

# Hair Swatch Study

Patent Pending: Application Number 62/289,493



Powerful Protection  
 Composite Particles  
 Natural Strengthening  
 Hair Scaffolding  
 Selective Matrix

## ABSTRACT

Let us start from the beginning. The hair contains keratin proteins made up of the amino acid cysteine, which contains a sulfur atom. Typically sulfur atoms join together to form a disulfide bond to create a link between two proteins. In terms of the hair, proteins are partially responsible for your hair's overall shape and strength. When we perm or straighten our hair, these disulfide bonds are broken, thus affecting the strength and appearance of the hair. However, disulfide bonds can also break from repeated stress, such as exposure to heat, sunlight, hair styling and chemical treatments – like coloring or perming.

The question is how, do we prevent the hair from being damaged during times of stress? Active Concepts, LLC has developed a unique product comprised of two of our most popular materials – Phytofuse Renew® and ACB Pisum Sativum Peptide.

Phytofuse Renew® is a product derived from the desert plant – *Selaginella lepidophylla*, often referred to as the 'rose of Jericho'. It contains unique secondary metabolites that are required to endure its harsh desert environment. We isolate the plant's secondary metabolite system to get extraordinary benefits. Its smooth feel makes a perfect natural silicone replacement and it offers benefits, such as moisturization, repair, antioxidant properties, smoothness and shine when used in hair care products.

We combine this material with ACB Pisum Sativum Peptide, which is an innovative, hydrolyzed pea protein. Great for any application but particularly unique when it comes to benefits to the hair. This 'anti-aging' material can improve shine, combability, softness and manageability of the hair. Its exclusive manufacturing process contributes to its unique benefits - antioxidant activity and a volumizing effect to the hair! These attributes are not typical of a hydrolyzed protein, but are much needed in hair care.

As mentioned, proteins contain amino acids, such as cysteine. We increase the bioavailability of ACB Pisum Sativum Peptide with our manufacturing process and

**Code Number: 22045**

**INCI Name:** Polyquaternium-80 & Water & Hydrolyzed Pea Protein & Selaginella Lepidophylla Extract

**INCI Status:** Approved

**REACH Status:** Complies

**CAS Number:** N/A & 7732-18-5 & 222400-29-5 & 90106-73-3

**EINCS Number:** N/A & 231-791-2 & N/A & 290-298-0

**Origin:** Botanical

**Processing:**

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

**Additives:**

Preservatives: None

Antioxidants: None

Other additives: None

**Solvents Used:** Water

**Appearance:** Clear to Slightly Hazy  
Semi-Viscous Liquid

**Soluble/ Miscible:** Water Soluble  
100% Biodegradability

**Microbial Count:** < 100 opg,  
No Pathogens

**Suggested Use Levels:** Reference  
Formulation Guidelines on Page 5

**Suggested Applications:**

Hair Protection, Nourishing,  
Support

## Benefits of Active.Lite® Hair

- Protects Hair
- Great for All Hair Types
- Provides Moisturization
- Strengthens Hair

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cysteine within the product. When added to a hair bleach product, Active.Lite® Hair protects the hair from the damaging effects of bleach while also providing a silky soft feel. Achieve the hair color you have always wanted with Active.Lite® Hair.

## MATERIALS AND METHODS

This study was conducted by salon professionals using virgin hair swatches. The study shows there is no difference in processing time between the virgin bleached hair and the virgin bleached hair with Active.Lite® Hair using 20 volume of developer. One set of hair swatches only used Pravana bleach (no additive) while another set used Pravana bleach combined with Active.Lite® Hair. Virgin bleached hair and Active.Lite® Hair had the same processing time of 1 hour and 47 minutes to reach the same color shade. Both hair swatches were rinsed with warm water and air dried.

All measurements are with DRY Pravana bleach powders. Active.Lite® Hair is not to be mixed with DRY powder bleach, however, the developer must be added and mixed to a "butter cream" consistency before adding Active.Lite® Hair to lightener. Active.Lite® Hair will not dilute the peroxide and it is not necessary to increase peroxide levels to achieve maximum hair lightening. Please see the last page for standard formulation guidelines.

Standard Electron Microscopy (SEM) imaging was used to show high resolution images of the hair cuticles on each hair swatch. SEM images show how extensive hair damage is to the cuticle when bleach is applied.

## RESULTS

Active.Lite® Hair gives you the ability to chemically alter, thermally style, or enhance daily hair mechanics while still maintaining the hair's integrity by penetrating and strengthening internally. Active.Lite® Hair exhibits both visual and sensorial properties that are most commonly associated with healthy, vibrant hair, specifically when compared to untreated (bleach only) controls. This swatch study conducted by salon professionals demonstrates a clear difference in hair that has been treated, protected, and sealed using Active.Lite® Hair.

**Active.Lite® Hair should be added to a bleach formulation to protect the hair from breakage during the bleaching/coloring process.**  
**Achieve flawless hair!**



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## Original Hair Color



Figure 1. Original Hair Color.

## Bleached Hair (no additive)



**40  
volume**

Figure 2. Bleached Hair with no additive.

## Bleached Hair with Active.Lite® Hair



**40  
volume**

Figure 3. Bleached Hair with Active.Lite® Hair.

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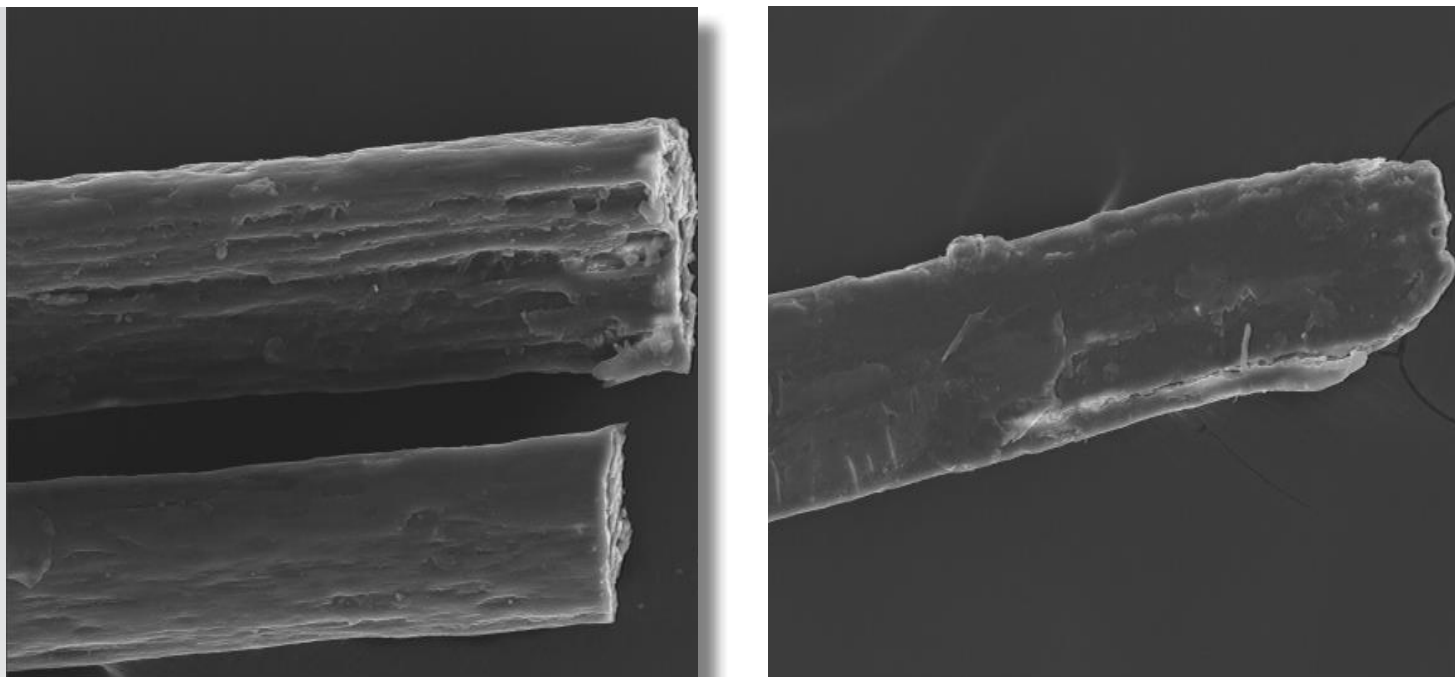


Figure 4. SEM Imagery, Untreated Hair (Left) vs. Bleached Hair (Right)

As seen in Figure 4, the Standard Electron Microscopy imaging at 20 kV demonstrates that, untreated hair is already prone to damage from everyday stressors, showing characteristic signs of breakdown. Results of bleaching the hair can be viewed on the right. The imagery results show more extensive damage to the hair fiber. This type of damage leads to irregular growth, breakages, and overall unhealthy or dead appearance. At a singular level, one cuticle may not seem important, but these strand to strand imperfections contribute to a much bigger picture of unhealthy and unprotected hair.

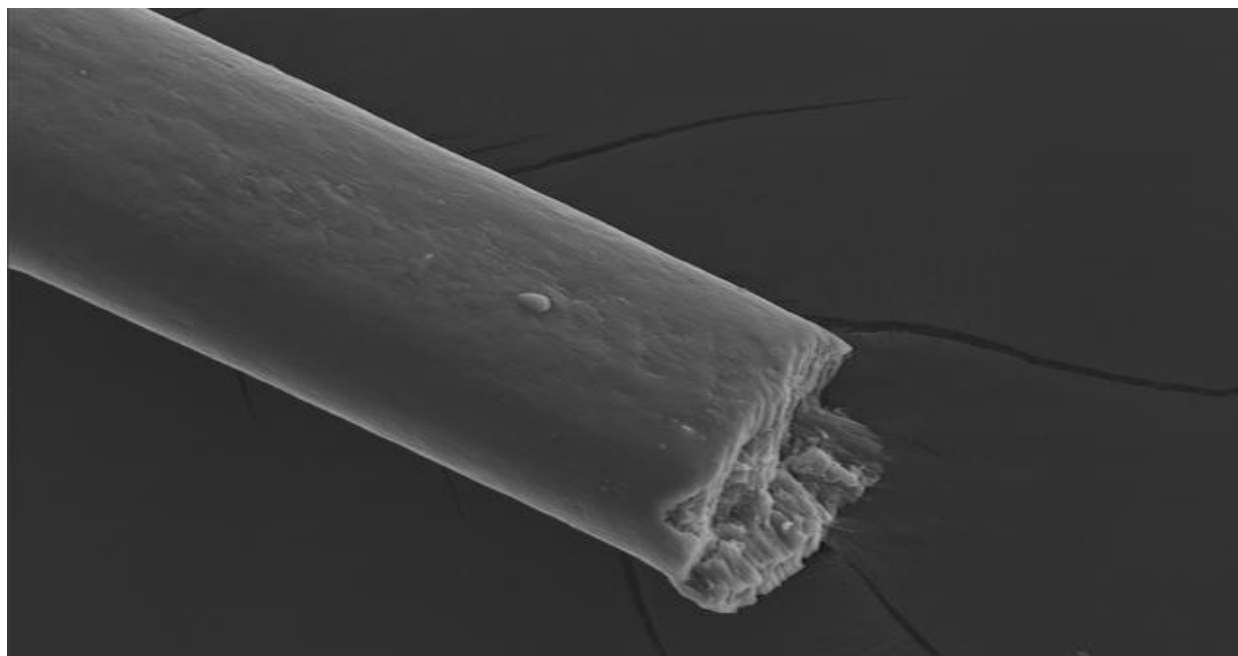


Figure 5. SEM Imagery, cuticle treated with **Active.Lite® Hair**

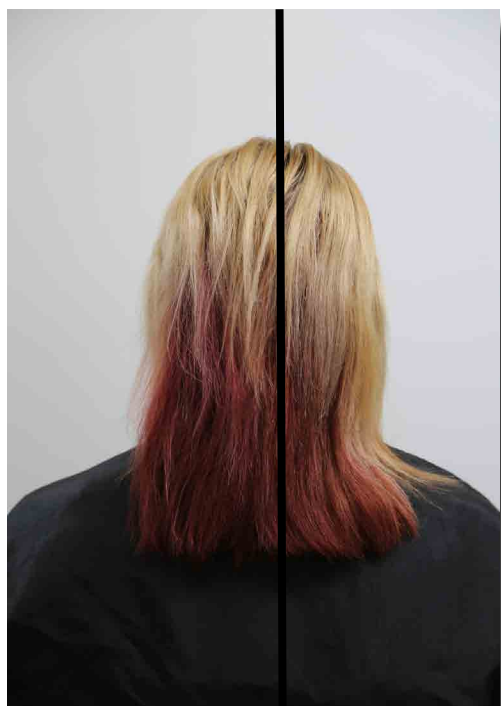
Treating hair with **Active.Lite® Hair**, as shown in Figure 5, makes a difference at the microscopic level, creating a scaffolding-like matrix to support hair while allowing the permeation of small molecules for hair bleaching. In Figure 4 the cuticle is clearly damaged whereas, in Figure 5 **Active.Lite® Hair** demonstrates its ability to protect each fiber by shielding the cuticle, leaving it beautifully smoothed and annealed, contributing to overall healthier looking, and feeling hair.



# Formulating with Active.Lite® Hair

**Active.Lite® Hair** is an incredible, scientific breakthrough that is slated to shake the very foundation on which we've built preventative hair care. Below, various guidelines will help you achieve the best formulation/use results:

- 1) Measure 2.5% **Active.Lite® Hair** compared to DRY bleach powder
  - Example: 1/2oz or less DRY bleach = 0.378g of **Active.Lite® Hair**
  - Example: 1 oz or more DRY bleach = 0.758g of **Active.Lite® Hair**
- 2) Measure approximately 25.0% water compared to dry bleach powder
  - Example 1.0oz dry bleach (28.0 grams) = 6.4g of water
    - Add 3.2g of water for 1/2oz or less of DRY bleach powder
    - Add 6.4g of water for 1.0oz or more of DRY bleach powder
- 3) Combine **Active.Lite® Hair** from Step 1 and water measured from Step 2
- 4) Add developer to bleach powder to form desired consistency,
  - If no benchmark exists "a butter cream" or "gravy" can be used as a target
- 5) Add the measured **Active.Lite® Hair** from Step 3 with bleach from step 4



**Active.Lite® Hair** can also be used in conditioners and sealers!

Conditioners and sealers can be incorporated anywhere from 2.0-5.0% during the water phase of formulating.



## THINGS TO NOTE:

This formulating guideline is strictly for **Bleach Powder Lighteners**.

**Do NOT** add **Active.Lite® Hair** to the dry bleach powder.

Follow aforementioned guidelines for optimal results.