



ABSOLUTELY
EVERYTHING
CURLY

BOND BUILDERS

Many products on the market claim to be bond builders. The choices can be overwhelming. So, how can you figure out which product might be a good alternative? The key is to look at the ingredients list. Specifically, the First Five, which typically make up the bulk of the product. You will notice that, although useful in other ways, most of these “bond repair treatments” are unlikely to actually repair disulfide bonds in keratin. And many contain water-insoluble silicones that can build up on hair.



What is human hair composed of?

Most human hair is made up of approximately 65% to 95% keratin, as well as water, lipids, minerals, and pigments. The two primary morphological tissues of hair are the cuticle and the cortex. The cuticle is composed of plate-like cells at the outermost layer of hair, whereas the cortex is composed of aggregates of spindle-shaped cells containing melanin pigments.

What does bleaching do to hair?

Typically the first step in hair lightening involves a “bleaching step,” which leads to oxidative decolorization of melanin pigments. Immediately before use, to destroy the melanin pigments, the bleaching cream is mixed with an oxidizing emulsion, usually an aqueous solution of hydrogen peroxide in a concentration-dependent on the desired level of hair color removal. In general, bleaching creams contain persulfates as sodium (or potassium) and ammonium salts. Ammonium salts, when dissolved in an alkaline solution, produce ammonia, which is easily absorbed by the hair, allowing it to swell and cause physical deterioration of the hair fibers. Bleaching also leads to cleavage of disulfide bonds of cystine residues and, in cases of severe bleaching, degradation of amino acid residues leading to peptide bond breakage. This is why bleaching is considered one of the harshest treatments for hair bonds.





What is the Olaplex Bond Builder?

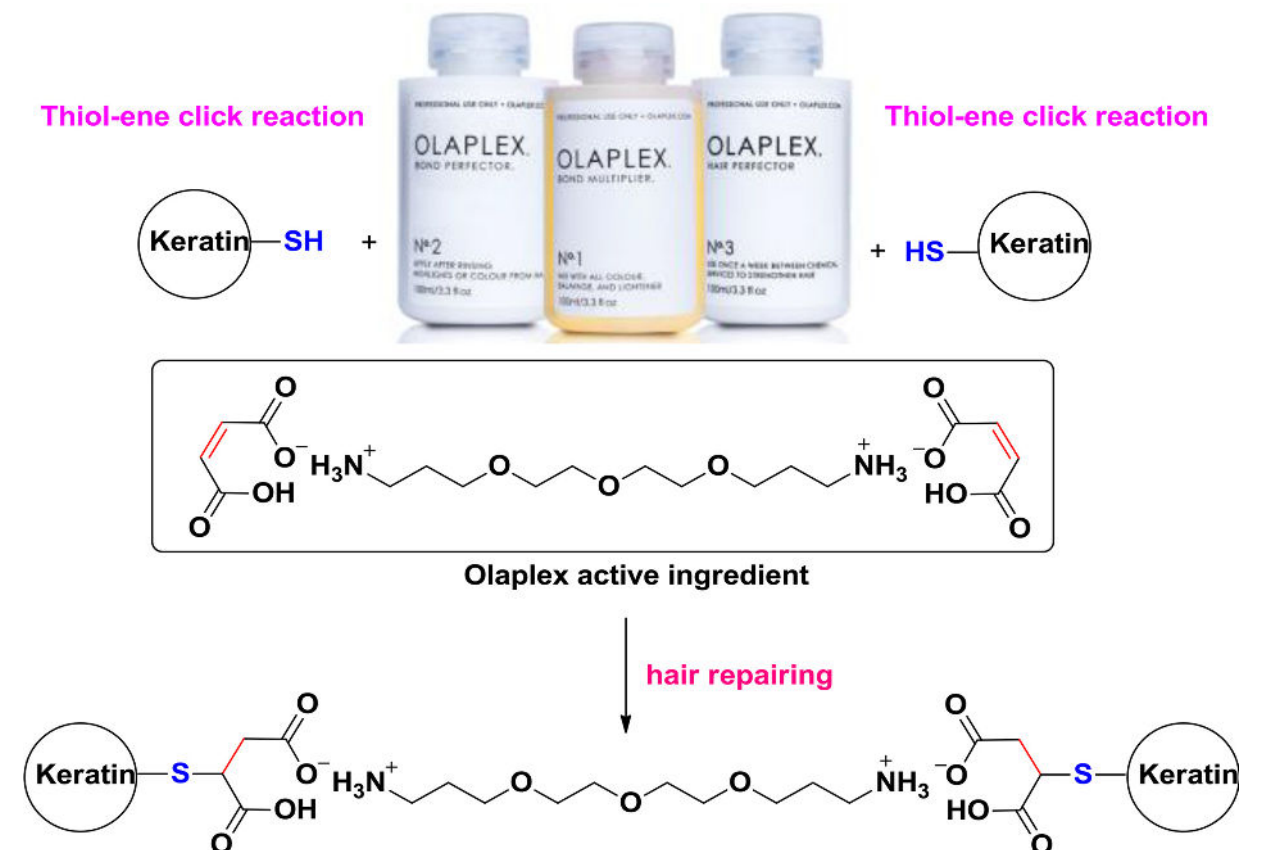
Olaplex was developed by Olaplex LLC, a small company founded in 2014 by two research chemists based at the University of California, Santa Barbara campus. Olaplex's formulation is designed to protect hair from damage during hair coloring procedures. This formulation is used in the Olaplex Bond Multiplier No.1 product, which the company claims is "the first successful and effective product in the hair bond-building market and a world leader in that market."

The ingredients in Olaplex No. 1 are water, ethanolamine, citric acid, maleic acid, three unnamed colorants normally used as food colorants, and bis-aminopropyl diglycol dimaleate (or similar alternatives to the dimaleate version). Olaplex was launched in the US in June 2014 and is now marketed in

more than 80 countries around the world. Essentially, Olaplex No.1 protects the individual hair strands, strengthening, conditioning, and repairing them prior to, as well as after, a bleaching step.

The chemistry behind Olaplex No. 1 involves the use of a one-click reaction, a thiol-ene reaction, to repair the hair. During bleaching, the disulfide bonds of keratin are broken down to form free thiol groups. The two vinyl ends of bis-aminopropyl diglycol dimaleate, the active ingredient in Olaplex No. 1) selectively react with the free thiols, making an artificial, extended disulfide bridge, and repairing the damaged hair. This reaction is illustrated in Figure 1 below.

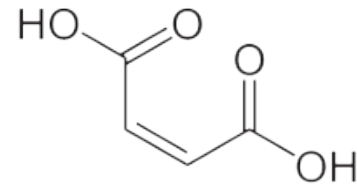
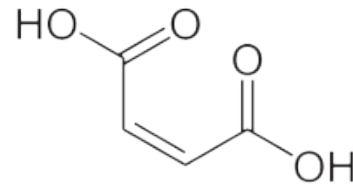
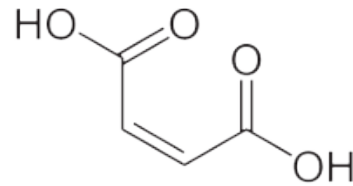
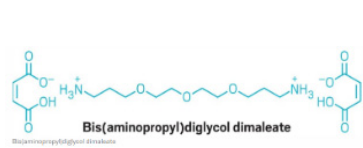
Figure 1. Thiol-ene Click Reaction of Olaplex



How does Olaplex compare to the bond-building products from L'Oréal, Matrix, and Redken?

TABLE 1. OLAPLEX VS OTHER BOND BUILDER PRODUCTS

Olaplex	L'Oréal Professionnel Smartbond	Matrix BOND Ultim8 Bond Protecting System	Redken PH Bonder Treatment System
ACTIVE INGREDIENT			
Bis-Aminopropyl Diglycol Dimaleate	Maleic Acid	Maleic Acid	Maleic Acid



Olaplex is best used during color treatment, rather than after it, but some people report good results post-coloring. It is not a miracle cure for colored, dry hair but it can assist in strengthening the bonds that are normally broken during the coloring process.

This may assist in stopping breakage and post-colored hair having that cotton candy texture. Since the launch of the Olaplex brand, many alternatives have been marketed.

Olaplex	L'Oréal Professionnel Smartbond	Matrix BOND Ultim8 Bond Protecting System	Redken PH Bonder Treatment System
How To Apply These Multi-Step Products			
THE IN-SALON STEPS: PART 1			



Olaplex No. 1 - Bond Multiplier

For professional in-salon use - and can be put on the hair as a stand-alone treatment, or if receiving a color treatment, it is mixed in with the bleach and put straight onto hair in foils.

STEP 1 - Additive (30 sec)

To be put in colors, lighteners & bleaches. Bond protecting & strengthening action during technical services.

STEP 1 - Amplifier

This formula is added to any Matrix color or lightener to protect hair as it processes. When dosed correctly, it will not alter the color performance or timing in any way. Step 1 preserves the bonds in hair and also acts as an ion trapper by removing damaging bleach residues.

Redken Ph-Bonder STEP 1

This is a protecting additive that is used during the lightening and coloring process to prevent damage to the hair follicle.

How To Apply These Multi-Step Products (Cont.)

THE IN-SALON STEPS: PART 2



Olaplex No. 2 - Bond Perfector

This is put on the hair once the bleach is rinsed out, usually at the backwash. This is left on for a good 20 minutes to really get the most out of its chemical mending.

STEP 2 - Pre-Shampoo (10 min)

Pre Shampoo to be applied on hair after rinsing color or bleach. Finishing action after the service helps rinse off all chemical residues breaking weak bonds.

STEP 2 - Sealer

This deep conditioning treatment helps seal in the benefits of Step 1 and adds further protection. It is applied after the color is processed and rinsed, and processed for 10 minutes at room temperature. The hair is then rinsed, shampooed, and conditioned with the preferred Matrix professional products. Step 2 restores the bonds that have been weakened by the chemical process.

Redken Ph-Bonder Step 2 Pre-Wash Concentrate

Hair is rinsed and 15-30ml of #2 Fiber Restorative Pre-Wash Concentrate is applied to towel-dried hair. It is left in for 10 minutes, then thoroughly rinsed and followed by shampoo and conditioner.

How To Apply These Multi-Step Products (Cont.)

THE IN-SALON STEPS: PART 3



Olaplex No 3. - Hair Perfector

Is an at-home bond-building treatment, not a conditioner, that reduces breakage and visibly strengthens hair, improving its look and feel.

-A generous amount is applied from roots to ends on damp, towel-dried hair, combed through, and left on for a minimum of 10 minutes. Then it is rinsed from the hair, followed by shampoo and conditioner.

STEP 3 - Conditioner (2-3 min)

To be used every 3 shampoos, after your regular shampoo. Rinse. The Step 3 treatment is supposed to continuously strengthen the hair fiber week after week.

STEP 3 - Weekly Sealing Treatment

This follow-up formula is used to perfect fibers and provide additional nourishment at home, following the in-salon service.

Redken Ph-Bonder Post-Service Perfector

The pH-Bonder Post Service Perfector is applied once a week. It should be applied before shampooing on wet, towel-dried hair, massaged into hair from roots to ends, and left on for at least 10 minutes. After rinsing, it is followed by regular shampoo and conditioner.



All HD Plex Bond Treatment

Bond Maker #1

First Five Ingredients: Water, Cetearyl alcohol, behentrimonium methosulfate, bis-cetearyl amodimethicone, C13-15 alkane stearamidopropyl dimethylamine, glycerin

Bond Maker #2

First Five Ingredients: Water, Cetearyl alcohol, behentrimonium methosulfate, bis-cetearyl amodimethicone, C13-15 alkane stearamidopropyl dimethylamine, glycerin



Alterna Caviar Anti-Aging Restructuring Bond Repair Leave-In Treatment Mousse

First Five Ingredients: Water, Cetearyl Alcohol, Isobutane, Glycerin, Pyrus Malus (Apple) Fruit Extract, Steareth-21



Amika the Kure Repair Shampoo

First Five Ingredients: Water, Sodium C 14-16 Olefin Sulfonate, Cocamidopropyl Betaine, Glycerin, Disodium Cocoamphodiacetate, Peg-7 Glyceryl Cocoate

CAUTION



ApHogee Two Step Protein Treatment

First Five Ingredients: Water (Aqua, Eau), Hydrolyzed Collagen, Citric Acid, Magnesium Sulfate, Imidazolidinone, Panthenol



B3 Brazilian Bond Builder

First Five Ingredients: Dimethyl Isosorbide, PPG-3 Benzyl Ether Myristate, Hydrogenated Castor Oil / Sebacic Acid Copolymer, Benzyl Alcohol, Argania Spinosa (Argan) kernel oil



Bond Angel Plex Effect Bond Multiplier

Step 1 Bond Maker

First Five Ingredients: Aqua, Glycerin, Quaternium-70, Hydrolyzed Collagen, Hydroxyethylcellulose, Alcohol

Step 2 Bond Maker

First Five Ingredients: Aqua, paraffinum liquidum, stearyl alcohol, glycerin, Cheryl alcohol, dimethicone



Bond Builder Split End Remedy

First Five Ingredients: Aqua/Water/Eau, Propylene Glycol, Dimethicone, Hydrogenated Castor Oil/Sebacic Acid Copolymer, Polyacrylamide, Butylene Glycol



Bumble and Bumble Glow Bond-Building Styler

First Five Ingredients: Water\Aqua\Eau, Propanediol, Cetearyl Alcohol, Dimethicone, Aleurites Moluccana (Kukui) Seed Oil, Hydrogenated Castor Oil/Sebacic Acid Copolymer





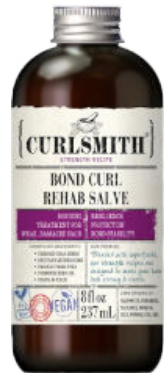
Color WOW Dream Cocktail – Kale infused

First Five Ingredients: Water (Aqua), Behentrimonium methosulfate, Cetyl alcohol, Caprylic/Capric Triglyceride, Polyquaternium-37, Glycerin



Formula8 Mask

First Five Ingredients: Water/Aqua/Eau, Cetearyl Alcohol, Alcohols C16-18, Behentrimonium Chloride, Amodimethicone, Cetyl Esters



Curlsmith Bond Curl Rehab Salve

First Five Ingredients: Water (Aqua), Cetearyl Alcohol, Salvia Hispanica (Chia) Seed Extract, Creatine, Polyquaternium-10, Stearamidopropyl Dimethylamine



Hair Bond Repair Treatment by Paise Botanics

First Five Ingredients: Water, Glycerin, Cetearyl Alcohol, Coco Caprylate, Undecane, Tridecane



Elizavecca CER-100 Collagen Coating Hair Protein Treatment

First Five Ingredients: Water, Cyclopentasiloxane, Dimethicone, PEG-14M, Glycerin, Dimethicone/Vinyl Dimethicone Crosspolymer



IGK Antisocial Overnight Bond-Building Dry Hair Mask

First Five Ingredients: Dimethyl Ether, Aqua/Water/Eau, Dicaprylyl Carbonate, Disiloxane, Dimethicone, sr-Spider Polypeptide-1



Fanola Fiber Fix

Fanola Fiber Fix N.1 Bond Fixer

First Five Ingredients: Aqua (Water), Alcohol Denat., Pisum sativum (Pea) Peptide, Phenoxyethanol, Ammonium Acryloyldimethyltaurate / Beheneth-25 Methacrylate Crosspolymer, Citric Acid

Fanola Fiber Fix Shampoo

First Five Ingredients: Aqua (Water), Ammonium Lauryl Sulfate, Sodium Myreth Sulfate, Sodium Cocoamphoacetate, MIPA-lauryl sulfate, Glycol Distearate



Ion Color Brilliance

Absolute Perfection Booster Step 1

First Five Ingredients: Water, Propylene Glycol, Peg-7 Glyceryl Cocoate, Peg-18 Glyceryl Oleate/Cocoate, Peg-40 Hydrogenated Castor Oil, Dicytyldimonium Chloride

Absolute Perfection Color Sealer Step 2

First Five Ingredients: Water, Cetearyl Alcohol, Glycerin, Hydroxypropyl Starch Phosphate, Fragrance, Behentrimonium Methosulfate

Absolute Perfection Color Sealer Step 3

First Five Ingredients: Water, Cetearyl Alcohol, Glycerin, Hydroxypropyl Starch Phosphate, Fragrance, Behentrimonium Methosulfate





Joico Defy Damage Protective Masque

First Five Ingredients: Water/Aqua/Eau, Butylene Glycol, Dimethicone, Sorbitol, Behenyl Alcohol, Stearyl Alcohol



Joico K-Pak Deep-Penetrating Reconstructor Treatment for Damaged Hair

First Five Ingredients: Water/Aqua/Eau, Stearamidopropyl Dimethylamine, Mineral Oil/Paraffinum Liquidum/Huile Minérale, Glycol Stearate, PEG-8 Distearate



K18 Leave-In Molecular Repair Hair Mask

First Five Ingredients: Water (Aqua) (Eau), Alcohol Denat., Propylene Glycol, Cetearyl Alcohol, Dicaprylyl Ether, Cetyl Esters



Kerastase Resistance Ciment Anti-Usure Hair Treatment

First Five Ingredients: Aqua / Water - Behentrimonium Chloride, Cetearyl Alcohol, Cetyl Esters, Peg-180, Isononyl Isononanoate



Keune Bond Fusion

Bond Fusion Phase 1 (Bond Builder)

First Five Ingredients: Aqua (Water), Propylene Glycol, Quaternium-80, Silicone Quaternium-22, Cocodimonium Hydroxypropyl Hydrolyzed Keratin, Hydrolyzed Keratin



Bond Fusion Phase 2 (Bond Enhancer)

First Five Ingredients: Aqua (Water), Cetearyl Alcohol, Paraffinum Liquidum (Mineral Oil), Steara-midopropyl Dimethylamine, Cetrimonium Chloride, Polyquaternium-37



Bond Fusion Phase 3 (Bond Recharger)

First Five Ingredients: Aqua (Water), Cetearyl Alcohol, Paraffinum Liquidum (Mineral Oil), Stearamidopropyl Dimethylamine, Cetrimonium Chloride, Polyquaternium-37



Knight and Wilson Pureplex Reconstructing Conditioner

First Five Ingredients: Aqua (Water), Myristyl Alcohol, Glyceryl Stearate, Cetrimonium Chloride, Behenyl Alcohol, Laurdimonium Hydroxypropyl Hydrolyzed Keratin



L'Oréal Professionnel Smartbond



L'Oréal Professionnel Smartbond Step 1 Additive

First Five Ingredients: Aqua/Water, Maleic Acid, Ethanolamine, CI 19140/Yellow 5, CI 14700/Red 4, CI 42090/Blue 1, C188999/1



Smartbond Step 2 Pre-shampoo

First Five Ingredients: Aqua/Water/Eau, Cetearyl Alcohol, Propylene Glycol, Maleic Acid, Behentrimonium Methosulfate, Ethanolamine



L'Oréal Professionnel Smartbond Step 3 Conditioner

First Five Ingredients: Aqua / Water, Cetearyl Alcohol, Propylene Glycol, Maleic Acid, Behentrimonium Methosulfate, Ethanolamine



Madison Reed Light Works Bond Building Cleansing Treatment

First Five Ingredients: Water, Sodium Lauroyl Methyl Isethionate, Cocamidopropyl Betaine, Sodium Cocoyl Isethionate, Disodium Cocoamphodiacetate, Aloe Barbadensis Leaf Juice



Matrix Bond Ultim8 Bond Protecting System

Matrix Bond Ultim8 Step 1 Amplifier

First Five Ingredients: Aqua / Water, Maleic Acid, Ethanolamine, Citric Acid, CI 19140 / Yellow 5, CI 14700 / Red 4



Matrix Bond Ultim8 Step 2 Sealer

First Five Ingredients: Aqua / Water, Cetearyl Alcohol, Propylene Glycol, Maleic Acid, Behentrimonium Methosulfate, Ethanolamine

Matrix Bond Ultim8 Step No 3 Fiber Protecting Sealing Treatment

First Five Ingredients: Aqua / Water, Cetearyl Alcohol, Propylene Glycol, Maleic Acid, Behentrimonium Methosulfate, Ethanolamine



NanoKplex by Nanokeratin System

Nanokeratin System 01 REBOND Bond Builder and 02 REINFORCE Bond Enhancer

First Five Ingredients: Aqua (Water), M460P, Polyquaternium-37, Amodimethicone, Phenyl Trimethicone, Panthenol (Pro-Vitamin B5)





OGX Restoring + Bonding Plex Bonding Cream Leave-In Treatment

Bonding Plex Shampoo

First Five Ingredients: Water (Aqua), Sodium C14-16 Olefin Sulfonate, Cocamidopropyl Betaine, Glycol Distearate, Sodium Chloride, Fragrance (Parfum)

Bonding Plex Conditioner

First Five Ingredients: Water (Aqua), Cetyl Alcohol, Behentrimonium Chloride, Glycerin, PPG 3 Benzyl Ether Myristate, Steareth 20

Bonding Plex Leave-In Treatment

First Five Ingredients: Water (Aqua), Cetyl Alcohol, Glycerin, Behentrimonium Chloride, Steareth 20, Cystine Bis-PG-Propyl Silanetriol



Onc Artocare Quinoaplex R3 Rapid Hair Renewal Formula

First Five Ingredients: Aqua, **Propanediol (Corn Sugar), **Coco-glucoside (Coconut Oil), **Hydrolyzed Quinoa Protein, Quaternium-80, Polysorbate-20



PCA Bond Repair Hair Treatment

First Five Ingredients: Water (Aqua /Eau), Amodimethicone, Butylene Glycol, Betaine, Bis-PCA Dimethicone, Sorbitan Laurate



pH Plex Protect & Repair Set

pH Plex 1 Protect

First Five Ingredients: Aqua/Water, Sodium Malate, Sodium Hydroxide, Propylene Glycol, Quaternium-80, Cetrimonium Chloride

pH Plex 2 Repair

First Five Ingredients: Aqua/Water, Cetyl Alcohol, Sodium Malate, Isopropyl Myristate, Polyquaternium-37, Cetrimonium Chloride

pH Plex 3 Stabilize

First Five Ingredients: Aqua/Water, Cetyl Alcohol, Sodium Malate, Isopropyl Myristate, Polyquaternium-37, Cetrimonium Chloride



Pronexa Hair Bond Repairing Complex by Hairgenics

First Five Ingredients: Purified Water, Isopropyl Myristate, Stearyl Alcohol, Hydrogenated Castor Oil/Sebacic Acid Copolymer, Stearamidopropyl Dimethylamine, Cyclomethicone



Redken Acidic Bonding Concentrate Conditioner

First Five Ingredients: Aqua/Water/Eau, Cetearyl Alcohol, Glycerin, Behentrimonium Chloride, Dimethicone, Bis-Cetearyl Amodimethicone





Redken Extreme CAT Anti-Damage Protein Reconstructing Rinse-Off

First Five Ingredients: Aqua/Water/Eau, Hydroxypropyltrimonium Hydrolyzed Wheat Protein, Magnesium Sulfate, Laureth-23, Taurine, Sodium Benzoate



Redken Ph Bonder Post Perfector

First Five Ingredients: Aqua / Water, Cetearyl Alcohol, Propylene Glycol, Maleic Acid, Behentrimonium Methosulfate, Ethanolamine



Revolution Haircare Plex Bond

Plex 3 Bond Restore Treatment

First Five Ingredients: Aqua (Water, Eau), Cetearyl Alcohol, Glyceryl Stearate Se, Quaternium-91, Panthenol, Stearamidopropyl Dimethylamine

Plex 4 Bond Plex Shampoo

First Five Ingredients: Aqua (Water, Eau), Cocamidopropyl Betaine, Sodium Lauroyl Methyl Isethionate, Sodium Methyl Oleoyl Taurate, Coco-Glucoside, Lauryl Glucoside

Plex 5 Bond Plex Conditioner

First Five Ingredients: Aqua (Water, Eau), Glyceryl Stearate Se, Behentrimonium Methosulfate, Cetyl Alcohol, Cetearyl Alcohol, Cetrimonium Chloride

Plex 6 Bond Restore Styling Cream

First Five Ingredients: Aqua (Water, Eau), Cetearyl Alcohol, Behentrimonium Methosulfate, Cetyl Alcohol, Panthenol, Dimethicone



Schwarzkopf BLONDME Keratin Restore Bonding Mask - All Blondes

First Five Ingredients: Aqua (Water, Eau), Cetearyl Alcohol, Isopropyl Myristate, Behentrimonium Chloride, Distearoylethyl Hydroxyethylmonium Methosulfate, Stearamidopropyl Dimethylamine



Schwarzkopf Fibreplex Bond Enforcing System

Fibreplex Shampoo

First Five Ingredients: Aqua (Water, Eau), *Sodium Laureth Sulfate, *Cocamidopropyl Betaine, *Magnesium Citrate*PEG-7 Glyceryl Cocoate*PEG-120 Methyl Glucose Dioleate

Fibreplex 2 Bond Sealer

First Five Ingredients: Aqua (Water, Eau), *Dimethicone, *Cetearyl Alcohol, *Behenoyl PG-Trimonium Chloride, *Isopropyl Myristate, *Distearoylethyl Hydroxyethylmonium Methosulfate

Fibreplex No.3 Bond Maintainer

First Five Ingredients: Aqua (Water, Eau), *Dimethicone, *Cetearyl Alcohol, *Behenoyl PG-Trimonium Chloride, *Isopropyl Myristate, *Distearoylethyl Hydroxyethylmonium Methosulfate



Uberliss Original Bond Sustainer

First Five Ingredients: Aqua/Water/Eau, Aloe Barbadosis Leaf Juice, Cocos Nucifera (Coconut) Oil, Cetyl Esters, Cetyl Alcohol, Glycerin





VITAPLEX Part 3 Bond Preserver

First Five Ingredients: Aqua (Water), Myristyl Alcohol, Stearamidopropyl Dimethylamine, Glyceryl Stearate, Citric Acid, Behenyl Alcohol



Wella Fusionplex Mask

First Five Ingredients: Water/Eau, Bis-Aminopropyl Dimethicone, Stearyl Alcohol, Behentrimonium Chloride, Cetyl Alcohol, Fragrance/Parfum



WELLAPLEX Bond Builder

Wella Wellaplex No. 2 Bond Maker

First Five Ingredients: Water/Aqua/Eau, Malic Acid, Sodium Hydroxide, Propylene Glycol, Quaternium-80, Cetrimonium Chloride



Wella Wellaplex No. 2 Bond Stabilizer

First Five Ingredients: Aqua, Cetyl Alcohol, Isopropyl Myristate, Malic Acid, Paraffinum liquidum, Cetearth-25



Wella Wellaplex No. 3 Stabilizer

First Five Ingredients: Aqua, Cetyl Alcohol, Isopropyl Myristate, Malic Acid, Paraffinum liquidum, Cetearth-25



Sources We Found Useful:

1. Xu, Long, and Jiajia Dong. "Click chemistry: evolving on the fringe." Chinese Journal of Chemistry 38.4 (2020): 414-419.
2. Di Foggia, Michele, et al. "Structural investigation on damaged hair keratin treated with α , β -unsaturated Michael acceptors used as repairing agents." International Journal of Biological Macromolecules 167 (2021): 620-632.
3. <https://chicpursuit.com/products-like-olaplex/>
4. <https://softerhair.com/five-alternatives-to-olaplex/>
5. Olaplex wins case against L'Oréal for theft of trade secrets, breach of contract & patent infringement. Focus on Pigments, 2019(10), 7.
6. Olaplex alleges patent infringement by L'Oréal re hairbond-building prior to colouring. Focus on Pigments, 2017(3), 7.
7. <https://www.reuters.com/article/loreal-olaplex-patents-idUSL2N2L31D2>



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