



Formulator Report: Astringent with Floraesters K-20W[®] Jojoba



Floraesters K-20W Jojoba increases skin hydration, firmness, and consumer perception while maintaining pore health:

Floraesters K-20W Jojoba [INCI: Hydrolyzed Jojoba Esters (and) Water] is a multifunctional ingredient that has been utilized and/or tested in a variety of cosmetic and personal care formulations such as creams/lotions, hand sanitizers, nonwoven wipes, sunscreens, sunless tanners, shampoos/conditioners, toners/astringents, and face washes.¹ Its film-forming properties make it ideal for rinse-off products and products that require water resistance or to extend the period of residence time on the skin.

The substantivity of Floraesters K-20W Jojoba makes it well-suited to entrap molecules at the skin surface. For example, in combination with glycerin Floraesters K-20W Jojoba enhances skin moisturization;² sunscreen actives in combination with Floraesters K-20W Jojoba are retained on the skin after water immersion;³ and some fragrances are retained on the skin longer in the presence of Floraesters K-20W Jojoba.⁴ Clinical studies have also shown that Floraesters K-20W Jojoba is effective at reducing the appearance of irritation-associated erythema, as well as playing an active role in skin barrier function and restoration.⁵

The botanically-derived Floraesters K-20W Jojoba is Ecocert certified, and EU and China REACH compliant.

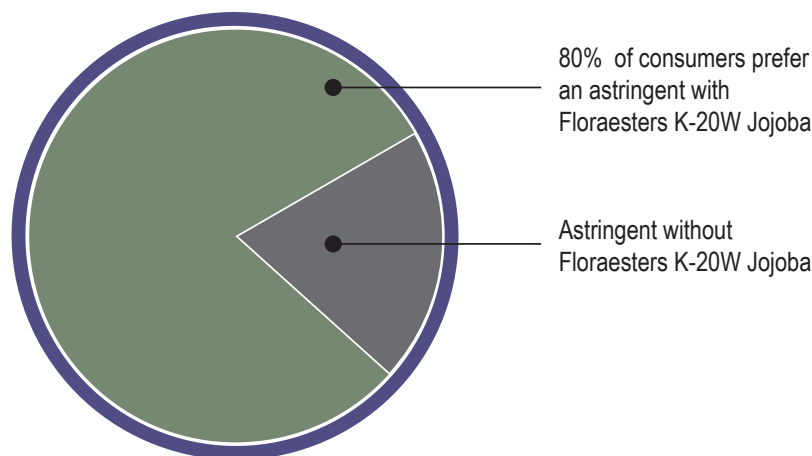
Clinical Study Facts⁶:

In a double-blind, vehicle-controlled, two-week, take-home, consumer-use study, Floraesters K-20W Jojoba in an astringent produced the following benefits:

- Improved skin hydration by 16% (Figure 1)
- Improved skin firmness by 10% (Figure 2)
- 80% of consumer preference for overall product performance preference (Figure 3)
- Greater than 60% of consumer preference for other skin and product attributes such as a decrease in pimples and blackheads, a more pleasing product texture, and less tight feeling skin (Figure 3)
- Reduction in appearance of pores (Figure 4)
- Maintenance of healthy pores (Figure 4)

Formulation Benefits:

- Emolliency remains after rinse-off
- Results in rich emolliency on skin
- Substantivity
- Water resistant
- Soluble in most alcohols and glycols
- Botanically derived
- Readily biodegradable⁷



1. Cargill has not tested Floraesters K-20W Jojoba in final OTC drug formulations. Compliance with FDA regulations is the responsibility of the customer.
2. See Claim Sheets 09-013, 09-014, 10-017, 10-024, and 13-052 for more information.
3. See Claim Sheet 10-018 for more information.
4. M. Cummings. Built to last. *Soap, Perfumery & Cosmetics*. November 2001.
5. See Claim Sheets 11-035 and 11-036 for more information.
6. Final Reports available upon request. Figures can be found on the next two pages of this document.
7. Biodegradable according to OECD 301B.

Figures⁸:

Floraesters K-20W Jojoba Improved Skin Hydration and Firmness

Fig. 1 - Increased Skin Hydration

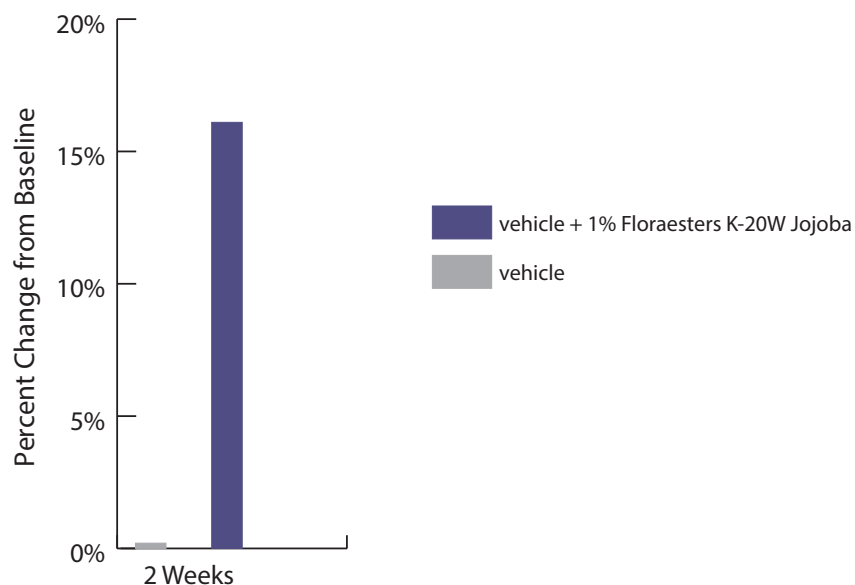
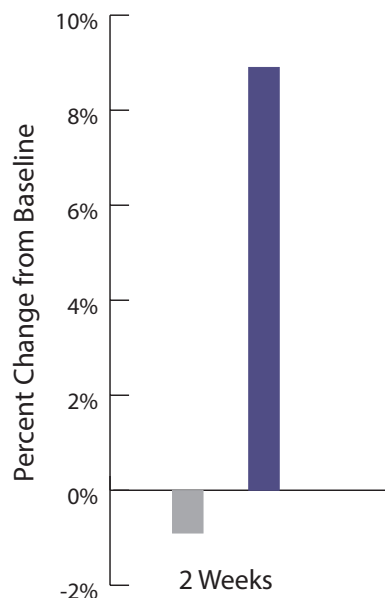


Fig. 2 - Increased Skin Firmness

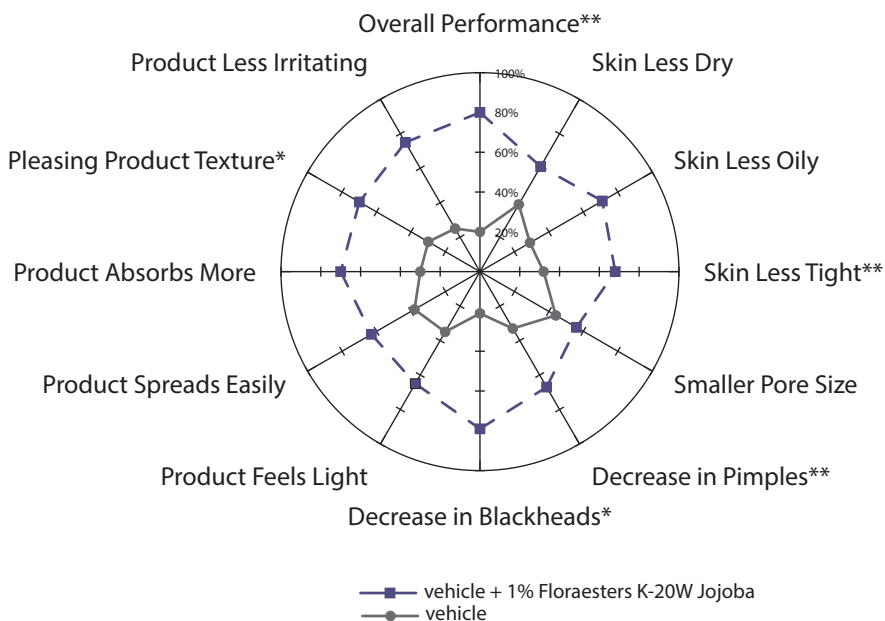


Figures 1 and 2: Floraesters K-20W Jojoba increased skin hydration and skin firmness better than the vehicle astringent. The addition of 1% Floraesters K-20W Jojoba produced statistically significant increases in skin hydration ($p < 0.0001$) and skin firmness ($p < 0.0001$) from baseline over the vehicle astringent. (See CS 13-052 for study details.)

Eighty Percent of Female Consumers Prefer an Astringent with Floraesters K-20W Jojoba

Fig. 3 - Consumer Preference

Figure 3: The test article containing 1% Floraesters K-20W Jojoba was preferred over the vehicle test article (without) as shown in the graph. Statistical (**) and directional (*) significance are shown ($p < 0.05$ and $p < 0.1$, respectively) by the categories of Overall Performance, Skin Less Tight, Decrease in Pimples, Decrease in Blackheads, and Pleasing Product Texture. (See CS 13-053 for study details.)



8. All studies were conducted double-blind, vehicle-controlled, and randomized.

Floraesters K-20W Jojoba Reduced the Appearance of Pores and Maintained Pore Health

Fig. 4 - Change in Pore Health

Pore Health Parameter	Test Article	Mean Difference (count)	Subjects that showed a decrease (%)
Open Comedones	Vehicle + 1% K-20W	-20.9	52%
	Vehicle	-8.6	44%
<i>P. acnes</i> Pores	Vehicle + 1% K-20W	-83.3	56%
	Vehicle	25.6	27%
Inflamed Pores	Vehicle + 1% K-20W	-20.6	52%
	Vehicle	-9.0	44%
Enlarged Pores	Vehicle + 1% K-20W	-14.2*	44%
	Vehicle	91.0	39%

Figure 4: The addition of 1% Floraesters K-20W Jojoba in an astringent formula produced directionally significant decreases (*p<0.1) the appearance of pores (as measured by enlarged pore counts) over the vehicle after two weeks of twice daily test article use; and unlike many other natural and synthetic emollients⁹ Floraesters K-20W Jojoba does not result in an increase in unhealthy pores [as measured by open comedones, *Propionibacterium acnes* (*P. acnes*), and inflamed pore counts]. (See CS 13-051 for study details.)

Fig. 5 - *P. acnes* Pores

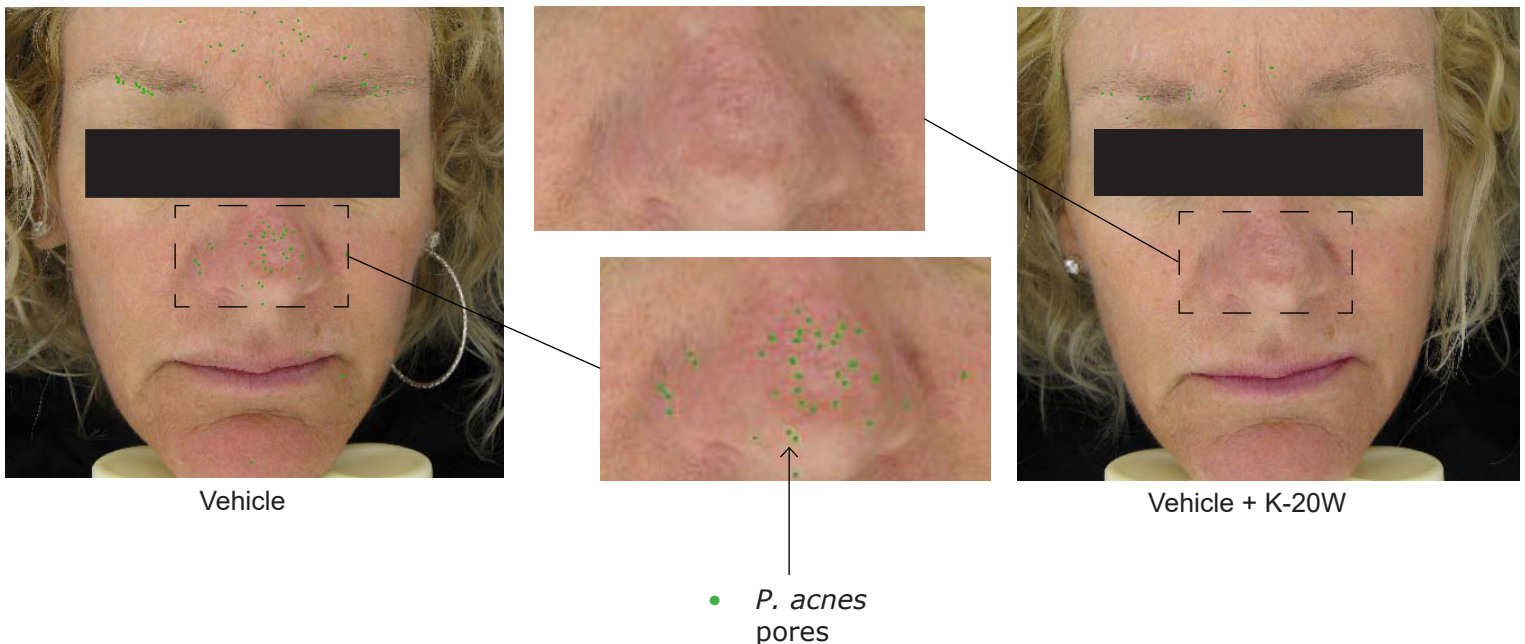


Figure 5: The astringent with 1% Floraesters K-20W Jojoba (right photo) showed fewer *P. acnes* pores (indicated with green dots), particularly within the T Zone (forehead / nasal region), than the vehicle (left photo), both after two weeks of test article use. (See CS 13-051 for study details.)

9. Fulton JE. Comedogenicity and irritancy of commonly used ingredients in skin care products. *J. Soc. Cosmet. Chem.* 1989; 40: 321-333.

Formula: Total Pore-Control Astringent¹⁰

This moisturizing astringent, featuring Floraesters K-20W Jojoba, is designed to increase skin hydration and firmness while maintaining pore health. The formula helps remove dead skin resulting in a more even skin tone, leaving the face looking more youthful and feeling refreshed.

Phase	Trade/Common Name	INCI Name	Manufacturer	% wt./wt.
A	Deionized Water	Water	----	q.s.
	Versene® Na2 Crystals	Disodium EDTA	The Dow Chemical Co.	0.05
	Sodium Phosphate Dibasic (Na2HPO4)	Disodium Phosphate	Sigma-Aldrich Co. LLC.	0.10
	Tego® Cosmo C 100	Creatine	Evonik Industries	0.10
	N-Acetyl-D-Glucosamine	Acetyl Glucosamine	Penta Manufacturing Company	0.05
	Trehalose 100	Trehalose	Hayashibara Co., Ltd.	0.10
	Potassium Sorbate FCC	Potassium Sorbate	Tri-K Industries Inc.	0.03
	Lipo® Hyaluronic Acid - 1% Solution	Sodium Hyaluronate	Lipo Chemicals Inc.	0.10
B	Ethanol Solutions 3, UN 1170, PG II, SDA 40-2, 200 Proof	Alcohol Denat.	Remet Corporation	20.00
	Solubilisant LRI	PPG-26-Buteth-26 (and) PEG-40 Hydrogenated Castor Oil	Sensient Cosmetic Technologies	1.00
	Floraesters K-20W® Jojoba	Hydrolyzed Jojoba Esters (and) Water (Aqua)	Floratech	1.00
C	Glycerin, USP	Glycerin	The Dow Chemical Co.	4.00
	Distilled Witch Hazel, USP 14% Standard Alcohol	Hamamelis Virginiana (Witch Hazel) (and) Water (and) Alcohol	American Distilling, Inc.	4.00
	1,3-Butylene Glycol	Butylene Glycol	OXEA Corporation	0.50
	Preservative ¹¹	----	----	q.s.
	Violet (1.5% Solution) ¹²	Blue 1 (and) Red 40 (and) Red 1 (and) Propylene Glycol (and) Water (and) Preservative	----	q.s.
			Total	100.00

10: To prepare Violet (1.5% Solution), combine the following ingredients and mix until dissolved:

Ingredient	%wt./wt.
Red 40 (Emerald Performance Materials)	1.0
Blue 1 (Sensient Cosmetic Technologies)	0.5
Propylene Glycol, USP	49.25
Deionized Water	q.s.
Preservative	q.s.

Procedure:

1. In the main vessel, mix all ingredients of Phase A with propeller agitation at room temperature.
2. In a separate vessel, mix all ingredients of Phase B with propeller agitation at room temperature.
3. Add Phase B to Phase A with propeller agitation at room temperature.
4. Add ingredients of Phase C to Phase AB in the order listed.

Formula Properties:

Property	Result
pH	7-9
Appearance	transparent

Ingredient Information

24/7 Online

iLabel[®]
www.floratech.com/info



Floraesters
K-20W Jojoba

10. INCI/trade names must be verified with each manufacturer.

11. Preservative: Bronidox® 1160 (INCI: Phenoxyethanol) supplied by BASF Corporation

12. Color: Violet (1.5% Solution) [INCI: Blue 1 (and) Red 40 (and) Red 1 (and) Propylene Glycol (and) Water (and) Preservative] supplied by Sensient Cosmetic Technologies and Emerald Performance Materials