

THREE WAYS IT WORKS

1. Keraplast FK Protect Plus™ forms a film over the hair to protect the fiber exterior from environmental aggressors such as pollution components and UV.
2. The film can seal in the moisture of healthy hair, locking in its natural water content and retaining flexibility.
3. The fiber surface is smoothed by addition of a continuous, glossy protein layer conveying conditioning benefits.

MECHANISM OF PROTECTION

The film forming and excellent substantivity of the high molecular weight keratin creates a cohesive and continuous film on the hair. It acts like a galvanizing agent forming a reactive protective layer. The high natural cystine content allows it to quench free radicals caused by pollution and UV before they propagate.

KEY CLAIMS

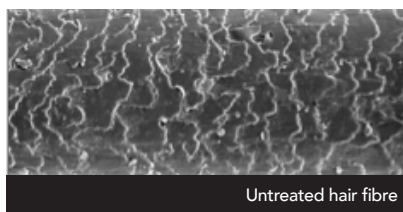
Adding Keraplast FK Protect Plus™ at a level of 2.5% into Shampoo and Conditioner has been shown to

- Prevent pollution damage
- Protect the hair
- 36% improvement in shine
- Improve condition
- 67% prevention of color fade

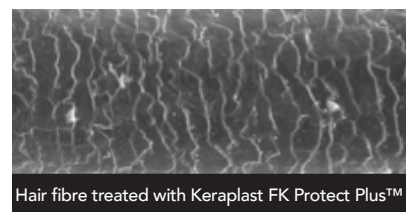
Shielding the hair with a sacrificial layer

Keraplast FK Protect Plus™ is extracted from wool using a mild process which results in a high MW soluble keratin protein. This natural form of protein can arrange itself into stable, cohesive films on the hair taking advantage of three dimensional interactions of amino acids within the native protein chains.

FK Protect Plus™ is a strong antioxidant potential (222 micromol TEAC/100ml) arising from its unique active cystine component. The antioxidant activity enables it to scavenge free radicals at the point of formation. This protects against the force multiplying damage of UV combined with pollution.



Untreated hair fibre



Hair fibre treated with Keraplast FK Protect Plus™

KERAPLAST FK PROTECT PLUS – Galvanizing agent for the hair

Function	FK Protect Plus™ contains high molecular weight Functional Keratin® to shield and protect the hair from environmental aggressions such as UV and pollution. The film locks in moisture and conditions the hair.
Composition	Intermediate filament protein + medium and low molecular weight hydrolyzed keratins.
Physical Form	Pale yellow to light brown semi-viscous liquid.
INCI Name	Aqua (and) Keratin (and) Hydrolyzed Keratin (and) Oxidised Keratin.
Applications	Shampoos, conditioners, styling products and intensive/post-chemical treatments.
Formulations	Can be formulated into a broad range of hair care systems. Some care required in combination with cationic species. Higher pH is preferred at high inclusion levels.
Typical Usage Levels	0.5 - 5.0% as supplied.

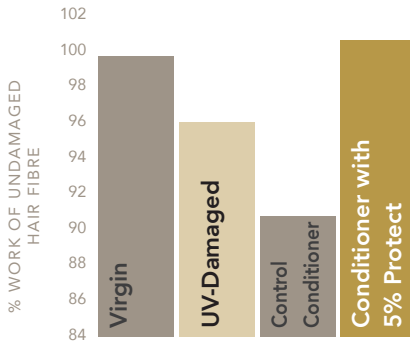
KERAPLAST FK PROTECT PLUS™

PROTECT AND CONDITION

FILM FORMING PROTECTION

TENSILE PROPERTIES

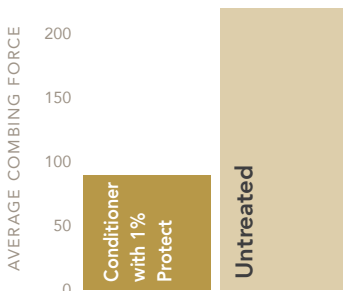
ENERGY TO EXTEND HAIR



UV PROTECTION

Mechanical properties maintained when Protect is applied to hair prior to UV exposure to sunlight.

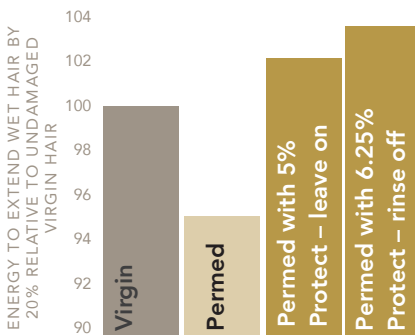
COMBING FORCE



SMOKING

62% easier to comb following exposure to cigarette smoke compared to no treatment

ENERGY TO EXTEND HAIR



PERMING HAIR

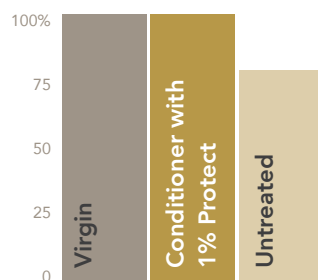
Tryptophan is an amino acid that is sensitive to UV light and the oxidizing components of pollution. Tryptophan is naturally present on the hair surface and can be measured by irradiating at a certain wavelength and recording the emission using fluorescence spectroscopy.

To measure the surface “health” of the hair, we first record the amount of tryptophan on the surface using fluorescence spectroscopy. We then subject the hair to potentially damaging effects eg UV light or pollutants, and re-measure the tryptophan on the hair surface.

A decrease in tryptophan indicates that the hair has been adversely affected (damaged) by the reactants/UV. If the tryptophan level is retained, the hair has been protected.

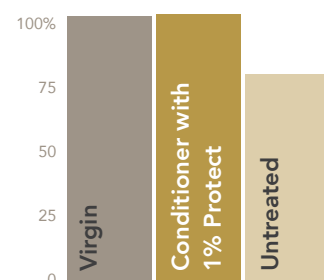
KERAPLAST FK PROTECT PLUS™ IS SHOWN TO PROTECT AGAINST KEY POLLUTANTS AND CIGARETTE SMOKE

TRYPTOPHAN ANALYSIS



SULFUR DIOXIDE

20% improvement in hair surface health exposed to SO₂, compared to no treatment



OZONE

25% improvement in hair surface health exposed to O₃ compared to no treatment

PROTECTION AGAINST POLLUTION AND PM2.5 & PM10

FK Protect Plus™ keratin protein layer protects the hair when applied prior to exposure to pollution. Cigarette smoke contains a wide range of harmful chemicals including heavy metals, formaldehyde and particulates. It is therefore a very good test for how hair responds to airborne pollution. Results show significantly more healthy hair when FK Protect Plus™ is used prior to exposure.

The presence of PM2.5 and PM10 in urban areas is a serious problem. These particulates deliver harmful heavy metals and PAHs to the surface of the hair and skin. FK Protect Plus™ anti-pollution efficacy originates from its radical scavenging ability arising from its naturally high cysteine component (222umol TEAC/100ml).