



HydroSal® Heat Protection

An advanced encapsulation system that protects hair from severe heat damage while delivering fragrance during and after thermal treatments.

The use of thermal treatment such as hot flat irons, curling irons, or blow dryers can damage the hair and cause moisture loss, frizz, split ends, and breakage.

To protect hair from thermal treatments, silicones are commonly used due to their excellent heat insulating property. However, it can be difficult to completely wash away silicone from hair, and silicone build-up remains a concern for consumers. Silicone-free heat protection products, usually polymer-based, have been developed, but do not offer heat protection comparable to silicone-based solutions.

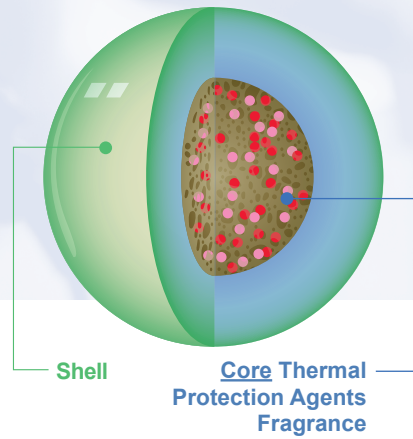


Figure 1: The sub-micron structure of HydroSal® Heat Protection.

- UNIQUE FEATURES**
- 1 ENCAPSULATION**
Allows for easy removal that prevents silicone build-up.
 - 2 CONTAINS SILICONE-BASED**
heating agent and film-forming polymers for double heat protection.
 - 3 ENCAPSULATES FRAGRANCE**
to protect from rapid evaporation.

HOW THE TECHNOLOGY HELPS YOU

HydroSal® Heat Protection contains sub-micron particles that encapsulate and deliver thermal protection agents and fragrance to the hair. The particles have a porous core enclosed within a film-forming polymer shell (Figure 1). When applied to hair, the film-forming polymer coats the hair and releases the thermal protection agent and fragrance onto the hair surface. The thermal protection agent protects hair from heat damage by slowing down external heat transfer to the hair cuticle, and the fragrance is gradually released due to the presence of the polymer film.



HydroSal® Heat Protection raw



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VISIBLE RESULTS

A hair strand was taken from a volunteer to observe heat protection capabilities. A leave-in conditioner prepared with 3% HydroSal® Heat Protection was compared to a commercial benchmark product and vehicle alone as the control. Each hair strand underwent severe heat application (200°C for 1 minute) and then hair surface morphology was evaluated under a light microscope at 10x objective (Figure 2).

The control hair strand shows heat damage by the cuticles flipping out from the strand. The commercial benchmark displays better protection from the control hair strand, but does not perform as well as the HydroSal® Heat Protection. The strand treated with HydroSal® Heat Protection shows protection against heat resulting in a smooth hair surface.

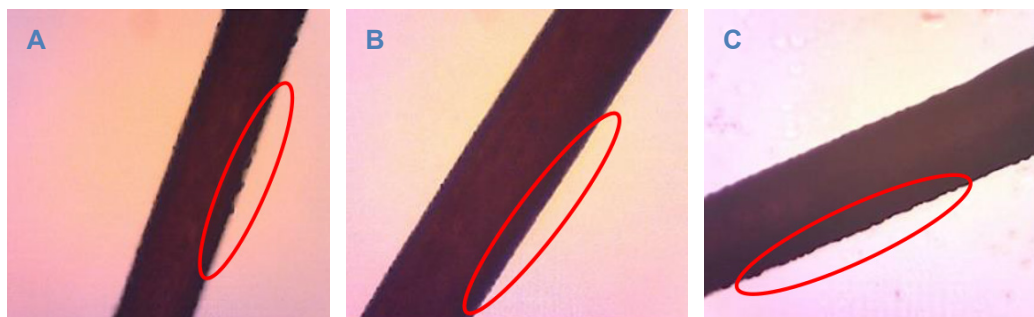


Figure 2: Microscopy photos of severe heat-treated hair strand with (A) vehicle alone, (B) leave-in conditioner containing 3% HydroSal® Heat Protection, and (C) commercial benchmark product.

FORMULATION

Ingredients	(W/W %)
HydroSal® Heat Protection	3.33
Glycerin	2.0
Polyacrylate-13/ Polyisobutene/ Polysorbate-20	0.50
Dimethicone	1.0
DI Water	92.17
Preservative	1.0

TECHNICAL DATA

Appearance @ 20°C	Opaque liquid
Applications	Suitable for hair products such as leave-in conditioners, pre-heat serums, pre-heat styling mousse, and thermal primer
Color	White
Odor	Typical to fragrance used
pH (1 % solution)	4.5-6.5
Shelf Life (months)	18
Usage Level (wt%)	2.0-5.0%
Storage (°C)	Closed container at 12-32°