



Making Cosmetics More Beautiful

Kraton® Polymers for Oil Modification



Creating Beauty Through Innovative Science

Kraton Polymers offer the most state-of-the-art solutions for specialty oil gels. Our wide array of hydrogenated styrenic block copolymers (SBCs) allows for highly transparent, glossy and moisture-resistant products – hallmarks of exceptional cosmetics.

Our polymers are compatible with a vast range of oils and waxes, creating endless possibilities for new uses and formulations. They may be used as gelling agent, a sole modifier, to complement other ingredients, to boost the viscosity of the oil phase and as a film former.

The Next Generation

Kraton® polymers make it possible to stay ahead of evolving beauty industry trends. When blended with a wide variety of synthetic, polar, ester or natural oils, our polymers transform these oils into clear, thicker, shear thinning, thixotropic and film forming gels that meet a multitude of industry needs. These blends contribute to the stabilization of water in oil (W/O) emulsions with excellent oil retention and possess a beautiful gloss.

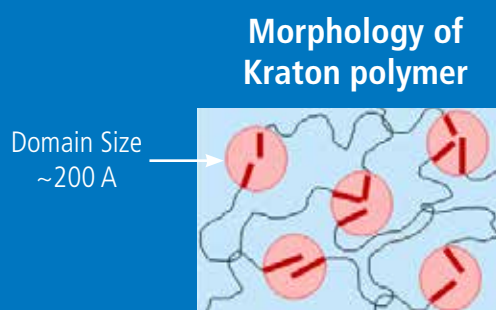
Benefits of Our Science

The global beauty industry uses a wide range of oils and waxes, in which Kraton polymers are compatible with. Our science creates easy and uniform spreading, a high gloss, a gradual fragrance release, and has a positive impact on water resistance – producing cosmetics that are protective, non-greasy and resistant to rinse-off.

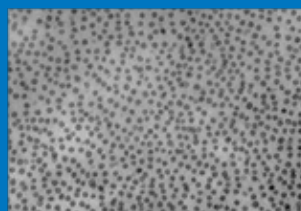


The Science Behind the Beauty

SBCs are a unique class of thermoplastic elastomers consisting of a two-phase structure of hard polystyrene endblocks and soft rubber midblocks. The polystyrene endblocks associate to form domains imparting strength, while the rubber midblock provides elasticity.



TEM Micrograph
(S/B=20/80%)



SEP/SEPS and SEBS grades are respectively listed in the International Nomenclature of Cosmetic Ingredients (INCI) as "hydrogenated styrene/isoprene copolymer" and "hydrogenated styrene/butadiene copolymer".

Kraton® G EP Polymers

Ethylene/propylene based polymers with different molecular designs used as thickeners of paraffinic oils, allowing for the production of gels with thixotropic, shear-thinning behavior. The film forming gels may aid in creating a protective moisture barrier, resistant to rinse-off and minimizing water loss.

Properties

- Diblock polymers (Kraton G1701, Kraton G1702) lead to thixotropic greases (important shear thinning)
- Star polymers (Kraton MD6953, Kraton G1750) are thickening paraffinic oils

Kraton® G SEBS Polymers

Ethylene/butylene-based polymers that solidify paraffinic oils and result in flexible, strong, solid oil gels with eventual adhesive properties and tackiness.

Properties

- Solidify paraffinic oils, creating cohesive oil gels
- Certain adhesive properties when diblocks are present in molecule

Kraton® A Polymers

A range of polymers with unique, polar midblock structure offering excellent compatibility with natural, polar and ester oils and enable the production of clear, thickened oil or solid gels, depending on polymer concentration.

Properties

- Unique midblock structure
- Polarity of the midblock leads to compatibility with polar, ester and natural oils such as macadamia, jojoba, olive, almond, rice, sesame and soybean

Kraton® G ERS Polymers

A range of low viscous, low hardness polymers which allow for soft, lower temperature processable gels when mixed with mineral oils.

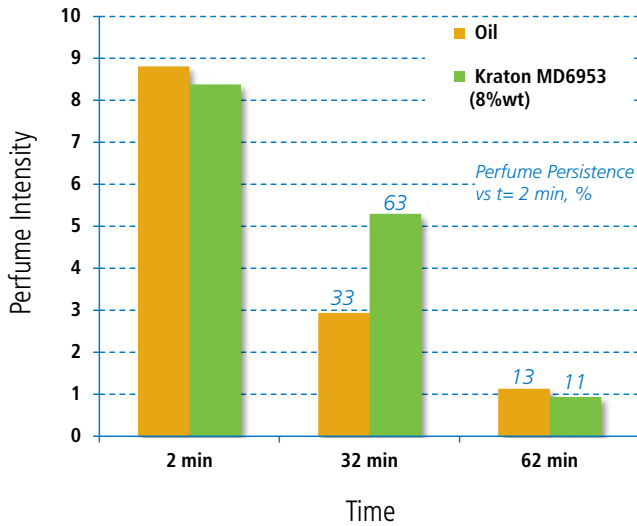
Properties

- Soft rubber block leads to low hardness
- Low viscosity
- Useful in temperature sensitive formulations

Properties of Kraton Polymers in Oil Gels

Olfactory Effect

Olfactory results show that incorporating Kraton® MD6953 in paraffinic, white oil has a significant effect on perfume persistence.



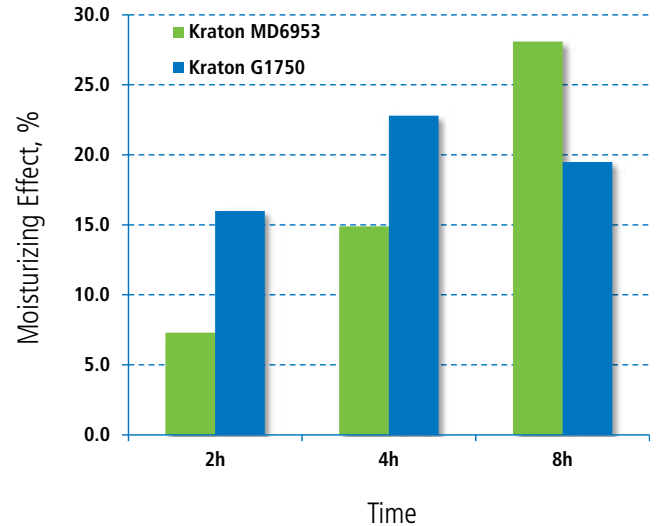
Temperature: 32 °C

Perfume: 2% wt mandarin essential oil

Olfactory testing done by 16 panelists at Laboratoire d'analyse sensorielle, EBI (F).

Moisturizing Effect

Corneometry results indicates that oil gels containing Kraton MD6953 and Kraton® G1750 have a significant moisturizing effect on the upper layers of the epidermis.



8% wt polymer in paraffinic, white oil

Measurement of electrical resistance of skin (corneometry testing), on 10 panelists, at Proclaim (F).

Visual Aspect

Oil gels containing Kraton® A1536 and Kraton MD6953 are highly transparent and glossy.

| | Opacity* | Gloss* |
|---|----------|--------|
| Kraton A1536 (7 %wt) in macadamia oil | 0.3 | 9.2 |
| Kraton MD6953 (8%wt) in paraffinic, white oil | 1.1 | 9.3 |

* on scale of 0 to 10:

0 = non-opaque

10 = opaque

0 = non-glossy

10 = glossy

Visual assessment done by 20 panelists at Laboratoire d'analyse sensorielle, EBI (F).



Kraton Innovative Solutions For Specialty Oil Gels

Delivering unparalleled science and solutions to meet the high demands and stringent needs of the cosmetics industry.

Appearance and Feel

- Crystal clear, colorless, odorless oil gels
- High gloss
- Silky, smooth texture

Stability Improvement

- Stabilization of water in oil (W/O) emulsions

Rheology Modification

- Compatibility with wide range of oils and waxes
- Viscosity boost of oil phase

Film Formation

- Easy and uniform spreading
- Moisturizing effect
- Positive impact on water resistance: protective, non-greasy, resistant to rinse-off and moisture
- Gradual fragrance release



Company Profile

Kraton Performance Polymers, Inc. is a leading global producer of engineered polymers used to enhance the performance of products that touch virtually every aspect of our lives. As the original inventor of styrenic block copolymer (SBC) chemistry, Kraton has a robust history of innovation that dates back more than 50 years. Used in a myriad of applications, Kraton adds utility, value and customer appeal to products ranging from adhesives and coatings, paving and roofing to personal care items, medical supplies, electronic and automotive components. Kraton offers approximately 800 products to more than 700 customers in over 60 countries worldwide. Dedicated to "Giving Innovators Their Edge," we also collaborate with manufacturers on custom solutions for specific needs.



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