

*Multi-functional
hybrid polymer*

Protesil™ LH

Hybrid polymer made from silk
gives various effects as you wish

Color

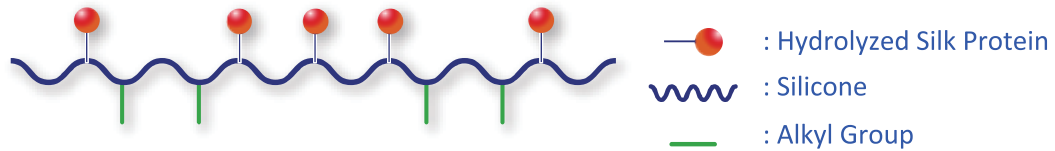
Repair

Gloss

Multi-Functional Hybrid Polymer **Protesil LH**

Protesil LH is multi-functional hybrid polymer composed of 3 different kinds of chemical structure. Hydrolyzed Silk Protein is adsorbed into hydrophilic part of hair damaged chemically by coloring or perming. Meanwhile, Silicone and Alkyl Group forms hydrophobic film on hair surface.

Thanks to this structural characteristic features, **Protesil LH** gives various effects on hair.



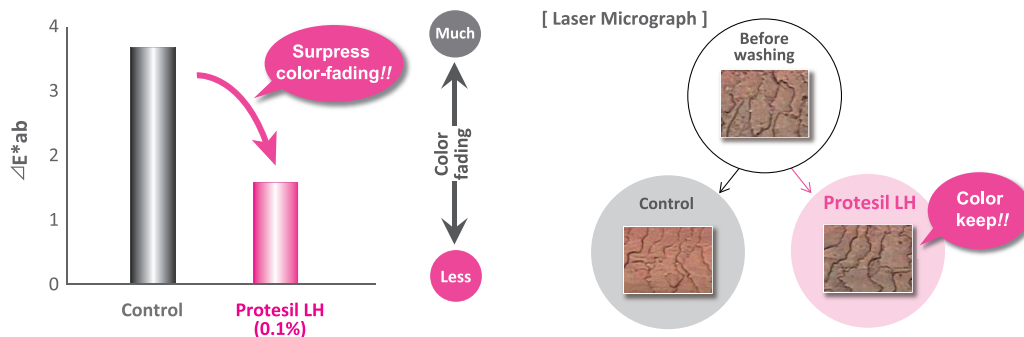
INCI Name : Hydrolyzed Silk-PG Propyl Methylsilanediol Crosspolymer, Water

The Features of Protesil LH

- ✓ **Protect hair from color-fading**
Protesil LH boosts efficacy to dyeing power of hair color and keeps brilliant shade and color by using hair care products.
- ✓ **Repairment of the damaged hair**
Protesil LH repairs hair damages and gives silky and smooth feel.
- ✓ **Effective at low dosage -Cost Effectiveness-**
Protesil LH effectively gives gloss, manageability moist-feel, smoothness, and finger-combability at low dosage.
- ✓ **Non-buildup effect**
Protesil LH suppresses the build-up of Amodimethicone on hair surface and continues to provide a good texture.

Verification test

TEST 1 Protect hair from color-fading



[Evaluation Method]

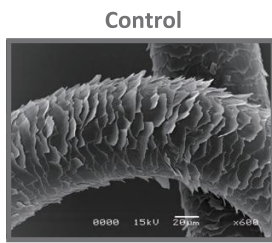
Bleached and red-dyed hair was three times treatment with shampoo with 0.1% Protesil LH or without active ingredient (Control), washed with running water, and dried by hair-dryer. Then the color of hair was observed by laser micrograph.

“ Dyed hair is protected from color-fading by using shampoo containing **Protesil LH**. ”

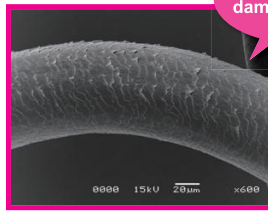
Verification test

TEST 2

Repairment of the damaged hair



Control



Protesil LH (0.1%)

Repair the damaged hair!!



[Evaluation Method]

Damaged hair was treated with shampoo and conditioner with 0.1% Protasil LH or without active ingredient (Control) for 30 days. Hair surface was observed by scanning electron microscopy (SEM).

“Protasil LH repairs hair damages and makes the hair surface smooth.”

TEST 3

Effective at low dosage - Cost Effectiveness -



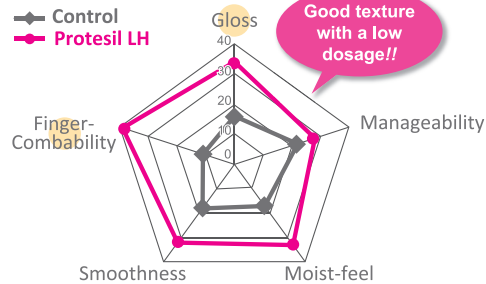
Control

Protesil LH (0.1%)

Glossy and smooth!!

[Sensory Evaluation]
n = 10

— Control
— Protasil LH



Good texture with a low dosage!!

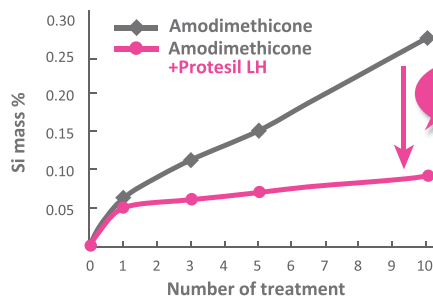
[Evaluation Method]

Half head test was conducted by using shampoo with 0.1 % Protasil LH and without active ingredient (Control) for 6 days (n=5). 10 panels gave 1 point to better sensory texture. The total evaluation points were summed.

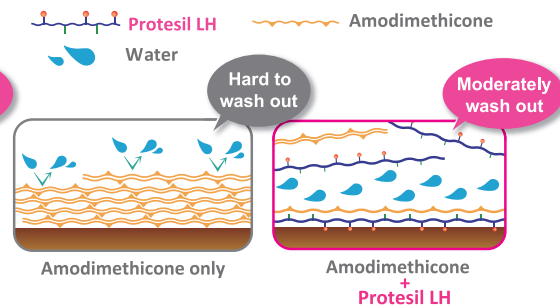
“Protasil LH effectively gives glossy and smooth texture to hair at low dosage.”

TEST 4

Suppressing effect of silicone build-up



Supress build-up!!



Hard to wash out

Moderately wash out

[Evaluation Method]

Bleached hair was washed with shampoo, treated with hair conditioner including 0.5% amodimethicone with 0.1% Protasil LH or including only 0.5% amodimethicone, washed and dried by hair-dryer. The washing-to-drying cycle was repeated 10 times. The Si* amount of hair surface was measured by SEM and energy-dispersive X-ray spectroscopy (EDS).

“Protasil LH suppresses the build-up of amodimethicone on hair surface.”

Application for cosmetics

Non Build-up Conditioner

Formula No.H-201A
(W/W%)

	SEIWA KASEI	0.1
Protesil LH		
Cetearyl Alcohol, Cetearyl Glucoside		1.0
Cetearyl Alcohol		3.0
Glycerin		2.0
Simmondsia Chinensis (Jojoba) Seed Oil		2.0
Behentrimonium Chloride (80%), Isopropyl Alcohol (20%)		1.0
Steareth-20		0.5
Promois KR-30 ⁴	SEIWA KASEI	1.0
Amitose R ⁵	SEIWA KASEI	1.0
Preservatives		0.3
Water		Up to 100

⁴ Hydrolyzed Keratin, Water
⁵ Dihydroxypropyl Arginine HCl, Water



Product Information

INCI name	Hydrolyzed Silk PG-Propyl Methylsilanediol Crosspolymer, Water
CAS No.	638164-47-3



SEIWA SEIWA KASEI CO., LTD.

HEAD OFFICE & OSAKA PLANT

1-2-14, Nunoichi-cho, Higashiosaka, Osaka, Japan
TEL +81-72-987-2626 FAX +81-72-987-2072
E-mail sales@seiwakasei.co.jp

URL <https://seiwakasei.jp/en>

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