



## Synopsis:

Floratech emollients such as **Floramac® 10** [INCI: Ethyl Macadamiate], **Floraesters® IPJ** [INCI: Isopropyl Jojobate (and) Jojoba Alcohol (and) Jojoba Esters], **Floraesters 15** [INCI: Jojoba Esters], **Floramac Macadamia Oil Refined** [INCI: Macadamia Integrifolia Seed Oil], **Florasun® 90** [INCI: Helianthus Annuus (Sunflower) Seed Oil], and **Floralipids® Moringa Oil Refined** [INCI: Moringa Oleifera Seed Oil] are well suited for pressed powder formulations. They each provide superior oxidative stability compared to other natural emollients; and by some measures they also provide superior functional and consumer benefits compared to silicones commonly used in pressed powders for pigment binding and wetting.

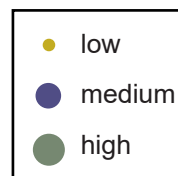
Floramac 10, Floraesters IPJ, Floraesters 15, Floramac Macadamia Oil Refined, Florasun 90 and Floralipids Moringa Oil Refined are EU and China REACH compliant. Floraesters 15, Floramac Macadamia Oil Refined, Florasun 90, and Floralipids Moringa Oil Refined are COSMOS approved.

**This technical report will highlight the benefits of Floratech emollients in pressed powders:**

- Improved pigment color stability compared to dimethicone
- Improved pigment binding compared to dimethicone
- Increased consumer preference compared to dimethicone
- A pressed powder formula with no added silicones

## Floratech Emollient Profile

Floratech emollients were compared relative to one another for a variety of sensory attributes and categorized by low, medium, and high (see Table 1).



**Table 1. Emollient Profile**

Sensory Attribute	Floramac 10	Floraesters IPJ	Floraesters 15	Floramac Macadamia Oil Refined	Florasun 90	Floralipids Moringa Oil Refined
Color / Odor	clear to pale yellow / none	clear to pale yellow / none	clear to pale yellow / none	clear to pale yellow / none	clear to pale yellow / none	pale yellow to yellow / green
Pigment Wetting	●	●	●	●	●	●
Oxidative Stability <sup>1</sup>	●	●	●	●	●	●
Slip <sup>2</sup>	●	●	●	●	●	●
Spread <sup>2</sup>	●	●	●	●	●	●
Absorption	●	●	●	●	●	●
Gloss	●	●	●	●	●	●
Occlusivity	●	●	●	●	●	●

## Conclusions:

**Floratech emollients can be used in a variety of pressed powders, depending on the desired skin feel and attributes.**

1. MKT15 (Improve Shelf Life of Finished Formulations) available upon request.  
2. MKT12 (The importance of Slip and Spread) available upon request.

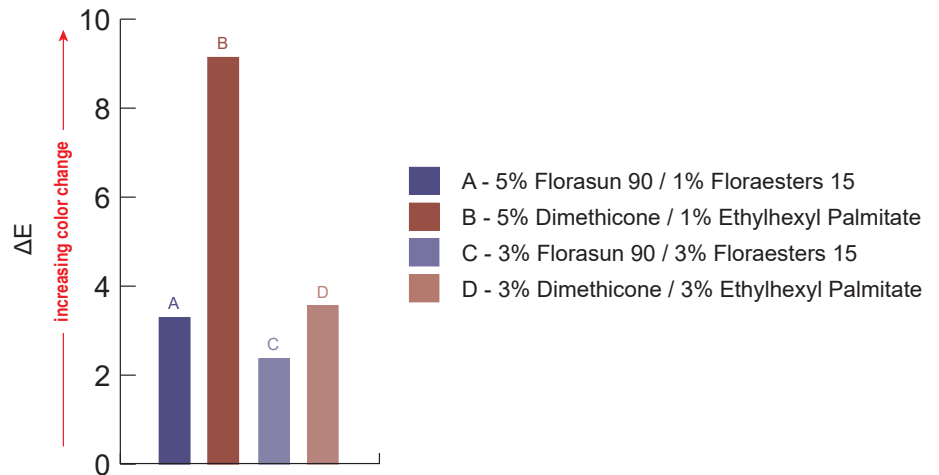
# Technical Report: Formulating Stable Pressed Powders

## Improved Pigment Color Stability with Florasun 90 and Floraesters 15

### Color Stability Methodology<sup>3</sup>:

Pans of pressed powders<sup>4</sup>, each with 6% of the test emollients, were placed in an oven at 50°C and evaluated for color using a Colorimeter CL400 after 12 weeks (Figure 1). All samples remained stable at room temperature and 50°C for 12 weeks.

Figure 1. Mean Color Change (12 weeks @ 50°C)

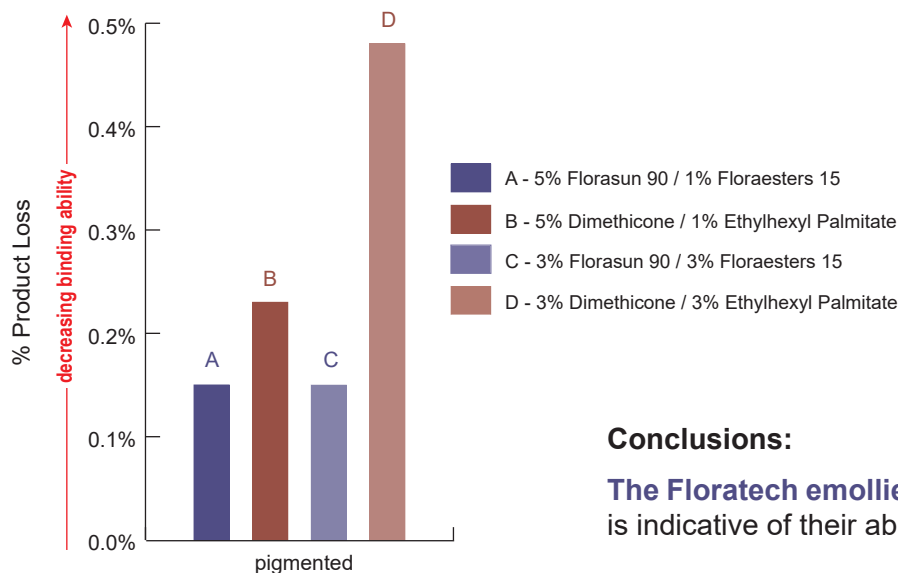


### Conclusions:

**A combination of Florasun 90 and Floraesters 15 resulted in smaller color changes after 12 weeks at 50°C.**

## Improved Pigment Binding with Florasun 90 and Floraesters 15

Figure 2. Percent Product Loss



### Breakage Methodology<sup>3</sup>:

The pressed powders<sup>4</sup> were evaluated for breakage. Pans were weighed, dropped from 30 centimeters high, and reweighed to determine how much pressed powder was lost (Figure 2). This is indicative of the binding ability of the emollients.

All samples remained stable at room temperature and 50°C for 12 weeks.

### Conclusions:

**The Floratech emollients resulted in minimal product loss which is indicative of their ability to bind pigments within pressed powders.**

3. Final Reports AR-011 and AR-012, which include complete methodologies for color stability and binding ability studies, are available upon request.

4. Pressed powders were made using the following ingredients and pressed in a metal pan: Synthetic Fluorophlogopite (48.90%), Talc (40.00%), Test Emollients (6.00%), Yellow Iron Oxides (2.20%), Boron Nitride (1.00%), Red Iron Oxides (0.60%), Phenethyl Alcohol (and) Ethylhexylglycerin (0.70%), Black Iron Oxides (0.35%), Potassium Sorbate (0.10%), Tocopherol (0.10%), and Tetrasodium EDTA (0.05%).

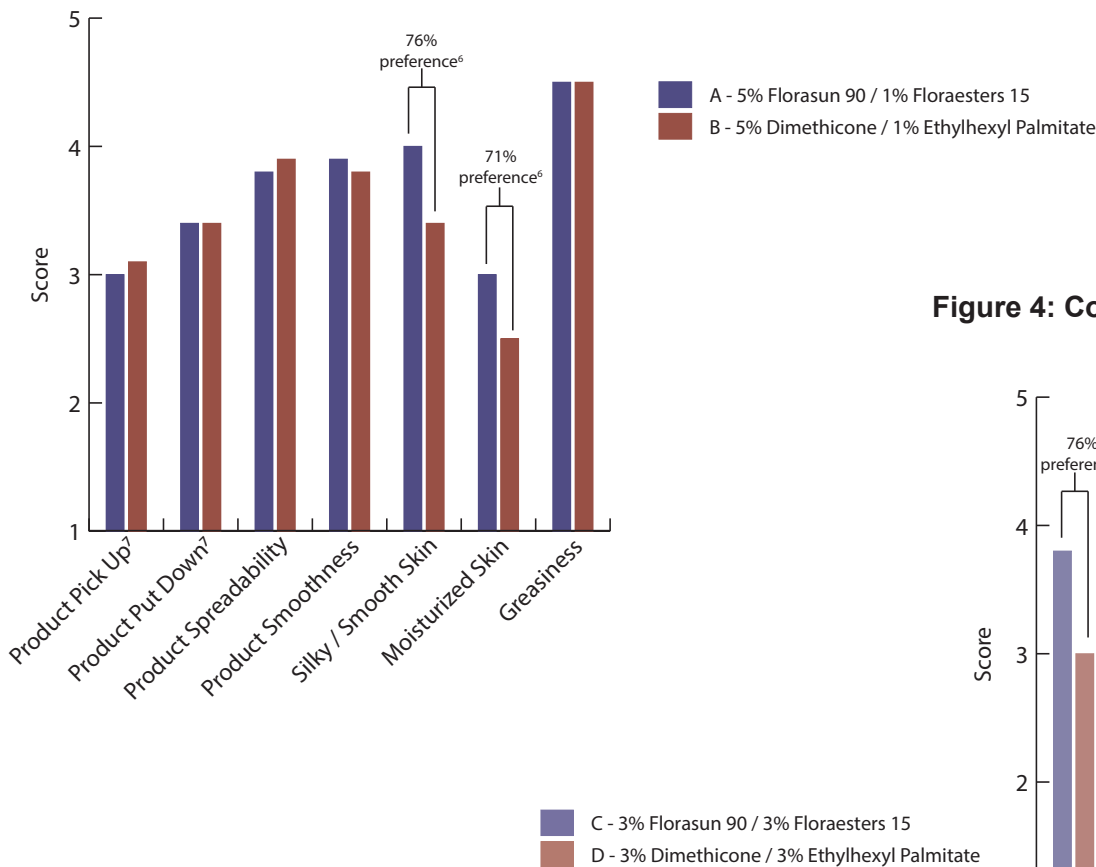
# Technical Report: Formulating Stable Pressed Powders

## Increased Consumer Preference with Florasun 90 and Floraesters 15

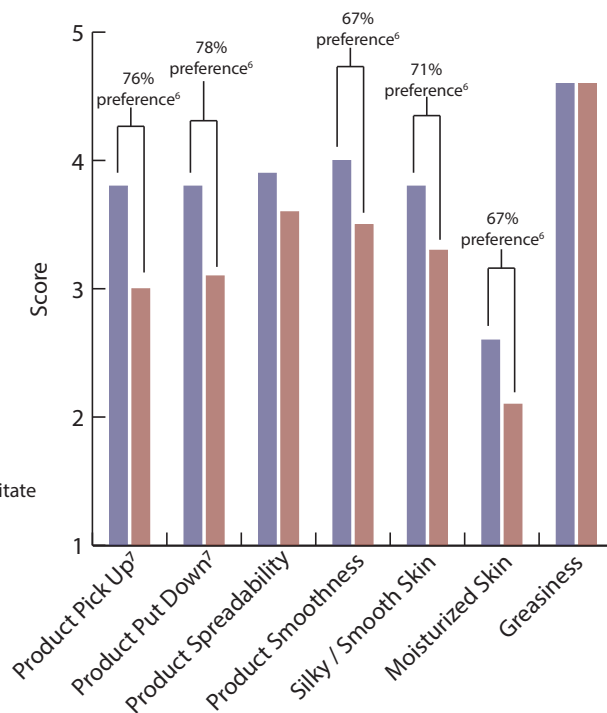
### Consumer Preference Methodology<sup>5</sup>:

Subjects evaluated the pressed powders<sup>4</sup> with and without Floratech emollients on scale of 1 - 5 (1 = negative, 3 = moderate, and 5 = positive efficiency) (Figures 3 and 4). Preference was given to the test article with the highest score and percent preference was determined.

**Figure 3: Consumer Perception / Preference**



**Figure 4: Consumer Perception / Preference**



### Conclusions:

**>70% of consumers preferred<sup>8</sup> a combination of Florasun 90 and Floraesters 15 over a combination of dimethicone and ethylhexyl palmitate for silky / smooth and moisturized skin.**

5. Final Report 19-078 available upon request.

6. p<0.05

7. Product pick up is defined as how easily the product adheres to the brush during pick up, and product put down is defined as how easily the product transfers to the skin from the brush.

8. The preference data does not include subjects that indicated no preference.

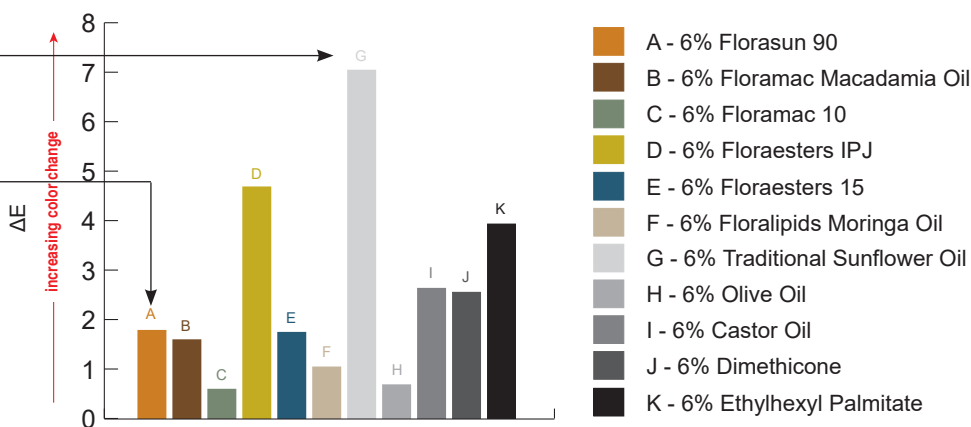
## Improved Pigment Color Stability with Floratech Emollients

### Color Stability Methodology<sup>3</sup>:

Pans of pressed powders<sup>9</sup> (without colored pigments), each with 6% of a test emollient, were placed in an oven at 50°C and evaluated for color using a Colorimeter CL400 after 12 weeks (Figure 5). All samples remained stable at room temperature and 50°C for 12 weeks.



Figure 5. Mean Color Change (12 weeks @ 50°C)



### Conclusions:

**Floramac 10 provided better color stability** than dimethicone, and **Florasun 90 provided better color stability** than traditional sunflower oil.

### Bold Payout Pressed Powder<sup>10</sup>

Florasun 90 and Floraesters 15 work together to help bind pigments in this high-color-payout pressed powder. In addition, these multifunctional Floratech emollients enhance the stability of the formulation, reducing color and odor changes over time.

Phase	Trade/Common Name	INCI Name	Manufacturer	% wt./wt.
A	Synafil® S 115	Synthetic Fluorphlogopite	Eckart America	q.s.
	Supra® H USP	Talc	Luzenac America, Inc.	40.00
	Tres BN® PUHP1109	Boron Nitride	Saint-Gobain Advanced Ceramics	1.00
B	Unipure® Red LC 381 AS	Iron Oxides (and) Triethoxycaprylylsilane	Sensient Cosmetic Technologies	0.60
	Unipure® Yellow LC 182 AS	Iron Oxides (and) Triethoxycaprylylsilane	Sensient Cosmetic Technologies	2.20
	Unipure® Black LC 989 AS	Iron Oxides (and) Triethoxycaprylylsilane	Sensient Cosmetic Technologies	0.35
	Potassium Sorbate FCC	Potassium Sorbate	Tri-K Industries Inc.	0.10
	Versene® 220 Crystals Chelating Agent	Tetrasodium EDTA	The Dow Chemical Co.	0.05
D	<b>Florasun 90</b>	<b>Helianthus Annuus (Sunflower) Seed Oil</b>	<b>Floratech</b>	<b>3.00</b>
	<b>Floraesters 15</b>	<b>Joboba Esters</b>	<b>Floratech</b>	<b>3.00</b>
	Covi-Ox® T 70 C	Tocopherol	BASF Corporation	0.10
	Preservative <sup>11</sup>	-----	-----	q.s.
			<b>Total</b>	<b>100.00</b>

### Procedure:

1. Add all the ingredients of Phase A to a blender and mix until uniform.
2. Add all of the ingredients of Phase B to the blender and mix until uniform.
3. In a separate vessel, mix all of the ingredients of Phase C.
4. Add approximately 15% of Phase C to Phase AB and mix until uniform.
5. Repeat until all of Phase C has been added to Phase AB.
6. Press the mixture at 3g per pan (1 inch square pan).

<sup>9</sup>. Pressed powders were made using the following ingredients and pressed in a metal pan: Synthetic Fluorphlogopite (48.90%), Talc (40.00%), Test Emollient (6.00%), Titanium Dioxide (3.15%), Boron Nitride (1.00%), Phenethyl Alcohol (and) Ethylhexylglycerin (0.70%), Potassium Sorbate (0.10%), Tocopherol (0.10%), and Tetrasodium EDTA (0.05%).

<sup>10</sup>. INCI/Trade names must be verified with each manufacturer.

<sup>11</sup>. Preservative: Sensiva® PA 20 provided by Schülke & Mayr