistant.

An alkali contained in color products swells the cuticle and allows the haircolor to penetrate. The combination of hydrogen peroxide with an alkali creates a chemical reaction, which breaks down the melanin and develops the dyes. Depending on the level of color, the color will penetrate further into the hair on subsequent applications.

Hydrogen peroxide in combination with an alkali is responsible for releasing peroxides free radicals. The peroxide and alkali break apart the melanin, causing it to diffuse and give the hair a lighter appearance. The peroxide is primarily responsible for dissolving the melanin.

It is important to know the relationship between volume and percentage when discussing peroxides. Hydrogen peroxide manufactured for haircolor use is labeled according to strength. In the United States, peroxide strength is stated as a numeric value followed by the word "volume"; e.g. 20 volume peroxide. In other countries such as England and Canada.

4 HRS HAIRCUTTING REFERENCE

Introduction

Haircutting is the single most important service you must master as a professional cosmetologist. Why? Because a good haircut serves as the foundation of most every other service offered in the salon. Compare it to building your dream home. You envision the finished product. You imagine the style you will use to furnish it. You then hire an architect (the stylist) to create the floor plan. Then you contract with a builder (the stylist) to construct the home. Now, if the builder establishes a weak foundation made of sand or clay, the home will not stand. A solid foundation, however, like the haircut, will serve as the sound base for the beautifully created home (or hairstyle)!

In addition, every member of the family avails themselves to regular haircuts. Therefore, it is a tremendous source of revenue and repeat business. You will begin with the basics in haircutting. You will need to learn the purpose and safe use of each haircutting implement. There are some basics in the anatomy of the head that will impact your skills in haircutting as well. Also, a review of some of the basic elements of design, including form, balance, and wave pattern, will be beneficial as you design a haircut.

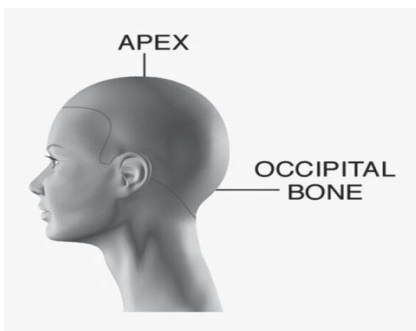
If a quality, well-blended haircut is not achieved, you will have difficulty in completing other services such as styling or chemical texture services. So it will serve you well to master your haircutting skills before entering the salon.

As with any other service, the client's desires, personality and lifestyle will all impact the techniques used and the end result of the haircut.

PRINCIPLES OF HAIR DESIGN

You need to develop an understanding of the important steps of the haircutting process. Those principles include sectioning, combing, elevating the hair, and cutting the hair ends which all essentially represent the physics (for every action or technique used, there will be an expected and predictable result) of hair.

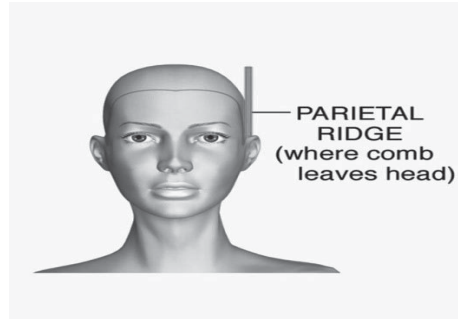
ANATOMY OF THE SKULL



Reference Points

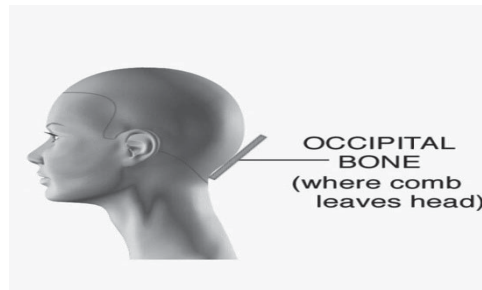
Understanding the reference points will help ensure balance within the design; allow you to re-create the haircut again and again; allow you to know where and when to change technique to make up for irregularities, such as a flat crown.

Parietal Ridge

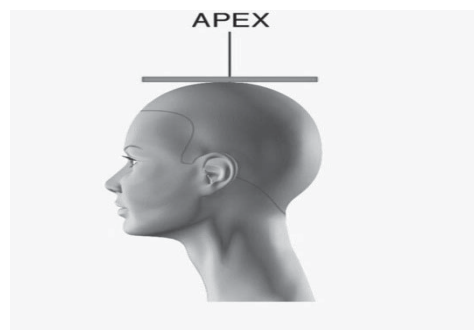


The Parietal Ridge is the widest area of the head, starting at the temples and ending at the bottom of the crown. It is found by placing a comb flat on the head at the sides. Where the head starts to curve away from the comb is the parietal ridge. This area is also referred to as the crest area.

Occipital Bone



The Occipital Bone protrudes at the base of the skull. This area is found by feeling the skull or placing a comb flat against the nape area to observe where the comb leaves the head.



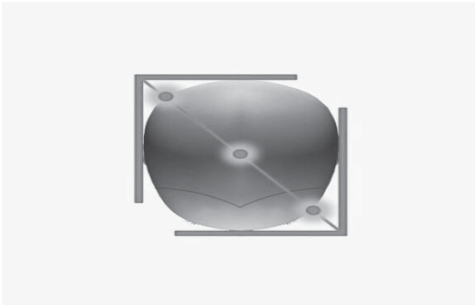
Apex

The Apex is the highest point on the top of the head. It is located by placing a comb flat on the top of the head. It will rest on that highest point.

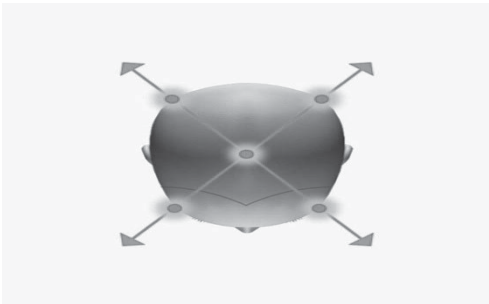
Four Corners

This area can be located in two ways.

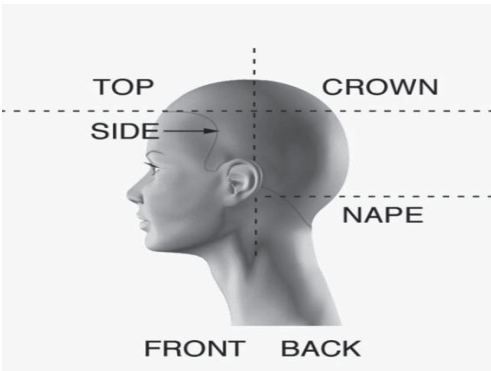
(1) Place two combs flat against side and back, locating the back corner at the point where the two combs meet.



(2) Make two diagonal lines crossing the apex of the head, pointing directly to the front and back corners.



Areas of the Head



Top- Locate the top by parting the hair at the parietal ridge, continuing all the way around the head. The hair in the top area lies on the head while hair everywhere else hangs due to gravitational pull.

Front- Locate the front by parting from the apex to the back of the ear. The hair that falls in front of the ear is considered to be the front (some side hair will be included here).

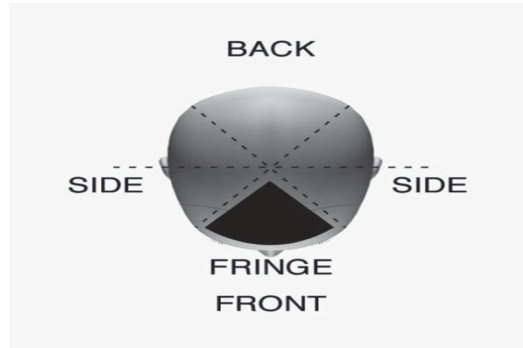
Sides- The sides include all the hair from the back of the ear forward, and below the parietal ridge.

Crown- The crown is the area between the apex and the back of the parietal ridge.

Nape- The nape is the area at the back of the neck and below the occipital bone. This area can be located by taking horizontal parting across the back of the head at occipital bone.

Back- This area is located by parting from the apex to the back of the ear. The hair that falls naturally behind the ear (located at the same time you locate the front section).

Fringe- This is also called the bang area. It is a triangular section that begins at the apex and ends at the front corners. This area can be located by placing a comb on top of the head so that the middle of the comb is balanced on the apex.



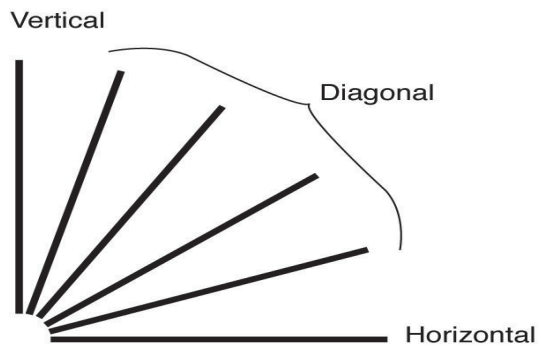
The spot at which the comb leaves the head in front of the apex is where the fringe begins. When combed into a natural falling position, it falls no farther than the outer corners of eyes.

LINES AND ANGLES

A **Line** is a thin, continuous mark used as a guide.

An **Angle** is the space between lines or surfaces that intersect at a given point.

Straight Lines can be broken down into three types:



Horizontal lines are parallel to horizon or floor. They are level and opposite of vertical. They direct the eye from one side to the other. Horizontal lines are used in one-length and low-elevation haircuts. They build weight. Consider the following:



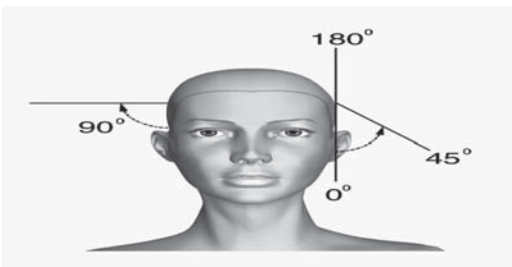
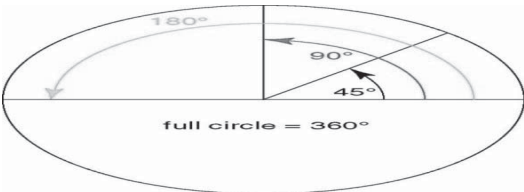
Vertical Lines are up and down rather than left and right. They are perpendicular to the floor. These types of lines are used to create graduated or layered haircuts and used with higher elevations. They remove weight. Consider the following example:



Diagonal Lines are between horizontal and vertical lines. They have a slanting or sloping direction. They are used to create beveling (a technique for creating fullness by cutting the ends at a slight taper). Diagonal lines are used to create stacking and to blend long layers to short layers as the following demonstration shows:



Angles- Basic geometry is important to haircutting because this is how shapes are created. Angles are important in elevation and cutting line



ELEVATION

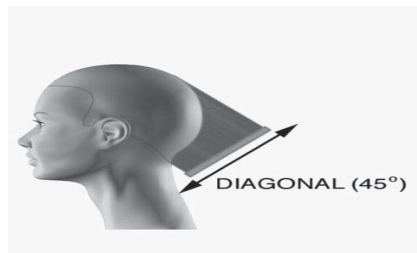
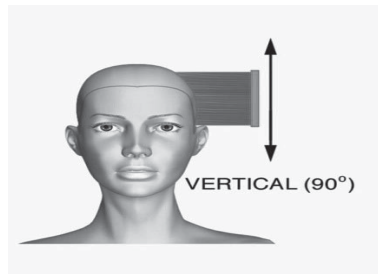
Elevation represents the angle or degree at which a subsection of hair is held, or elevated, from the head when cutting. It creates graduation and layers and is usually described in degrees. The more you elevate the hair, the more graduation you create.

Elevation below 90 degrees builds weight.

Elevation above 90 degrees removes weight or layers the hair.

CUTTING LINE

This is the **ANGLE** at which the fingers are held when cutting the actual line of hair that is cut. It's also called *finger angle*, *finger position*, *cutting position*, *cutting angle*, and *shears angle*.



GUIDELINES

Also called a *guide*, this is the section of hair that determines the length the hair will be cut. It is located at either the perimeter (outer line) or the interior of the cut. It is usually the first section cut.

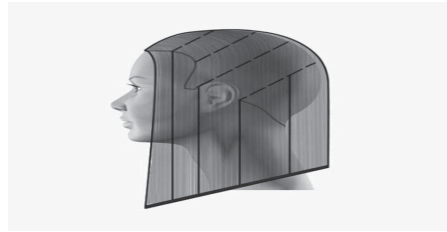
Stationary Guide- This guide does not move.



All other sections for the stationary guide are combed to this guide and cut at the same angle or length. A blunt cut is an example:



ELEVATION EXAMPLES:

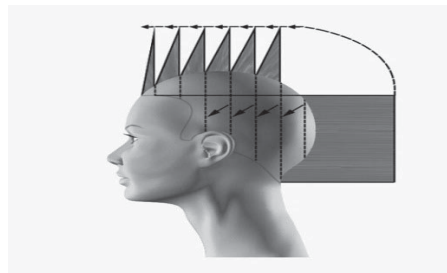


Blunt/One-Length Cut

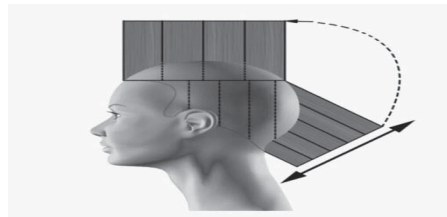
Traveling Guide- Also called a movable guide, this guide moves as the haircut progresses.



When using this type of guide, you take a small slice of the previously cut section and move it to the next subsection where it becomes the new guide. This guide is used often in layered and graduated haircuts.



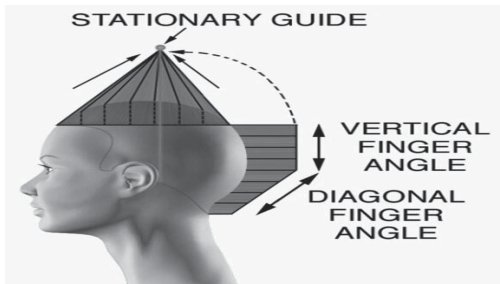
90-Degree Elevation



45-Degree with 90-Degree

OVER DIRECTION

OVER DIRECTION occurs when hair is combed away from its natural falling position, rather than straight out from the head, toward a guide. It's used in graduated and layered haircuts.



Client Consultant

A great haircut always begins with a great consultation. Often, when clients come to you, they are feeling that there is a lot at stake. They may be preparing for an important event, such as a party, a business event, or a wedding. They may be in the market for a new look, or wanting to change their appearance and, by extension, how they feel about themselves. Always perform a complete consultation on the client before beginning the haircut to ensure that both of you are in accord and that the haircut is suitable.

A consultation is a detailed conversation between you and your client during which you find out what the client is looking for, offer suggestions and professional advice, and come to a decision, about the most suitable haircut. The purpose of the consultation is to open the lines of communication, have a clear understanding of what the client wants, ensure that the client understands what you would like to do, and together determine the end result. Together you may share thoughts about the best haircut for the client's face shape and can discuss the nature of the client's hair whether it is thick or thin, fine or coarse, or straight or curly. If the client has a particular look in mind, the two of you can discuss whether that look will be appropriate.

It can be difficult when a client asked for something that you know will not look best for that person. This is when you will want to draw a line on skills such as gentle persuasion and positive reinforcement. A true professional can offer alternative suggestions that will work with the client's hair texture, face shape, and lifestyle. It is within the framework of the consultation that you will target those skills that led you into this people-oriented profession in the first place.

The Desired Look

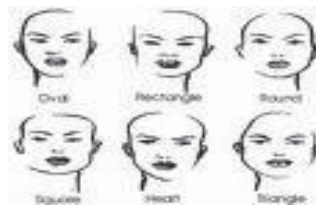
A great place to start with the consultation is to ask the client what she wants. Sometimes, she may not be able to answer that question and may ask you for some suggestions. Either way, this is the first step in the consultation.

There are several focal points to focus on here:

1. How much time is the client willing to spend on her hair every day?
2. What is her lifestyle?
3. Does she want something classic or trendy? For example, if a client with naturally curly thick hair is asking for a haircut that is primarily designed for straight hair, will she be willing to take the time to blow-dry it straight every day?

This is also the time you will want to analyze the hair density and texture, growth patterns, and hairline. If the client has hair that grows straight up in the nape and is requesting a short haircut that is soft and wispy at the hairline, you know the hairline will not lie down, so you may need to suggest other alternatives that will work with that kind of hairline.

Face Shape



Another part of consultation is analyzing the face shape.

A great haircut is not only technically sound, but also it suits the client's face shape. To analyze the shape of a client's face, pull all the hair away with a clip, or wrap the hair in a towel. Look for the widest areas, the narrowest areas, and the balance of the features.

A quick way to analyze a face shape is to determine if it is predominantly wide or long. Look at the features that you want to bring out, and those you might want to de-emphasize.

Wide Face Hairstyle

By analyzing face shape, you can begin to make decisions about the most suitable haircut, or shape, for the client. An important thing to remember is that weight and volume draw attention to an area. For example, if a client has a wide face, a hairstyle with fuller sides makes the face appear wider, whereas a narrower shape will give length to the face. On the other hand, if the client has a narrow forehead, you can add visual width by increasing volume or weight in that area. In order to balance out face shapes or draw the eye away from certain areas, you need to add or remove weight or volume in other areas.



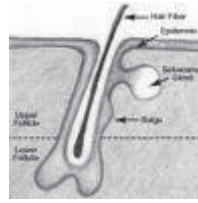
Narrow Face Hairstyle

Another important point to consider is the client's profile, or how she looks from the side. Turn the chair so you can see your client from the side in the mirror. Pull the hair away from the face and away from the neck. What do you see? Look for features to emphasize, such as a nice jaw line or lovely neck; or features to draw attention away from, such as a prominent or a receding chin, a double chin, or a prominent nose. The haircut you choose should flatter the client by emphasizing good features and taking attention away from features that are not as flattering. For example, if a client has a prominent chin, you will want to balance the shape by adding volume or weight somewhere else. If the client has a prominent nose, you can balance the shape from the profile by adding weight in an appropriate place.



Style for Client with Prominent Chin
Style for Client with Prominent Nose

Hair Analysis



There are five characteristics that determine the behavior of the hair

- Density
- Texture
- Wave pattern
- Hairlines
- Growth pattern

Hair Density

Hair density is the number of individual hair strands on one square inch of scalp. It is usually described as thin, medium, and thick. Hair density is different from hair texture in that different individuals with the same hair texture can have different densities. Some individuals with the same hair texture can have different densities. Some individuals may have coarse hair texture (each hair has a large diameter), but low hair density (a low number of hairs on the head). Others may have fine hair texture (each hair has small diameter), but high hair density (a high number of hairs on the head).

The average hair density is about 2,200 hairs per square inch. Hair with high density (thick or dense hair) has more hairs per inch. Hair with low density (thin hair) has fewer hairs per square inch. The average head of hair contains about 100,000 individual hair strands. The number of hairs on the head generally varies with the color of the hair. Blondes usually have the highest density, and redheads tend to have the lowest.

Hair Texture

Hair texture is the general quality and feel of the hair. It is based on thickness or diameter of each hair strand, usually classified as coarse, medium, and fine. A fine hair strand is much "skinnier" than that of a coarse hair strand. A client may, in fact, have a fine texture of hair with a thick density, meaning the individual hairs are fine, but there are a lot of them, or a client may have a coarse texture but a thin density, meaning the individual hairs are "fatter" but they are spaced further apart, or the client may have a coarse texture and a thick density, which translates into a substantial amount of hair.

Why is density and texture important? Different hair types respond differently to the kind of cutting they receive. Some hair types need more layers; some need more weight.

For example, coarse hair tends to stick out more, especially if cut to short, whereas fine hair can be cut to very short lengths and still lie flat.

However, if a client has fine (texture) and thin (density) hair, cutting too short can result in an unflattering look, with the scalp showing through.

Coarse hair texture has the largest diameter. It is stronger than fine hair, for the same reason that thick rope is stronger than thin rope. Coarse hair also has a stronger structure. It usually requires more processing than medium or fine hair and may also be more resistant to processing. It is usually more difficult for hair lighteners, hair colors, permanent waving solutions, and chemical hair relaxers to penetrate coarse hair.

Medium hair texture is the most common and is the standard to which other hair is compared. Medium hair is considered normal and does not pose any special problems or concerns.

Fine hair has the smallest diameter and is more fragile, easier to process, and more susceptible to damage from chemical services than coarse or medium hair.

Hair texture can be determined by feeling a single dry strand between the fingers. Take an individual strand from four different areas of the head: front hairline, the temple, the crown, and the nape. Hold the strand securely with one hand while feeling it with the thumb and forefinger of the other hand. With a little practice, you will be able to feel the difference between coarse, medium, and fine hair diameters.

Wave Pattern

The wave pattern, or the amount of movement in the hair strand, varies from client to client, as well as within the same head of hair. A client may have stick-straight hair (no wave), wavy hair, curly hair, extremely curly hair, or anything in between. Wave pattern is the result of genetics and racial background. Although there are exceptions, as a general rule, Asians tend to have extremely straight hair, Caucasians tend to have straight to wavy hair, and African Americans tend to have extremely curly hair. However, straight, curly, and extremely curly hair occurs in all races. This means that anyone of any race, or mixed race, can have hair with varying degrees of curliness from straight to extremely curly. It is also true that within races, individuals have hair with varying degrees of curliness.

The wave pattern may also vary from strand to strand on the same person's head. It is not uncommon for an individual to have different amounts of curl in different areas of the head. Individuals with curly hair often have straighter hair in the crown and curlier hair in other areas.

Several different theories seek to explain the cause of naturally curly hair, but there is no single, definite answer that explains why some hair grows straight and other hair grows curly.

The most popular theory claims that the shape of the hairs cross section determines the amount of curl. This theory stated that hair with a round cross-section is straight, hair with an oval cross-section is wavy, and hair with a flat cross-section is curly.

Although it is true that cross-sections of straight hair tend to be round and curlier hair tends to be more oval, modern microscopes have shown that a cross-section of hair can be almost any shape, including triangular. The shape of the cross-section does not always relate to the amount of curl.

Although it is still only a theory, it is now believed that natural curl is the result of one side of the hair strand growing faster than the other side. Since the side that grows faster is slightly longer than the slower growing side, tension within the strand causes the long side to curl around the shorter side. Hair that grows uniformly on both sides does not create tension and results in straight hair.

The hair's wave pattern is independent of its other properties. Hair has different diameters from fine to coarse, regardless of its wave pattern. All hair, straight to extremely curly and everything in between comes in different texture and densities.

Imagine the same haircut cut at the same length on different types of hair; fine thin hair, thick coarse hair, and medium curly hair.

Hairlines and Growth Patterns

Both the hairline and the growth patterns are important to examine. The hairline is the hair that grows at the outermost perimeter along the face, around the ears, and on the neck. The growth pattern is the direction in which the hair grows from the scalp, also referred to as natural falls or natural falling position. Cowlicks, whorls, and other growth patterns affect where the hair ends up once it is dry. You may need to use less tension when cutting these areas to compensate for hair being pushed up when it dries, especially in the nape, or to avoid getting a "hole" around the ear in the one-length haircut. Another crucial area is the crown (on many people there are some wild things going on up there!)



Uniform layered cut on fine, thin hair.



Uniform layered cut on thick, coarse hair.



Uniform layered cut on medium, curly hair.

Posture and Body Position

Posture, which is how you stand, and body position, which is how you hold your body when cutting hair, are important habits to be aware of. As a working cosmetologist, you will be spending many hours on your feet. Good posture and body position will help you avoid back problems in the future and ensure better haircutting results. The correct body position will help you move more efficiently through the haircut and thereby maintain more control over the process.

- Position the client. Not only is your body position important, but your client's is also. Make sure your client is sitting up straight and that her legs are not crossed. Gentle reminders as the haircutting progresses may be necessary. Remember, you can move the client by turning the chair, which give you the option to either keep your body in the same place or angle the client's chair so you can see what you are doing in the mirror.
- Center your weight. When working, keep your body weight centered and firm. Stand with your knees slightly bent, rather than locked. Instead of bending at the waist, bend one knee if you need to lean slightly one way or the other.
- Stand in front of your section. When cutting hair, a general rule of thumb is to stand directly in front of the area you are cutting. By doing this, you keep your body weight centered, and you will automatically find yourself moving around the head during the haircutting service. If you wish to stay standing in the same place, or want to be able to view what you are doing in the mirror, you may choose to move the chair.

Hand Positions for Different Cutting Angles

As a rule, always stand in front of the area you are working on, and position your hands according to the cutting line.

- Cutting over your fingers. There are some situations in which you will be cutting over your fingers or on top of your knuckles. This hand position is used most often when cutting uniform or increasing layers. In this case, you will usually stand to the side of the section on which you are working.
- Cutting below the fingers. When cutting a one-length bob or a heavier graduated haircut, it is customary to use a horizontal cutting line. In this case, you will be cutting below your fingers, or on the inside of your knuckles.
- Cutting palm to palm. When cutting with a vertical or diagonal cutting line, cutting palm to palm is the best way to maintain control of the subsection, especially with regard to elevation and over direction. Cutting palm to palm means that the palms of both hands are facing each other while cutting. This is different from cutting on the top of your fingers or knuckles. Cutting palm to palm also helps to prevent strain on your back as you work.

General Haircutting Tips

- Always take consistent and clean partings, which ensure an even amount of hair in each subsection and produce results that are more precise.
- Take extra care when working in the crown and neckline, which sometimes have very strong growth patterns.
- Another danger zone is the hair that grows around the ear or hangs over the ear in a finished haircut. Allow for the protrusion of the ear by either keeping more weight in that area of cutting with minimal tension.
- Always use consistent tension. Tension may range from maximum to minimum. You can maintain light tension by using the wide teeth of the comb and by not "pulling" the subsection too tightly. Whatever tension you are using, it should be consistent with in the area on which you are working.
- Pay attention to head position. If the head is not upright, it can be hard to judge elevation and over-direction.
- Maintain an even amount of moisture in the hair. Dry hair responds to cutting differently than wet hair, and may give you uneven results in the finished haircut.

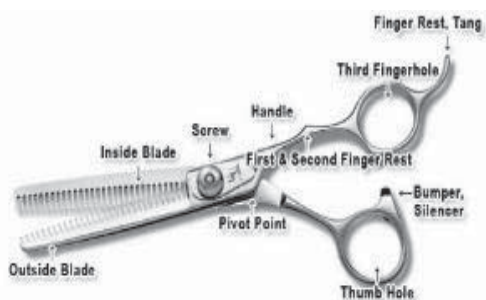
- Always work with your guideline. If you cannot see the guide your subsection is too thick. Go back and take a smaller subsection before cutting. Taking too large a subsection can result in a large mistake. By using smaller sections, if a mistake is made, it is small and therefore easier to correct.
- Always crosscheck the haircut; Crosscheck is parting the haircut in the opposite way, from which you cut it, to check for precision of line and shape. For example, if you use vertical partings in a haircut, crosscheck the lengths with horizontal partings.
- Use the mirror to see your elevation. You can also turn the client sideways so that you can see one side in the mirror while working on the opposite side. This helps create even line and maintains visual balance while working.
- Always check that both sides are even by standing in front of your client as well.

Remember that curly hair shrinks more than straight hair, anywhere from ½ to 2 inches. Always leave the length longer than the desired end result.

Haircutting Tools

There are several tools that are indispensable for haircutting. Understanding these different implements or tool and the different results you can get is vital to creating a great haircut. To do your best work, buy and use only superior implements from a reliable manufacturer. Use them properly, and take good care of them.

- **Haircutting shears**- mainly used to cut blunt or straight lines in the hair. May also be used to slide cut, point cut and for other texturizing techniques.



- **Thinning shears** mainly used to remove bulk from the hair. Sometimes referred to as texturizing shears, tapering shears or notching shears. Many different types of thinning shears are used today, with varying amount of teeth in the blades. A general rule of thumb is that the more teeth there are the less hair is removed.

Notching shears are usually designed to remove more hair, with larger teeth set farther apart.



- **Straight razor or razor shaper**- mainly used when a softer effect is desired on the ends of the hair. Razors can be used to create an entire haircut, to thin hair out, or to texturize the hair in certain areas. Razors come in different shapes and sizes, with or without guards.



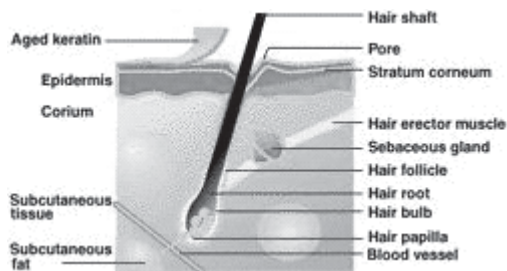
- **Clippers**- mainly used when creating short tapers, short haircut, fades and flat tops. Use cutting guards at various length or in the clipper-over comb technique. Clippers can be used without a guard to shave hair right to the scalp.



- **Edgers**- a smaller version of clippers mainly used to remove excess or unwanted hair at the neckline and around the ears, mostly on haircuts for men and very short haircuts for women.
- **Wide tooth comb**- mainly used to detangle hair. Rarely used when performing a haircut.
- **Section clips**- these come in a variety of shapes styles and sizes and can be made of plastic or metal. In general two types are used jaw clip and duckbill clips. Both come in large and small sizes.
- **Barber Comb**- Mainly used for close tapers in the nape and sides when using the shears over comb technique. The narrow end of the comb allows the shears to get very close to the head.
- **Styling or cutting comb**- also referred to as all-purpose comb, used for most haircutting procedures. It can be 6 to 8 inches in length and has fine teeth at one end, wider at the other.

12 HOUR COSMETOLOGIST COMPOSITION

The Structure of Hair:

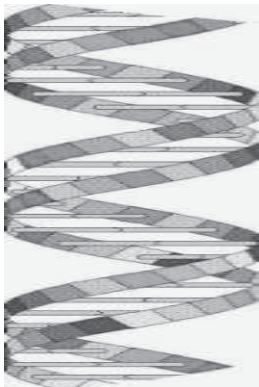


We will begin by defining the hair. Hair is composed primarily of proteins (88%). These proteins are of a hard fibrous type known as keratin. Keratin protein is comprised of what we call "polypeptide chains." The word, polypeptide, comes from the Greek word "poly" meaning many and "peptos" meaning digested or broken down.

In essence, if we break down protein, we have individual amino acids. Many (poly) amino acids joined together form a "polypeptide chain". Two amino acids are joined together by a "peptide bond", and the correct number of amino acids placed in their correct order will form a specific protein; i.e. keratin, insulin, collagen and so on.

The "alpha helix" is the descriptive term given to the polypeptide chain that forms the keratin protein found in human hair. Its structure is a coiled coil. The amino acids link together to form the coil and there are approximately 3.6 amino acids per turn of the helix (coil).

Each amino acid is connected together by a "peptide bond". The peptide bond is located between the carbon atom of one amino acid extending to bond with the nitrogen atom of the next amino acid.

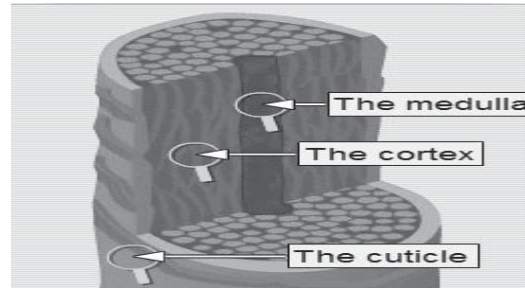


The A Helix Coil

In the organization of a single hair, three "alpha helices" are twisted together to form a "protofibrils". This is actually the first fibril structure of the hair. Nine protofibrils are then bundled in a circle around two or more to form an eleven-stranded cable known as the "micro fibril". These micro fibrils are embedded in an amorphous unorganized protein matrix of high sulfur content and hundreds of such micro fibrils are cemented into an irregular fibrous bundle called a "macro fibril".

These macro fibrils are grouped together to form the cortex (or the main body) layers of the hair fiber. Packed dead cells surround these structures and are known as the cuticular layers of the hair. In the center of these structures lies the medullary canal, which is actually a part of the excretory system and houses any foreign debris, heavy metals, synthetics and medications that are thrown off by the body and eventually released through the canal.

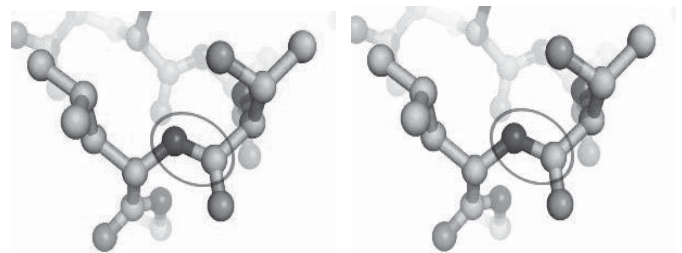
The Cortex



The cortex is the middle layer of the hair, located directly beneath the cuticle layer. End bonds connect the polypeptide chains of the cortex. End bonds are cross-linked by side bonds. This cross-linking forms the fibers and hair structure.

These chemical bonds hold the hair in its natural wave pattern and, are responsible for the incredible strength and elasticity of human hair. Breaking the side bonds of the cortex makes it possible to change the natural wave pattern of the hair.

Peptide Bonds (End Bonds)



The chemical bonds that join the amino acids are called peptide bonds, in turn, link together to form long chains of amino acids called polypeptide chains. Proteins are long, coiled, complex polypeptide chains that make of many different amino acids linked together, end-to-end, like pop beads.

It is important to note that peptide bonds should not be broken during any salon service. Breaking the hair's peptide bonds causes the polypeptide chains to come apart and dramatically weakens the hair. If used incorrectly, chemical hair texturizers can break peptide bonds and cause hair breakage. Chemical hair texturizers must be used carefully.

Side Bonds

The middle layer of the hair, the cortex, is made up of millions of polypeptide chains cross-linked with each other by three different types of side bonds. The bonds that link up the polypeptide chains of the hair are hydrogen, salt and disulfide bonds.

Hydrogen bonds account for one-third of the hair's strength. The hydrogen bond is a weak physical side bond that is easily broken by water or heat. Hydrogen bonds can be reformed by drying or cooling the hair. These bonds are very abundant in the hair.

Bonding in Keratin Protein

When the hair is in its normal unstretched state. It is referred to as A of alpha keratin. The original configuration of the hair is held in place by the bonding found in the cortex layers of the hair. As we stated earlier, keratin protein begins with an alpha helix building into protofibrils, micro fibrils, macro fibrils, and then cortex layers. The bonds in the hair are located within each and every alpha helix.

Disulfide Bonds

Disulfide bonds are formed between two cysteine amino acids, located on neighboring polypeptide chains. A disulfide bond joins a cysteine sulfur atom on one polypeptide chain with a second cysteine sulfur atom on a neighboring polypeptide chain to form cysteine, the oxidized form of cysteine. Disulfide bonds are weaker than peptide bonds, but are much stronger than hydrogen or salt bonds.

Disulfide bonds are strong chemical side bonds that are not broken by heat or water. Although there are far fewer disulfide bonds that are not broken by heat or water.

Although there are far fewer disulfide bonds than hydrogen or salt bonds, disulfide bonds are the strongest of the three side bonds and account for about one-third of the hair's overall strength. The chemical and physical changes in disulfide bonds make permanent waving, soft curl permanents (curl re-forming), and chemical hair relaxing possible.

Salt Bonds (Side Bonds)

Salt bonds are relatively weak physical side bonds that are the result of an attraction between opposite electrical charges. Salt bonds are easily broken by changes in pH, as in permanent waving, and re-form when the pH returns to normal. Even though salt bonds are far weaker than disulfide bonds, the hair has so many salt bonds that they account for about one-third of the hair's total strength.

Hydrogen Bonds (Side Bonds)

Hydrogen bonds are relatively weak physical side bonds that are the result of an attraction between opposite electrical charges. This bond is located between the coils of the alpha helix and is responsible for the ability of the hair to be stretched (elasticity) and return back to its original shape. The hydrogen bonds allow us to change the shape of

the hair temporarily with the aid of water. Hydrogen bonds are easily broken by water, as in wet setting, or heat, in thermal styling, it is re-form as the hair dries or cools. Although individual hydrogen bonds are very weak, there are so many of them that they account for about one-third of the hair's total strength.

A wet set is an example of a physical change that results from breaking and re-forming the hydrogen bonds within the hair. Wetting the hair breaks the hydrogen bonds and permits the hair to be stretched and wrapped on rollers. Drying the hair removes the water and re-forms the hydrogen bonds in their new shape. These changes are only temporary. As soon as the hair is wet or is exposed to high humidity, it will return to its original shape. Thermal styling with hair dryers, curling irons, and pressing combs also break hydrogen bonds. These styles involve a physical change with temporary results. The hair returns to its original shape as soon as it is wet.

Understanding Hair Structure

A hair is a specialized outgrowth of part of the skin called the epidermis. It can be divided into two distinct parts, the hair follicle and the hair shaft.

- Hair follicle: is a small, curved pit buried deep in the fat of the scalp and is the point from which the hair grows. The hair follicle is well supplied with tiny blood vessels and the blood passing through them nourishes the growing region. Normal body temperature surrounds the hair follicle, which is not affected by cold or hot weather.

While animal hair, like that of a cat or horse, grows at different rates depending on the amount of natural light, which varies according to the time of year, human hair too behaves similarly, growing a little faster in winter than in summer.

- Hair is composed of protein cells: and these die very soon. Which means that hair is made up of dead protein cells, therefore those products in the market claiming that they are meant to nourish and revive hair are false since a dead cell cannot be repaired. The differences seen after shampooing or conditioning are temporary measures to control and give a cosmetically aided short-lived solution that fades with time. However, since these work well enough for that special day out or the first half of office hours, these temporary fixes are accepted by the majority of hair care product users.
- A hair shaft is an important part of hair structure: it is composed of three concentric layers namely, the medulla, which is the innermost layer and does not get affected by hair care products or processes, the middle layer is the cortex which contains the pigment and can be modified a

bit through dyeing, bleaching, perming and straightening while the outer layer is the cuticle, made up of tiny overlapping scales that protect the cortex. The condition of these scales determines your hair health for the day and if hair cuticles are smooth and lie flat, they make hair look glossy and sleek while broken ends at the cuticles is a sign of cortex damage, caused due to breakage, split ends and gives a brittle, dry and frizzy look.

Hair is actually dead protein that leaves it's root and therefore does not hurt when trimmed with a scissor. On an average scalp, there are close to 100-150 thousand hair fibers and usually blondes have more fibers than red or dark haired heads. Keratin, responsible for elasticity of fingernails, also lends the same to hair, which gives hair the strength like a wire of iron so that it can rip when a force equivalent to 60kg is applied after it has stretched itself for about 70 percent.

Client Consultation

The client consultation is one of the most important parts of a successful texture service. Before proceeding with any service, you must first determine exactly what the client expects and what is possible. No matter how advanced your technical skills are nothing will compensate for a lack of communication between you and your client.

- Always greet your client by name and introduce yourself.
- Ask open-ended questions that allow you to find out why the client wants the texture service and what results are expected.
- Look at pictures with your client to determine exactly what she wants.
- Ask about past texture services. Determine what the client liked and did not like.
- Ask how the client currently styles her hair and discuss any changes that would result from the texture service.
- Determine the finished hairstyle the client wants, considering the haircut and the degree of texture or relaxing that is needed.
- Evaluate the condition, texture, and wave pattern of the hair to make sure that the desired style is possible.
- Fill out a permanent wave record to document the condition of the hair and the desired outcome.

Client Records

Client records should include a complete evaluation of the length, texture, color, and condition of the hair prior to the service, and the results that are expected.

Extra caution should be used to determine any previous problems or adverse reactions the client may have had in the past. This information must be reevaluated prior to each service since there may have been changes in the client's history or in the formulation of the product since it was last used.

Also include in your records the type of perm, the type, and size of perm tools (rods), base direction, base control, wrapping technique, wrapping pattern, processing time, and the results achieved. Always remember to update your records and note any changes.

Client Release Form

Some schools and salons may require a client to sign a release form prior to receiving any chemical service. Although most release forms state that the school or salon is not responsible for any damages that may occur, they do not release the school or salon from all responsibility.

Release forms do indicate that the client knew, before the chemical service was given, that there was a possibility of damage to the hair or an unexpected adverse reaction.

Scalp Analysis

An analysis of the scalp should always be performed prior to a chemical service. A complete analysis will help you determine how the hair will react to the service and will help avoid most problems.

The condition, texture, and wave pattern of the hair must be considered when selecting the type of relaxer, perm, the type, and size of perm tool, and the wrapping method.

Hair Analysis

Hair is the fastest growing appendage on the human body. Anything that affects our general health also affects our hair. Diet, exercise, medications, and stress all affect hair growth. The quality of any permanent wave is directly related to the quality of the hair. All other things being equal, strong hair usually produces much stronger curls than weak hair.

Hair analysis is an essential part of a successful chemical hair service. A complete analysis will help you determine how the hair will react to the service and will help avoid most problems. The condition, texture, and wave pattern of the hair must be considered when selecting the type of relaxer, per, the type and size of perm tool, and the wrapping method. The five most important factors to consider in hair analysis are texture, density, porosity, elasticity, and growth direction.

Hair Texture

Hair texture describes the diameter of a single strand of hair and is classified as coarse, medium, or fine. Hair density differs not only from one individual to another but also from strand to strand on the same person's head. It is best determined by feeling a single, dry strand between the fingers. The three types of hair have the following characteristics.

- Coarse hair usually requires more processing than medium or fine hair and may be more resistant to that processing. It is usually more difficult for permanent waving solutions to penetrate coarse hair.
- Medium hair is the most common hair texture. It is considered normal and does not pose any special problems or concerns.
- Fine hair is more fragile, easier to process, and more susceptible to damage from perm services than is coarse or medium hair. As a rule, fine hair will process faster and more easily than medium or coarse hair.

Hair Density

Hair densities measure the number of strands of hair on the head, indicating how thick or thin the hair is. Individuals with the same hair texture can have different densities.

Some individuals with fine hair texture, characterized by each hair having a small diameter, may have high density, with many individual hairs per square inch.

Others with coarse hair texture, characterized by each hair having a large diameter, may have low density, with few individual hairs per square inch.

Resistant hair has a tight, compact cuticle layer that resists penetration. Chemical services performed on resistant hair require a more alkaline solution. A high pH raises the cuticle and permits uniform saturation and processing. Resistant hair also requires a slow and thorough application of perm solution to ensure complete saturation.

- Hair with normal porosity is neither resistant nor overly porous. Texture services performed on this type of hair will usually process as expected.
- Overly porous hair has a raised cuticle layer that easily absorbs solution. Chemical services performed on overly porous hair require a less alkaline solution than those performed on resistant hair. A lower pH minimizes swelling and helps prevent excessive damage to the hair.

Direction of Hair Growth

The individual growth direction of the hair causes hair streams, whorls, and cowlicks that influence the finished hairstyle and must be considered when selecting the base direction and wrapping pattern for each permanent wave.

Permanent waving is a two-step process:

1. The first part of any perm is the physical change caused by wrapping the hair on the perm rods.
2. The second part involves the chemical changes caused by the permanent waving solution and the neutralizer.

The Perm Wrap

In permanent waving, the size, shape, and type of curl are determined by the size, shape, and type of tool used in wrapping the hair. Permanent waving solution, by itself, does not cause the hair to curl any more than water causes a wet set to curl. Permanent waving solution simply softens the hair, allowing it to conform to the shape in which it was wrapped. As long as a perm is processed correctly, what you wrap is what you get.

The first part of any permanent involves wrapping the hair in the desired shape. In a perm wrap, just as in a wet set, wetting the hair with water breaks the hydrogen bonds and permits the hair to be wrapped in the desired shape. A perm wrap is essentially a wet set on perm rods instead of rollers. The major difference between a wet set and a permanent wave is the type of side bonds that are broken. A wet set breaks hydrogen bonds. A permanent wave breaks disulfide bonds.

The size of the perm tool determines the size of the curl. Small tools produce small curls and large tools produce large curls. Wrapping the hair on small tools increases the tension, which increases the amount of curl.

While tension produces curls, too much can cause marking or breaking of the hair. Keep the hair wet while wrapping, and always wrap with uniform, even tension.

Sectioning

All perm wraps begin by sectioning the hair into panels. The size, shape, and direction of these panels vary, based on the type of wrapping pattern and the type and size of the tool being used. Each panel is further divided into subsections called base sections. One tool is normally placed on each base section. The size of each base section is usually the length and width of the tool being used.

Base Control

Base control refers to the position of the tool in relation to its base section and is determined by the angle at which the hair is wrapped. Tools can be wrapped on base, half off base, or off base.

In on-base placement, the hair is wrapped at an angle 45 degrees beyond perpendicular to its base section. The tool is positioned on its base section.

Although on-base placement may result in greater volume at the scalp area, any increase in volume will be lost as soon as the hair begins to grow out. Caution should be used with on-base placement because of the additional stress and tension it places on the hair. Wrapping hair on base may damage or break the hair.

Half-off base placement refers to wrapping the hair at an angle of 90 degrees (perpendicular) to its base section. The tool is positioned half off its base section. Half-off-base placement minimizes stress and tension on the hair.

Off-base placement refers to wrapping the hair at an angle 45 degrees below perpendicular to its base section. The tool is positioned completely off its base section. Off base placement creates the least amount of volume and results in a curl pattern that begins farthest away from the scalp.

Base Direction

Base direction refers to the angle at which the tool is positioned on the head: horizontally, vertically, or diagonally.

Base direction also refers to the directional pattern in which the hair is wrapped. Although directional wraps can be wrapped backward, forward, or to one side, wrapping with the natural direction of hair growth causes the least amount of stress to the hair. Wrapping against the natural growth pattern causes excess stress that may damage or break the hair.

Wrapping Techniques

There are two basic methods of wrapping the hair around the perm tool: croquignole and spiral.

In croquignole perms, the hair strands are wrapped from the ends to the scalp, in overlapping layers. Because the hair is wrapped at an angle perpendicular to the length of the tool, each new layer of hair is wrapped toward the scalp on top of the previous layer.

This increases the effective size of the tool with each new overlapping layer and produces a tighter curl at the ends and a larger curl at the scalp. Longer thicker hair increases this effect.

In most spiral perms, the hair is wound from the ends to the scalp although depending on the tools used, some may also be wrapped from the scalp to the ends.

The difference should not affect the finished curl. In a spiral perm wrap, the hair is wrapped at an angle other than perpendicular to the length of the tool. The angle at which the hair is wrapped caused the hair to spiral along the length of the tool, like the grip on a tennis racket.

Although the layers in a spiral perm wrap may partially overlap the preceding layers, as long as the angle remains constant, any overlap will be uniform along the length of the tool and the entire strand of hair.

This wrapping technique causes the effective size of the tool to remain the same along the entire length of the strand, producing a uniform curl from the scalp to the ends. Longer, thicker hair will benefit the most from this effect.

Perm Tools

As we have noted, in permanent waving, the size of the tool determines the size of the curl. The shape and type of curl is determined by the shape and type of tool and the wrapping method. Selecting the correct perm tool and wrapping method is the key to creating a successful permanent. Perm tools come in a wide variety of sizes and shape that can be combined with different wrapping methods to provide an exciting range of styling options.

Types of Rods

Concave rods are the most common type of perm rod. They are usually used with a croquignole wrapping technique. Concave rods have a smaller circumference in the center that increases to a larger circumference on the ends. They produce a tighter curl in the center and a looser, larger curl on either side of the strand.

Straight rods are also usually used with a croquignole wrapping technique. Since straight rods are equal in circumference along their entire length or curling area, they produce a uniform curl along the entire width of the strand.

Concave and straight rods come in different lengths. Since the length of the base section is usually the same length as the rod, fewer rods are required when using long rods. Long, straight rods can also be used with a spiral wrapping technique to produce spiral perms, as long as the length of the rod will accommodate the length of the hair.

Although more rods may be needed when using short rods, they fit closer to the rounded curvatures of the head. Short rods can also be used for wrapping small and awkward sections where long rods would not fit.

Other Perm Tools

Soft bender rods are usually about 12 inches long with a uniform diameter along the entire length. These soft foam rods have a stiff wire inside that permits them to be bent into almost any shape.

Soft bender rods can be used with either a croquignole or spiral wrapping technique.

End Papers

End papers or end wraps are absorbent papers used to control the ends of the hair when wrapping and winding hair on the perm tools. End papers should extend beyond the ends of the hair to keep them smooth and straight and prevent "fishhooks".

The most common end paper techniques are the double flat wrap, the single flat wrap, and the bookend single paper wrap.

- The **double flat wrap** uses two end papers, one placed under, and one over the strand of hair being wrapped. Both papers extend past the hair ends. This wrap provides the most control over the hair ends and helps keep them evenly distributed over the entire length of the tool.
- The **single flat wrap** is similar to the double flat wrap, but uses only one end paper, placed over the top of the strand of hair being wrapped.
- The **bookend wrap** uses one end paper folded in half over the hair ends like an envelope. Refolded end papers are available, or you can fold a single large end paper and place it over the top and bottom of the hair so that it extends past the hair ends. The bookend wrap eliminates excess paper and can be used with short rods or with very short lengths of hair. Be careful to distribute the hair evenly over the entire length of the rod. Avoid bunching the ends together toward the center of the rod.

The Chemistry of Permanent Waving

Alkaline permanent waving solution softens and swells the hair, which raises the cuticle and permits the solution to penetrate into the cortex. Note that there is far less swelling of the cuticle layer. Once in the cortex, the waving solution breaks the disulfide bonds through a chemical reaction called reduction. A reduction reaction involves either the addition of hydrogen or the removal of oxygen. The reduction reaction in permanent waving is due to the addition of hydrogen.

In examining the reduction reaction more closely, we can see that a disulfide bond joins a sulfur atom on one polypeptide chain with a second sulfur atom on a neighboring polypeptide chain. Permanent waving solution breaks a disulfide bond by adding a hydrogen atom to each of the sulfur atoms in the disulfide bond. The sulfur atoms attach to the hydrogen from the permanent waving solution, breaking their attachment to each other. Once the disulfide bond is broken, the polypeptide chains are able to slip into their new curled shape.

The reducing agents used in permanent waving solutions are thio compounds, commonly referred to simply as thio. Thioglycolic acid is the most common. It is a colorless liquid with a strong unpleasant odor. Thioglycolic acid provides the hydrogen that causes the reduction reaction in permanent waving solutions.

The strength of the permanent waving solution is determined by the concentration of thio. Stronger perms have a higher concentration of thio with a greater number of hydrogen atoms. When more hydrogen atoms are available, more disulfide bonds are broken.

Thioglycolic acid is an acid, and since acids do not swell the hair or penetrate into the cortex, it is necessary for manufacturers to add an alkalizing agent. The addition of ammonia to Thioglycolic acid produces a new chemical called ammonium thioglycolate, which is alkaline. ATG is the main active ingredient or reducing agent in alkaline permanents.

The degree of alkalinity (pH) is a second factor in the overall strength of the permanent waving solution.

Coarse hair with a strong, resistant cuticle layer may need the additional swelling and penetration that is provided by a more alkaline permanent waving solution.

Porous hair with a damaged cuticle layer is easily penetrated. This type of hair can be damaged by a high alkaline permanent waving solution. The pH (alkalinity of the perm solution should correspond to the resistance, strength, and porosity of the cuticle layer.

Types of Permanent Waves

A variety of permanent waves is available in salons today. Brief descriptions of the most commonly used perms follow.

Alkaline Waves or Cold Waves

The first alkaline waves (or cold waves) were developed in 1941 and relied on the same ATG that is still used in most alkaline waves today. Since alkaline waves process at room temperature without the addition of heat, they became commonly known as cold waves. Most alkaline waves have a pH between 9.0 and 9.6.

True Acid Waves:

The first true acid waves were introduced in the early 1970s. Most true acid waves have a pH between 4.5 and 7.0 and require heat to speed processing. Glycerol monothioglycolate (GMTG) is the main active

ingredient and is an acid, with a low pH. Although a lower pH tends to cause less damage to the hair, acid waves process more slowly, may require the added heat of a hair dryer, and do not usually produce as firm a curl as alkaline waves.

All acid waves have three separate components: permanent waving solution, activator, and neutralizer. The activator tube contains GMTG, which must be added to the permanent waving solution immediately before use.

Although GMTG is the primary reducing agent in all modern acid waves, it may not be the only reducing agent. Most of these waves also contain ATG, just like a cold wave. Although the low pH of acid waves may seem ideal, repeated exposure to GMTG is known to cause allergic sensitivity in both hairstylists and clients.

Exothermic Waves:

An exothermic chemical reaction produces heat. Exothermic waves create an exothermic chemical reaction that heats up the solution and speeds up the processing.

All exothermic waves have three components: permanent waving solution, an activator, and a neutralizer. The permanent waving solution contains thio, just as in a cold wave. The activator contains an oxidizing agent (usually hydrogen peroxide.) that must be added to the permanent waving solution immediately before use. Mixing an oxidizer with the permanent waving solution causes a rapid release of heat and an increase in the temperature of the solution. The increased temperature increases the rate of the chemical reaction, which shortens the processing time.

Endothermic Waves:

An endothermic chemical reaction is one that absorbs heat from its surroundings. Endothermic waves are activated by an outside heat source, usually a conventional hood-type hair dryer. Endothermic waves will not process properly at room temperature. Most true acid waves are endothermic and require the added heat of a hair dryer.

Ammonia-Free Waves

Ammonia-free waves use an ingredient that does not evaporate as readily as ammonia, so there is very little odor associated with their use. Amino methyl propanol (AMP) and monoethanolamine (MEA) are examples of alkanolamines that are used in permanent waving solutions as a substitute for ammonia. Even though these solutions may not smell as strong as ammonia, they can still be every bit as alkaline and just as damaging. Ammonia-free does not necessarily mean damage-free.

Thio-Free Waves

Thio-free waves use an ingredient other than ATG as the primary reducing agent. The most common thio-free waves rely on cysteamine, or mercaptamine. Although these thio substitutes are not technically ATG, they are still thio compounds. Although thio-free is often marketed as damage-free, that is not necessarily true. At a high concentration, the reducing agents in thio-free waves can be just as damaging as thio.

Low-PH Waves

The use of sulfates, sulfites, and bisulfites presents an alternative to ATG known as low-pH waves. Sulfites work at a low pH and have been used in perms for years, but they have never been very popular.

Permanents based on sulfites are very weak and do not provide a firm curl, especially on strong or resistant hair. Sulfite permanents are usually marketed as body waves or alternative waves.

Selecting the Right Type of Perm:

It is extremely important to select the right type for each client. Every client has hair with its own distinct texture and condition, so individual needs must always be addressed. After a thorough consultation, you should be able to determine which type of permanent is best suited to your client's hair type, condition, and desired results.

Permanent Wave Processing:

The strength of any permanent wave is based on the concentration of its reducing agent. In turn, the amount of processing is determined by the strength of the permanent waving solution. If weak permanent waving solution is used on coarse hair, there may not be enough hydrogen atoms to break the necessary number of disulfide bonds, no matter how long the permanent processes. However, the same weak solution may be exactly right for fine hair with fewer disulfide bonds. On the other hand, a strong solution, which releases many hydrogen atoms, may be perfect for coarse hair, but too damaging for fine hair.

The amount of processing should be determined by the strength of the solution, instead of how long the perm processes.

In permanent waving, most of the processing takes place as soon as the solution penetrates the hair, within the first five to ten minutes. The additional processing should be determined by the strength of the solution, not necessarily how long the perm process.

In permanent waving, most of the processing takes place as soon as the solution penetrates the hair, within the first five to ten minutes. The additional processing time allows the polypeptide chains to shift into their new configuration.

Over processed Hair:

If you find that your client's hair has been over processed, it probably happened within the first five to ten minutes of the service, and a weaker permanent waving solution should have been used. If the hair is not sufficiently processed after ten minutes, it may require a reapplication of solution. Resistant hair requires a stronger solution, and a more thorough saturation.

Thorough saturation of the hair is essential to proper processing in all permanent waves, but especially on resistant hair. Regardless of the strength or pH of the solution, resistant hair may not become completely saturated with just one application of waving solution. You may need to apply the solution slowly and repeatedly until the hair is completely saturated.

A thorough saturation with stronger solution will break more disulfide bonds and process the hair more, but processing the hair more does not necessarily translate into more curl. A properly processed permanent wave should break and rebuild approximately 50 percent of the hair's disulfide bonds. If too many disulfide bonds are broken, the hair may not have enough strength left to hold the desired curl. Weak hair equals a weak curl.

Contrary to what many believe, over processed hair does not necessarily mean hair that is overly curly. If too many disulfide bonds are broken, the hair will be too weak to hold a firm curl. Over processed hair usually has a weak curl or may even be completely straight. Since the hair at the scalp is usually stronger than the hair at the ends, over processed hair is usually curlier at the scalp and straighter at the ends. If the hair is over processed, processing it more will make it straighter.

Under processed Hair

Under processed hair is, as the name suggests, the exact opposite of over processed hair. If too few disulfide bonds are broken, the hair will not be sufficiently softened and will not be able to hold the desired curl. Under processed hair usually has a very weak curl, but it may also be straight. Since the hair at the scalp is usually stronger than the ends, under processed hair is usually straighter at the scalp and curlier at the ends. If the hair is under processed, processing it more will make it curlier.

Permanent Waving Neutralization

Neutralization is the process of stopping the action of a permanent wave solution and hardening the hair in its new form by the application of a chemical solution called the neutralizer. Neutralization performs two important functions.

1. It deactivates (neutralizers) any waving solution that remains in the hair.
2. It rebuilds the disulfide bonds that were broken by the waving solution.

The neutralizers used in permanent waving are oxidizers. In fact, the term neutralizer is not very accurate because the chemical reaction involved is actually oxidation. The most common neutralizer is hydrogen peroxide. Concentrations vary between 5 volume (1.5 percent) and 10 volume (3 percent).

Neutralization: Stage One

The first function of permanent waving neutralization is the deactivation, or neutralization, of any waving lotion that remains in the hair after processing and rinsing. The Chemical reaction involved is oxidation.

As we know, oxidation reactions can also lighten hair color, especially at an alkaline PH level. To avoid scalp irritation and unwanted lightening of the hair color, always rinse the perm solution from the hair at least five minutes before applying the neutralizer. After rinsing and before applying the neutralizer, the hair should be blotted with towels to remove as much moisture as possible. Blot each rod several times using dry towels. Excess water left in the hair prevents even saturation and dilutes the neutralizer.

Some manufacturers recommend the application of a pre-neutralizing conditioner after blotting and before application of the neutralizer. An acidic liquid protein conditioner can be applied to the hair and dried under a warm hair dryer for five minutes or more prior to neutralization.

This added step is especially beneficial with much damaged hair because it strengthens the hair prior to neutralization. This step is optional, however. Always follow the manufacturers' directions and the procedures approved by your instructor.

Neutralization: Stage Two

As you have learned, waving solution breaks disulfide bonds by adding hydrogen atoms to the sulfur atoms in the disulfide bond.

Neutralization rebuilds the disulfide bonds by removing those extra hydrogen atoms. The hydrogen atoms in the disulfide bonds are so strongly attracted to the oxygen in the neutralizer that they release their bond with the sulfur atoms and join with the oxygen. Each oxygen atom joins with two hydrogen atoms to rebuild one disulfide bond and make one molecule of water. The water is removed in the final rinse, and the disulfide bonds form in their new curled position.

When the neutralizer removes the extra hydrogen atoms, each sulfur atom forms a bond with its nearest neighboring sulfur atom. The strength of these newly formed disulfide bond pairs holds the hair in its new shape.

Post-Perm Hair Care:

For a variety of reasons, most hairstylists have always recommended a three-day waiting period before shampooing freshly permed hair. Although some of their concerns may be valid, a properly neutralized perm is stable. The bonds in the hair are re-formed immediately, and there is no scientific basis for the standard three-day waiting period. Shampooing a properly processed permanent with the mild acid-balanced shampoos that are available today should not cause excessive relaxation or damage to the hair or scalp.

Most hairstylists have also recommended a three-day waiting period before performing hair color services on freshly permed hair. Although there may be some concern about scalp irritation or excessive relaxation, a permanent is stable as soon as it has been properly neutralized.

Unless there are signs of scalp irritation, modern demi permanent, deposit-only hair colors are safe to use on freshly permed hair. Always follow the manufacturers' directions and the procedures approved by your instructor.

Safety Precautions for Permanent Waving

Always protect your client's clothing. Have the client change into a gown, use a waterproof shampoo cape, and double drape with towels to absorb accidental spills.

Do not give a permanent to any client who has experienced an allergic reaction to previous permanent.

Do not save any opened, unused waving lotion or neutralizer. These lotions may change in strength and effectiveness if not used promptly.

Do not dilute or add anything to the waving lotion or neutralizer unless specified in the manufacturer's directions.

Keep waving lotion out of the client's eyes and away from the client's skin. In case of accidental exposure, rinse thoroughly with cool water.

Always, follow the manufacturer's directions.

Wear gloves when applying solutions.

Immediately, replace cotton or towels that have become wet with solution.

Always examine the scalp before the perm service. Do not proceed if there are any skin abrasions or any signs of scalp disease.

Do not perm hair that is excessively damaged or shows signs of breakage.

Do not attempt to perm hair that has been previously treated with hydroxide relaxers.

Always, perform a test for metallic salts to see if there is a possibility that metallic hair color was used on the hair previously.

Always, apply protective barrier cream around the client's hairline and ears prior to applying permanent waving solution.

The hair should be given reconditioning treatments until the condition improves and the damaged hair can be cut off.

Metallic Salts

Some home hair coloring products contain metallic salts that are not compatible with permanent waving. Metallic salts leave a coating on the hair that may cause uneven curls, severe discoloration, or hair breakage.

Metallic salts are commonly found in men hair colors that are sold for home use. Hair color restorers and progressive hair colors that darken the hair gradually with repeated applications are the most likely to contain metallic salts. If you suspect that metallic salts may be present on the hair, perform the following test.

In a glass or plastic bowl, mix 1 ounce of 20-volume peroxide with 20 drops of 28 percent ammonia. Immerse at least 20 strands of hair in the solution for 30 minutes. If metallic salts are not present, the hair will lighten slightly and you may proceed with the service. If metallic salts are present, the hair will lighten rapidly. The solution may get hot and give off an unpleasant odor, indicating that you should not proceed with the service.

Let us now turn to the basic perm procedures. The information presented earlier in the chapter on sectioning, base control, base direction, perm tools, wrapping techniques, and wrapping patterns should be used with the following procedures. These basic wrapping methods may be combined in different ways to create a wide variety of specialized perm wraps that provide an unlimited number of styling options.

The basic perm wrap is also called a straight set wrap. In this wrapping pattern, all the tools within a panel move in the same direction and are positioned on equal-size bases. All base sections are horizontal, with the same length and width as the perm tool. The base control is half off base.

In the curvature perm wrap, the movement curves within sectioned-out panels. Partings and base radiate throughout the panels to follow the curvature of the head. This wrapping pattern uses pie-shaped base sections in the curvature areas.

The brick lay perm wrap is similar to the actual technique of bricklaying. Base sections are offset from each other row by row, to prevent noticeable splits and to blend the flow of the hair. Different brick lay patterns use different starting points (front hairline, occipital area, and crown), and these can be used with different combinations of sectioning, base control, base direction, wrapping techniques, and perm tools.

The weave technique uses zigzag partings to divide base areas. It can be used throughout the entire perm wrap or can be kept to selected areas. This technique is very effective for blending between perm rods with opposite base directions. It can also be used to create a smooth transition from the rolled areas into the unrolled areas of a partial perm. The wave technique can be used with a variety of base directions, wrapping patterns, and perm tools.

The double tool technique is also called a piggyback wrap because two tools are used for one strand of hair, one on top of the other. The lower half of the strand is wrapped around one tool, and then the upper half of the same strand is wrapped around a second tool and stacked on top of the first.

The double tool technique doubles the number of tools used. Using more tools increases the amount of curl in the finished perm, making this technique especially effective on long hair. Tools with different diameters may be used to create different effects. This technique can also be used with a variety of base directions, wrapping patterns, and perm tools.

Unlike other techniques that are performed at an angle perpendicular to the length of the tool, the spiral perm technique, also called a spiral perm wrap is done at an angle that causes the hair to spiral along the length of the tool, like the grip on a tennis racket.

Although the layers in a spiral perm may partially overlap as they go along, as long as the angle remains constant, any overlap will be uniform along the length of the tool and the entire stand of hair. Since the effective size of the tool remains constant along the entire strand of hair, this technique produces a uniform curl from the scalp to the ends. Longer, thicker hair will benefit most from this effect.

The spiral wrapping technique can be used with a variety of base sections, base directions, and wrapping patterns. Base sections may be either horizontal or vertical and do not affect the finished curl.

Conventional rods, bendable soft foam rods, and the circle tool can all be used for this technique, depending on the length of the hair.

The implements and materials and the procedures for preparation, processing, and cleanup are the same for all perms, as described in the Basic Perm Wrap.

Preliminary Test Curls

Taking preliminary test curls helps you predict how your client's hair will react to a perm. It is advisable to take preliminary test curls if the hair is damaged or if there is any uncertainty about the results. Preliminary test curls provide the following information:

Correct processing time for optimal curl

Results you can expect from the type of perm solution you have selected

Curl results for the tool size and wrapping technique you are planning to use

Partial Perms:

If your client wants a perm but does not wish for the entire head of hair to be curled, a partial perm may be the answer. Partial perms also allow you to give a perm when some of the hair is too short to roll on tools. Partial perms can be used for:

Male and female clients who have long hair on the top and crown, but very short hair with tapered sides and nape.

Clients who only need volume and lift in certain areas.

Clients who desire a hairstyle with curls along the perimeter but a smooth, sleek crown.

Partial perms rely on the same techniques and wrapping patterns as those used with other perms, but there are some additional considerations.

In order to make a smooth transition from the rolled section to the unrolled section, use a larger tool for the last tool next to an unrolled section.

Applying waving lotion to unrolled hair may straighten it or make it difficult to style. To protect the unrolled hair, apply a protective barrier cream to the unrolled section before applying the waving lotion.

Work Cite and References
Quizlett and Milady

TRUE OR FALSE (24 HR. HAIRCUTTING AND COLOR TECH)**8 HR. HAIRCOLOR CHEMISTRY**

1. Haircoloring includes the processes of Depositing color on natural hair color.
2. Hair lightening or decolorizing involves diffusing natural or artificial color from the hair.
3. Since the very beginning of hair color usage the most threatening burden to hair color market growth were chemical ingredients.
4. The types of dyes used are neutral aromatic amine, nitro aromatic amine, or anthraquinone derivatives.
5. Color is a form of light energy, to see color, you have to have light.
6. Permanent hair color contains ingredients which create lift and color deposit.
7. Semi-permanent haircolor is not mixed with peroxide.
8. Caution must be exercised when utilizing a Semi-permanent haircolor on porous hair.
9. When alkaline substances are mixed with hydrogen peroxide they react and cause oxidation.
10. Hydrogen peroxide manufactured for haircolor use is labeled according to strength.

4 HR. HAIRCUTTING REFERENCE

1. The Parietal Ridge is the widest area of the head, starting at the temples and ending at the bottom of the crown.
2. The Occipital Bone protrudes at the base of the skull.
3. An Angle is the space between lines or surfaces that intersect at a given point.
4. Horizontal lines are used in one-length and low-elevation haircuts.
5. Vertical Lines are used to create graduated or layered haircuts.
6. A quick way to analyze a face shape is to determine if it is predominantly wide or long.
7. The haircut you choose should flatter the client by emphasizing good features.
8. The wave pattern may also vary from strand to strand on the same person's head.
9. The hairline is the hair that grows at the outermost perimeter along the face, around the ears, and on the neck.
10. Good posture and body position will help you avoid back problems in the future and ensure better haircutting results.

12 HR. COSMETOLOGY COMPOSITION

1. The cortex is the middle layer of the hair, located directly beneath the cuticle layer.
2. The chemical bonds that join the amino acids are called peptide bonds, in turn, link together to form long chains of amino acids called polypeptide chains.
3. Coarse hair usually requires more processing than medium or fine hair and may be more resistant to that processing.
4. In permanent waving, the size, shape, and type of curl are determined by the size, shape, and type of tool used in wrapping the hair.
5. Base direction refers to the angle at which the tool is positioned on the head: horizontally, vertically, or diagonally.
6. An exothermic chemical reaction produces heat.
7. Some home hair coloring products contain metallic salts that are not compatible with permanent waving.
8. The weave technique uses zigzag partings to divide base areas.
9. Preliminary test curls helps you predict how your client's hair will react to a perm.
10. Applying waving lotion to unrolled hair may straighten it or make it difficult to style.

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8HR. HAIRCOLOR CHEMISTRY

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 2. _____ 7. _____
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 5. _____ 10. _____

TEST 2
4 HR. HAIRCUTTING REFERENCE

1. _____ 6. _____
 2. _____ 7. _____
 3. _____ 8. _____
 4. _____ 9. _____
 5. _____ 10. _____

TEST 3
12 HR. COSMETOLOGY

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