

Chemical Texturizing is the process of changing the chemical bonds of the hair's inter-structure through the use of alkaline agents and some acid chemical agents that can permanently and/or temporarily alter the inter-structure of the hairs' cortex as well as what the outside looks and feels like. The cuticle layer is the outside layer and it is transparent. There are several products that are being used in beauty salons to alter the bonds of the hair, but the stylist should be trained and knowledgeable about how the chemicals can affect the pH level of the hair. Extreme caution should be taken when applying any type of chemical to the hair. The hair and skin can burn if proper timing and strength are not considered. Prior to the start of the service, there should be a consultation and a hair analysis performed on the client. This ensures that the stylist is aware of the state of the hair and scalp and he or she will be more prepared to determine how to better service the client's hair.

RELAXER THEORY

There are several types of products to chemically relax the hair. The most common types are/: sodium hydroxide (lye/no base), No-lye relaxers and ammonium thioglycolate. To avoid major problems it is imperative for the client to know which chemical ingredient was used on their hair in the past or after this service if this is their first service. (a) Sodium hydroxide (lye) and No-lye relaxers are not interchangeable.

A - Sodium hydroxide (lye) relaxer - used to straighten tightly curled hair. This type of relaxer is alkaline in pH (11.5 to 14), which forces the cuticle to open so that the relaxer can penetrate in the cortex layer of the hair. Once there, the sodium hydroxide breaks down the cross bonds (sulfur and hydrogen). When this happens, the hair will turn out to a straightened and softened form.

B - No-lye relaxers - contain a byproduct of sodium hydroxide. The active ingredients include guanidine, calcium, potassium, lithium hydroxide or bisulfate. This type of relaxer would be best for less resistant hair.

C - Ammonium thioglycolate relaxer - This relaxer has a pH of 8.5 to 9.5; hair usually will swell and soften. There are 3 strength levels of mild, regular and super. There are three (3) standard ingredients: an active alkaline agent, oil and water.

D - Today's Straightening Alternatives - These products are amino acid based treatments and do not permit "permanent" straightening to the hair; but rather loosen the curl pattern for a certain amount of time, most lasting for 12 weeks with proper care, products and styling. Research still exist on some of these treatments, as some have been linked to formaldehyde, which can be harmful to a client's health and hair.

E - What is Formaldehyde and How Can It Affect My Health?

Formaldehyde is a colorless, strong smelling gas that presents a health hazard if exposed on a regular basis. If you breathe in the fumes it causes asthma-like breathing problems. If it gets in your skin it could cause skin rashes and itching. Formaldehyde is a sensitizer and it can irritate the eyes and nose and cause coughing and wheezing as well as blindness. It is also a cancer hazard.

F - Other Relaxing Services

Thermal Reconditioning- Use of heat to restructure the bonds of the hair. Recommended for those with coarse curly or wavy hair that wants their hair up to 100% straight. Also may be known as Japanese straightening, ionic reconditioning and thermal rebonding/restructuring.

Curl Reformation- Introduced in the 1970s as a styling option for those with tightly curled hair. Hair goes from tightly curled to curly/wavy. This service has three main steps: reduce existing pattern, reform on a perm tools and rebond (neutralize) and lock in the new pattern.

II - PERMING THEORY

Perming is a highly valued service in the salon. Not only does it create changes in the client's appearance, it is also a significant revenue generator. Today's clients request perms to add volume, texture and movement to their hair. Fortunately, manufacturers have created perm

formulas that remove the chemical guesswork and allow you, as a designer, to concentrate on the creative side of the service, such as determining how much curl is introduced and in what direction it moves.

- HISTORY OF PERMING

The desire for curly or wavy hair dates back to ancient cultures, as early as the Ancient Egyptians. In 1905, Charles Nessler made history with the 1st heat permanent waving machine. Hair was wrapped spirally around the machine's heat rollers. The croquignole (overlap) wrapping method was introduced after WW1 and was used with heated roller clamps.

- Heat Waves: Acid/Endothermic and Exothermic

Acid waves appeared on the market in the early 1970s. Acid waves contained a thioglycolic derivative called glycerol monothioglycolate and did not contain ammonia. They were also called "buffered waves" because they were gentler on the hair and penetrated the hair strand more slowly than cold waves. To speed up the processing time, place a plastic cap on the client's head and place her under the preheated dryer. This method of processing is called endothermic because heat is absorbed from the surroundings. Heat causes the pH to rise gradually, leaving the hair in much healthier condition. Today's acid perms are in the pH range of 6.9 to 7.2

Appearing on the market next were **exothermic perms**. These perms are able to generate their own heat without an external heat source, because an additive is mixed with the perm solution to create heat through a chemical reaction. Exothermic perms are self-timing and range from acid to alkaline depending upon the manufacturer.

- Cold Waves: Thioglycolic Acid and Alkaline

Invented by Arnold F. Willatt in 1938 for a safer and more practical perming process and because no machine was used and chemicals caused no heat reaction. The process still involves wrapping the hair on a perm tool with a waving solution (thioglycolic acid) working without heat. Once processed, solution is rinsed and a neutralizer is applied to reform the hair to the perm tool shape. These early cold wave perms took 6-8 hours to complete.

Today's cold waves are called alkaline waves and normally take 15-30 minutes to process. Contains thioglycolic acid and ammonia or ammonium thioglycolate, which has a pH between 8.0 to 9.5. This allows the solution to penetrate the hair faster. Neutralizing brings down the pH and rebonds the curl pattern to make it permanent.

- New Technology

Perm technology and products are continually evolving. More recent perm products on today's market include neutral, low pH alkaline and low/no thio perms, which may or may not require heat. As a salon professional, it is your responsibility to stay current with the latest technology and products and always follow the manufacturer's directions.

Today's perms involve two major phases. The first phase is the physical act of wrapping the hair around specifically selected perm tools in particular patterns and directions. The second step is the chemical phase, which involves applying the perm solution, rinsing it from the hair, applying the neutralizer and rinsing it from the hair. Both phases of the perm process are of equal importance.

PHYSICAL PHASE OF PERMING

In this phase, hair is wrapped around perm tools based on desired size and shape of new wave or curl pattern. Hair must be smoothly and consistently wrapped around perm tool with appropriate tension to make sure it reaches your client's desired look and shape. This phase is an equally important part of the service and must be done efficiently. Must be familiar with distributing and sectioning and wrapping (perm tool, end paper techniques, base control and perm patterns).

There are 2 basic wrapping techniques: **overlap (croquignole) and spiral**. Each technique has variations but it is important to be skilled with the basics.

CHEMICAL PHASE OF PERMING

Once the hair has been wrapped on perm tools, the chemical phase begins. The chemical process transforms the hair into lasting perm texture. Two chemicals are used during the chemical phase: The perm solution, which is a reducing agent and the neutralizer, which is an oxidizing agent. Perm solution is also known as waving lotion or reforming lotion. Be sure to follow manufacturer's directions to ensure the best possible results when using perm solutions and neutralizers.

The procedures that you follow during the chemical phase may vary with perm products developed for individual hair types, such as fine, normal or color-treated hair. The basic steps of the chemical phase include:

Processing

- Applying perm solution
- Tinting and Testing
- Rinsing
- Blotting

Neutralizing

- Applying neutralizer
- Rinsing
- Removing perm tools

PROCESSING

To permanently change the hair from a straight to curly state, strong disulfide bonds found in the cortex of the protein chains are softened and split. The disulfide bond is a chemical bond formed between two sulfur (S) atoms found in the amino acid called cystine. The perm solution breaks the disulfide or S-S bonds. This softening process allows the disulfide bonds to shift to a new configuration.

In alkaline (cold) waves, the perm solution chemically breaks, or reduces, the strong disulfide bonds while the hair is wrapped on the perm

tools. With acid (heat) waves, heat tension, and the perm solution break the disulfide bonds. With both types of perm solutions, the processing action softens the protein structure and allows the disulfide bonds to shift, assuming the shape of the tool.

An accurately performed perm pattern and smoothly wrapped hair will allow for proper saturation of the perm solution. Once the hair is wrapped, a barrier cream is applied around the client's hairline and cotton is positioned on top of that. Cotton should be replaced when it becomes saturated. Leaving the cotton on the client's skin could cause burns.

NEUTRALIZING

Neutralizing is the final chemical step in the perm process. It reforms the disulfide bonds while lowering the pH of the hair. The main ingredient found in most neutralizers is hydrogen peroxide, sodium perborate or sodium bromate. The pH can range from 2.5 to 7, depending on the type of neutralizer. Neutralizing is also known as re-bonding or oxidation.

The neutralizer reduces the swelling caused by the alkalinity of the perm solution and re-bonds and restores the disulfide bonds. This change re-hardens, or fixes, the disulfide bonds into the new shifted position, which is determined by the size of the perm tool, making the texture change "permanent."

It is interesting to know that oxygen from the air (air oxidation) can achieve the same results as the neutralizer. Air oxidation is impractical; however, because the hair must dry naturally on the perm tools, without heat, from 24 to 48 hours, depending on the length and texture of the hair.

RINSING

After the hair is neutralized, it needs to be rinsed with water again to remove all chemicals. Handle the hair carefully while rinsing because it is still swollen and can easily damage. There are two methods for rinsing the neutralizer. With the first method, and for a stronger curl result, leave the perm tools in position and thoroughly rinse the neutralizer. With the second method, remove the perm tools, work the neutralizer through to the ends and rinse. The chemical phase is now complete and the hair will retain the shape of the tool, resulting in a new texture configuration.

PERMING SOLUTIONS

Alkaline perms should be wrapped without tension (minimal stretching or straining of the hair) because alkaline reforming lotion causes the hair to swell. This swelling creates the necessary tension on the hair. Wrapping the hair with too much tension prior to applying an alkaline perm solution could result in an uneven penetration of the lotion and lead to breakage. Instead, hair should be held just taut enough to control the hair, creating a smooth, even wrap from ends to scalp. Keep in mind that, because of the hair swell, it is easier to rinse and blot the hair when using an alkaline solution.

With alkaline perming, the hair starts to process as soon as the solution is applied. Because of its higher pH, it processes faster than an acid perm, increasing the risk for hair damage, which is why it is so important to watch the process carefully. ***Remember that alkaline perms are applied without heat.***

- **Acid perms are in the pH range of 6.9 to 7.2.** Acid perms in the market today are now capable of processing without heat. They start out with a higher pH and heat is an option for a firmer curl. Unlike alkaline perms, **acid perms cause only minimal swelling, therefore, it is essential that the hair be wrapped with firm, even tension.** Without uniform tension throughout the strand, the perm will not process correctly, which may produce an uneven curl pattern. Heat and wrapping with even tension boost the penetration of the glycerol

monothioglycolate into the hair strands where it breaks the disulfide bonds. The heat needed for acid perms is often just the client's body heat that is trapped by placing a plastic bag over the perm wrap. Additional heat is achieved by placing the client under a hooded dryer.

-A real benefit of working with lower pH in an acid perm is that you avoid exposure to higher alkaline pH solutions and excessive hair swelling, which would need to be counteracted during neutralizing.

- Acid perms are slower acting than alkaline perms and are recommended for damaged, highly porous and previously permed hair. Since the lower pH of an acid perm requires longer processing time, there is less chance of damage from over processing; however, you still want to monitor the process carefully.

- It is essential to completely rinse the perm solution from the hair before neutralizing. Since acid perms cause little swelling, it takes more time (at least 5 minutes) and attention to remove the perm solution from the hair than with an alkaline perm. Insufficient rinsing before neutralizing can trap order in the hair.

ADVANTAGES OF ALKALINE AND ACID PERMS

ALKALINE PERMS

- Strong curl Pattern
- Faster processing time
- Better for resistant hair - More control due to slower processing time
- No need for heat

ACID PERMS

- Soft, natural curl pattern
- Gentler to the hair
- More control due to slower processing
- Better for fragile or tinted hair.

LOW / NO THIO

The low/no thio perm, introduced in 1992, have a different reducing agent known as cysteamine hydrochloride (hi-dro-CLOR-id). There are many benefits to using this type of perm, such as deeper penetration of the solution for longer-lasting and more consistent curls, less dilation of the cuticle layer, and the ability to reform up to 60% more bond during neutralization. The low/no thio option makes perming available to people who may have an allergic reaction to thioglycolic acid, which is found in both alkaline and acid perms.

SUMMARY

Chemical Texturizing is a money generating service that has been in demand for many years. Whether relaxing or perming; powerful chemicals are involved and they deserve and demand proper handling.

WORKS CITED

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