



PLASTICIZERS IN PERSONAL CARE

WHAT IS A PLASTICIZER?

In personal care, it is an ingredient used to reduce crystallization and brittleness. Plasticizers are also used to create and promote durability, plasticity, and flexibility.

ELIMINATE THE ISSUES!

By building a plasticizer into the formulation, chemists can reduce or eliminate a multitude of issues before they start.



Why use a plasticizer?

Plasticizers are multifunctional tools that will support all types of formulation. These types of chemistries will give the formula both consistency and stability. They also create creamy textures in high wax content formulas. Overall, plasticizers can fix a myriad of formulation challenges.

Plasticizers are the answer to issues in problematic systems. They can fix graininess that occurs when solids migrate and agglomerate. Spontaneous crystallization can be stopped in formulas with high percentages of butters, otherwise known as "seeding". Thermal stability issues can be fixed by increasing melt point, without affecting the overall texture.

Plasticizers will also add consistency to formulas. Chemists can add a plasticizer to systems for more control in scale up processing. Formulators can use these chemistries to reduce stability issues caused by incorrect liquid to wax ratios, and they give compatibility to systems that require it.

Formula issues solved with plasticizers

- ◆ Bloom
- ◆ Brittleness
- ◆ Crystal Formation
- ◆ Flaking
- ◆ Graininess
- ◆ Seeding
- ◆ Structure Issues
- ◆ Sweating
- ◆ Syneresis

Improve the following with plasticizers

- ◆ Stability
- ◆ Color Distribution
- ◆ Durability
- ◆ Melt Point
- ◆ Film Forming
- ◆ Flexibility
- ◆ Payoff
- ◆ Flowability
- ◆ Plasticity
- ◆ Cushion
- ◆ Film Thickening
- ◆ Creaminess

KESTER WAX K-82P

WAX NO. 154S



Kester Wax K-82P is a pliable polyester with a melt point range of 70-85°C. Its unique, flexible properties suppress crystallization while offering stability with a high melt point.

Kester Wax K-82P will raise the melt point of your system without creating structure or hardness. This chemistry can add creaminess and consistency to all types of systems. By varying the percentage in the formula you can create a multitude of different textures. By adding Kester Wax K-82P into anhydrous systems, formulators can maintain their chosen texture over time.

INCI Name

- ◆ C18-38 Alkyl Hydroxystearoyl Stearate or Synthetic Beeswax

Applications

- ◆ Color Cosmetics, Skin Care, Hair Care, SPF Products

Supplied Form

- ◆ Solid Slab

Suggested use levels:

- ◆ Sticks: 1-5%
- ◆ Emulsions: 1-5%
- ◆ Anhydrous & Balms: 1-10%
- ◆ Flowable/Soft Anhydrous systems: 1-15%

ATTRIBUTES

ALL SYSTEMS

- ◆ Film forming
- ◆ Film thickening
- ◆ Increase melt point
- ◆ Improve thermal stability
- ◆ Reduce flaking
- ◆ Better color distribution
- ◆ Stops seeding

Anhydrous Systems

- ◆ Eliminate syneresis
- ◆ Add creaminess
- ◆ Remove graininess
- ◆ Maintain consistency & homogeneity
- ◆ Make smooth gels
- ◆ Increase pay-off

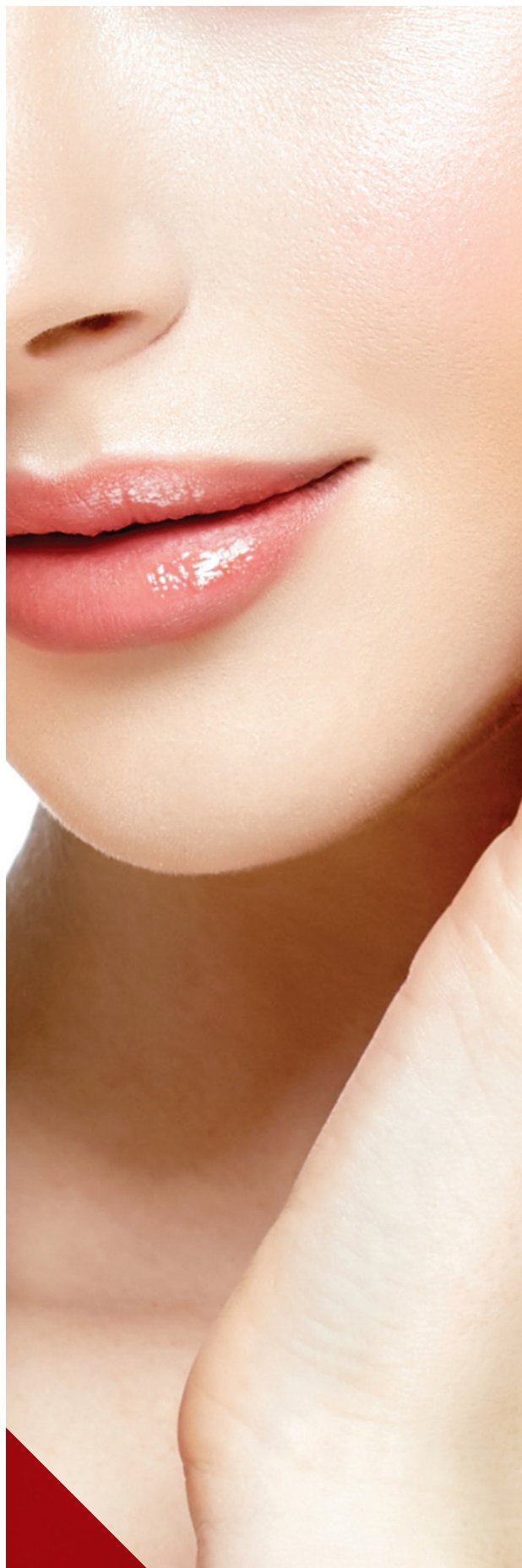
Stick Formulas

(Lipstick, Eyeliner, Pencils, Multi-use sticks)

- ◆ Flexibility
- ◆ Bloom
- ◆ Creaminess
- ◆ Durability
- ◆ Increase pay-off
- ◆ Improve film forming

Emulsions

- ◆ Increase stability
- ◆ Eliminate syneresis
- ◆ Increase SPF via film forming in sunscreens
- ◆ Increase film thickening in sunscreens
- ◆ Increase film forming in color cosmetics



Unisex Skin Perfector

Ingredient Trade Name	INCI Name	%
Phase A		
Beeswax ¹	Beeswax	7.0
Sunflower Wax ¹	Helianthus Annuus (Sunflower) Seed Wax	10.0
Kester Wax K-82P ¹	C18-38 Alkyl Hydroxystearoyl Stearate	3.0
Jeechem OP ²	Ethylhexyl Palmitate	14.0
Dermol 99 ³	Isononyl Isononanoate	11.5
Phase B		
Titanium Dioxide 325 ⁴	Titanium Dioxide	11.98
Unipure Red LC 381 ⁵	Iron Oxides CI 77491	1.04
Unipure Yellow LC182 ⁵	Iron Oxides CI 77492	3.82
Unipure Black LC989 ⁵	Iron Oxides CI 77499	0.38
PMMA-S ⁴	Polymethyl Methacrylate	4.64
Dimethicone Talc ST1925 ⁴	Talc (and) Dimethicone	8.84
Belsil PDM20 ⁴	Trimethylsiloxypheyl Dimethicone	23.80

FORMULATING TIPS FOR KESTER WAX K-82P

Start with 1%. Many formula challenges are fixed when as little as 0.5% is added to the system. When adding Kester Wax K-82P into a formula to fix an issue, remove liquids instead of thickeners, waxes or structuring aids. In emulsions, add it to the oil phase. Although Kester Wax K-82P is a solid, treat it like an anhydrous liquid when formulating.

KESTER WAX K-60P

WAX NO. 1484B



Kester Wax K-60P is a paste like, plasticizing ester with a melt point range of 50-70°C. It is a natural product derived from castor oil. K-60P is ideal for creating creamier textures while increasing the stability of your product.

INCI Name

- ◆ Polyhydroxystearic Acid

Applications

- ◆ Naturals, color cosmetics, anhydrous, balms, hair care

Supplied Form

- ◆ Hard Paste

Suggested use levels:

- ◆ Hair Care: 1-10%
- ◆ Sticks: 1-5%
- ◆ Emulsions: 1-5%
- ◆ Anhydrous & Balms: 1-10%
- ◆ Flowable/Soft Anhydrous systems: 1-15%

ATTRIBUTES

In natural systems for

- Plasticizing
- Reduce flaking
- Better color distribution
- Texturizing

In stick formulations

(Lipstick, Eyeliner, Pencils, Multi-use sticks)

- Flexibility
- Create creamy texture
- Stability
- Reduced Sweating
- Increase pay-off

In hair care

- Natural fixative in emulsions
- Adds creamy texture

In anhydrous systems to

- Reduce sweating
- Create creamy texture
- Stop graininess
- Give consistency
- Soft and stable



All Over Body Balm

Trade Name	INCI name	%
NF Cocoa Butter	Theobroma Cacao (Cocoa) Butter	12.00
Sunflower Wax	Helianthus Annuus (Sunflower) Seed Wax	7.50
Kester Wax K-60P	Polyhydroxystearic Acid	15.00
Kester Wax K-24	Lauryl Laurate	8.00
Organic Coconut Oil	Cocos Nucifera (Coconut) Oil	34.00
Joboba Oil	Simmondsia Chinensis (Jojoba) Seed Oil	13.50
Rice Bran Oil	Oryza Sativa (Rice Bran) Oil	9.00
Vitamin E Acetate	Tocopheryl Acetate	0.80
Fragrance	Parfum	0.20

“By using a combination of both chemistries, a variety of different textures are possible to formulators”

FORMULATING TIPS FOR KESTER WAX K-60P

Kester Wax K-60P is designed for natural products, but will work in any system. Start with 3%, but be aware that percentages will depend on the system and the desired effect. In anhydrous balms it promotes both softness and stability. In stick systems it helps with bloom and syneresis issues. Kester Wax K-60P could add more structure and thickening versus Kester K-82P in some systems.

THE SYNERGY WITH MULTIPLE PLASTICIZERS

Kester Wax K-82P and Kester Wax K-60P are both primarily plasticizers, however their chemistries are distinctive. In fact, their unique characteristics offer beneficial synergies in formulation. When a formula requires larger quantities of plasticizers, chemists can benefit from a combination of the two products. When formulating together, Kester Wax K-82P can be used to achieve higher melt points and flowable gels, while Kester Wax K-60P will add mid range melt point stability, creamy textures and slight firmness to the overall formula. By using a combination of both chemistries, a variety of different textures are possible.

Take My Hand Balm

Ingredient Trade Name	INCI Name	%
Phase A		
AR Cocoa Butter ¹	Theobroma Cacao (Cocoa) Butter	10.0
Sunflower Wax ¹	Helianthus Annuus (Sunflower) Seed Wax	6.0
Kester Wax K-60P	Polyhydroxystearic Acid	12.0
Kester Wax K-82P ¹	C18-38 Alkyl Hydroxystearoyl Stearate	1.0
Kester Wax K-24 ¹	Lauryl Laurate	4.0
Extra Virgin Coconut Oil ²	Cocos Nucifera (Coconut) Oil	35.0
Joboba Oil ²	Simmondsia Chinensis (Jojoba) Seed Oil	16.0
Rice Bran Oil ²	Oryza Sativa (Rice Bran) Oil	15.0
Vitamin E Acetate ³	Tocopheryl Acetate	0.8
Floviva Lavandin Oil ⁴	Lavandula Hybrida Oil	0.2



FORMULAS

Working with a new chemistry can create new questions for the laboratory.

Our formulation prototypes are a way of learning how these chemistries are used in the lab. We are available for consultation or review our formula page on our website at

Contact us or check our formula page at <https://www.kosterkeunen.com/industries/personal-care/formulations/> for additional formulas.

Procedures, color concentrate information and stability upon request.



Put Your Hands UP

Ingredient Trade Name	INCI Name	%
Phase A		
Sunflower Wax ¹	Helianthus Annuus (Sunflower) Seed Wax	8.0
AR Cocoa Butter ¹	Theobroma Cacao (Cocoa) Butter	8.0
Kester Wax K-60P ¹	Polyhydroxystearic Acid	13.0
Extra Virgin Coconut Oil ²	Cocos Nucifera (Coconut) Oil	22.0
Jeechem CTG ³	Caprylic/Capric Triglyceride	16.0
Magnesium Hydroxide	Magnesium Hydroxide	20.0
SMA Arrowroot Powder ⁴	Maranta Arundinacea Root Powder	12.0
Vitamin E Acetate ⁵	Tocopheryl Acetate	1.0