Floraesters® K-20W Jojoba increases skin hydration, reduces skin barrier dysfunction, increases skin smoothness, and enhances consumer preference when included in dish soap.

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

The substantivity of Floraesters K-20W Jojoba combined with its ability to reduce irritation-associated erythema and improve skin barrier function and restoration,¹ making it well-suited to perform in systems that include harsh ingredients (e.g. alcohol or surfactants) but are meant to have contact with the skin (which can result in skin irritation). Floraesters K-20W Jojoba has been proven to mitigate the negative effects of alcohol,² surfactants,³ and alpha hydroxy acids⁴; making it the perfect addition to skin-irritating household cleaners like dish soap.

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

Clinical Study Facts⁵:
In double-blind, vehicle-controlled, randomized, consumer-use clinical studies, Floraesters K-20W Jojoba produced the following benefits:

- **Significantly increased skin hydration** in skin repeatedly exposed to dish soap (Figure 1)
- **Reduced barrier disruption** in skin repeatedly exposed to dish soap (Figure 2)
- **Increased skin smoothness 4.3 times** as much as the vehicle dish soap after repeat exposure (Figure 3)
- **Preferred by more than 90%** of consumers for smooth, soft, and moisturized skin (Figure 4)

Other Benefits in Dish Soaps:
- Increased initial foam quantity and stability in a dish soap (Figure 5 and Image 1)
- Increased compactness of foam in dish soap (Image 2)
- No negative effects on cleanliness of dishes after mechanical or soak washing using dish soap (Image 3)

Formulation Benefits:
- Botanically-derived
- Allows for oil-free claims
- Soluble in most alcohols and glycols
- COSMOS certified

Purpose:
The purpose of these studies was to evaluate Floraesters K-20W Jojoba in dish soap for its skin care qualities, including mitigating the drying, barrier disruption, and roughening effects of dish soap on skin after repeated use. Consumer preference was also evaluated. Finally, dish soaps with and without Floraesters K-20W Jojoba were evaluated for relative foaming, structure of foam, and cleansing ability.

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¹ See Claim Sheets 11-035 and 11-036 for more information.
² See Claim Sheet 09-013 for more information.
³ See Claim Sheet 09-015 for more information.
⁴ See Claim Sheets 17-098 and 17-099 for more information.
⁵ Final Report available upon request. Figures, Images, and Tables can be found on the next two pages of this document.
All studies were conducted double-blind, vehicle-controlled, and randomized.

**Figures:**

**Figure 1. Improved Skin Hydration with Floraesters K-20W Jojoba**

The dish soap containing 0.5% Floraesters K-20W Jojoba increased skin hydration up to 4.8 times more than the vehicle (p<0.001). (See Claim Sheet 18-117.)

**Figure 2. Reduced Skin Barrier Dysfunction with Floraesters K-20W Jojoba**

The dish soap containing 0.5% Floraesters K-20W Jojoba decreased skin barrier dysfunction by 63% as compared to the vehicle (p<0.001). (See Claim Sheet 18-118.)

**Figure 3. Increased Skin Smoothness with Floraesters K-20W Jojoba**

The dish soap containing 0.5% Floraesters K-20W Jojoba improved skin smoothness up to 4.3 times as much as the vehicle (p<0.001). (See Claim Sheet 18-119.)

**Study Design:** Baseline hydration, barrier function (i.e. TEWL), and skinsmoothness measurements on subjects' hands were captured. Hands were then repeatedly immersed in either 10% dish soap solution with a cumulative hand soaking time of 30 minutes (sixty 30-second soaks). Measurements were repeated at the respective evaluation time points. The results appear in Figures 1, 2, and 3.
Skin Benefits Continued:

Figure 4. More than 90% of consumers preferred the dish soap containing 0.5% Floraesters K-20W Jojoba for smooth, soft, and moisturized skin as compared to the vehicle. Statistical significance (p<0.05) was apparent where indicated (*). (See Claim Sheet 18-120.)

Study Design: Hands were repeatedly immersed in either 10% dish soap solution with a cumulative hand soaking time of 30 minutes (sixty 30-second soaks). Subjects evaluated consumer preference immediately after immersing and 30 minutes after immersing in the dish soap solution. The results appear in Figure 4.

Formulation Benefits:

Figure 5. Increased Foam Quantity with Floraesters K-20W Jojoba

Figure 5. The dish soap with Floraesters K-20W Jojoba produced more foam initially compared to the vehicle dish soap without.

Image 1. Note how the dish soap with Floraesters K-20W Jojoba produced foam that remained denser after 20 minutes compared to the vehicle dish soap without.

Image 2. Note how the dish soap with Floraesters K-20W Jojoba produced a more consistent and compact foam compared to the vehicle dish soap without.

Study Design: Dish soaps were diluted to 5% in water and blended for 1 minute. The foam solution was then transferred to a graduated cylinder and foam height was measured (in mL). The results appear in Figure 5 and Image 1. Dish soaps were also diluted to 5% in water, shaken in a closed sterile cup, foam was collected, and pictures were immediately (initial) captured. The results appear in Image 2.
Both dish soaps produced clean dishes. Floraesters K-20W Jojoba did not increase water spots or greasiness of dishes.

**Image 3.** Note how the plates washed with the dish soap containing Floraesters K-20W Jojoba did not produce more water spots or greasier dishes compared to the vehicle dish soap without.

### Study Design:
Soiled plastic dishes were washed by hand using a 1% dish soap solution applied directly to a wet sponge using steady circular motions for 10 seconds. Following cleaning, each plate was rinsed under a running faucet for 10 seconds, and allowed to air dry overnight. Pictures were captured after drying and can be found in Image 3.

### Formula: Luxurious Dish Soap with Floraesters K-20W Jojoba
This rich, eco-friendly dish soap featuring multifunctional Floraesters K-20W Jojoba effectively hydrates skin and cleans dishes without leaving residue. The Floraesters K-20W Jojoba in a dish soap not only provides skin hydration, decreased TEWL, and improved skin smoothness, but also results in a thicker, more stable foam without affecting the cleansing ability.

#### Procedure:
1. Mix the Floraesters K-20W Jojoba with the Ethanol Solutions 3, UN 1170, PG II, SDA 40-2, 200 Proof at room temperature. Add to the deionized water of Phase A and mix with moderate propeller agitation.
2. Mix all the ingredients of Phase B in a separate vessel. Add to Phase A with rapid propeller agitation at room temperature.
3. Add Phase C to Phase AB in the order listed with medium propeller agitation at room temperature.
4. Add Phase D to Phase ABC with medium propeller agitation at room temperature.

### Ingredient Information
24/7 Online

![Floraesters K-20W Jojoba](https://www.floratech.com/info)