

# Film barrier silicone solutions

Effective film barrier for patient comfort and care



Skin topical medications containing the right topical ingredients can make the difference in patient comfort and compliance when providing a long-lasting film barrier to the skin. Safe, efficient and substantive benefits are key to formulating over-the-counter products that make consumers more satisfied.

Formulators look to the aesthetics and pleasurable feel of silicones to meet these needs, enhance skin protection products and enhance the sensorial profile of the products.

The DuPont™ Liveo™ Q7-9120 Silicone Fluid series meets the requirements as skin protectants (FDA monograph 21 CFR, part 347.1). Combining these with Liveo™ TI-7012 Solid Resin significantly improves the film-forming and long-lasting benefits of formulations designed for skin protectancy.

## Film-forming barrier solution

To provide an effective film barrier, DuPont™ Liveo™ TI-7012 Solid Resin has been developed as a key ingredient for dermatological consumer healthcare and topical medical device applications. This proven, 100% trimethylsiloxysilicate resin provides a permeable, long-lasting film barrier with excellent wash-off resistance.

Offering formulation flexibility, Liveo™ TI-7012 Solid Resin is compatible with silicones and organic carriers and can be incorporated easily into many product forms, such as:

- **Creams** for skin barrier applications
- **Sprays** that offer ease of application
- **Gels** for novel forms in challenging skin conditions

When combined with Liveo™ Q7-9120 Silicone Fluid, it provides a skin protectant benefit to each of these product forms.

Liveo™ TI-7012 Solid Resin can be formulated for a range of topical consumer healthcare applications, especially in barrier creams and sprays to protect skin from adhesive in ostomy applications.

Additionally, Liveo™ TI-7012 Solid Resin can be used in all dermatological topical forms where substantivity is needed.

## Proven silicone technology

## Outstanding efficacy and safety

## Regulatory support and compliance expertise

## Functional benefits

- Film-forming
- Long-lasting
- Excellent wash-off resistance
- Non-occlusive
- Film permeable to water vapor
- Sebum resistance

## Sensory benefit

- Non-tacky feel when dried

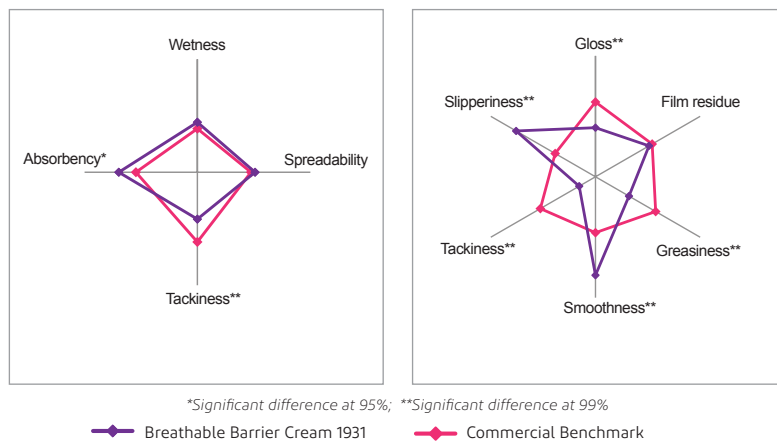
# Formulation flexibility

Liveo™ TI-7012 Solid Resin offers flexibility in formulating in a range of product forms. Substantivity profile data demonstrate the efficacy of the resin in a representative array of typical topical medication applications. The enhanced sensory profile may help patients be more compliant with their treatment.

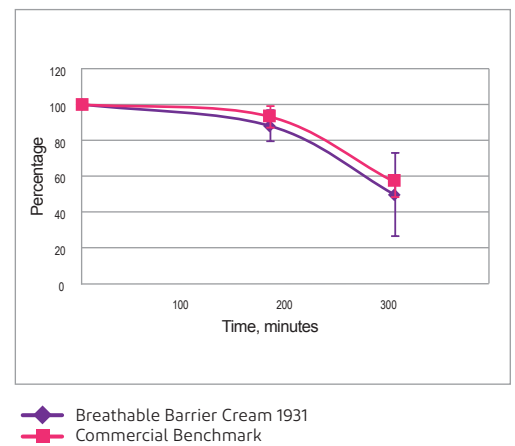
## Breathable Barrier Creams

These water-in-silicone emulsion formulations are breathable and easy to spread. They provide reduced tackiness and superior smooth after-feel (Figure 1) when compared to a commercial benchmark while keeping a similar substantivity (Figure 2) and occlusivity profile.

**Figure 1:** Sensory evaluation – before and after absorption



**Figure 2:** Substantivity versus time

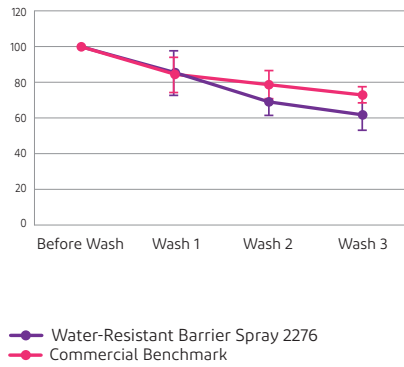


Product	Chemical Description	Composition	
		Breathable Barrier Cream 1931 % w/w	Protective Breathable Barrier Cream 2301 % w/w
<b>Phase A</b>			
W/Si Emulsifier	PEG-10 Dimethicone	4	4
Liveo™ TI-1050 Fluid, 5 cSt	Dimethicone	13	12
Liveo™ TI-7012 Solid Resin	Trimethylsiloxysilicate	2	2
Silicone Gum Blend	Dimethicone (and) Dimethiconol	5	5
Liveo™ Q7-9120 Silicone Fluid, 20 cSt	Dimethicone	–	1
<b>Phase B</b>			
Water	Aqua	70	70
Euxyl® PE 9010/Schülke	Phenoxyethanol (and) Ethylhexylglycerin	1	1
Sodium Chloride	Sodium Chloride	1	1
Glycerin	Glycerin	5	5

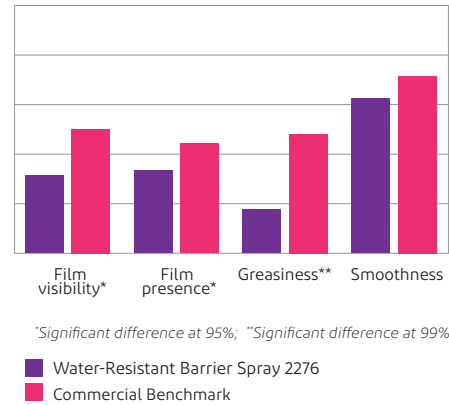
## Water-Resistant Barrier Spray

This spray formulation delivers a substantive film that is resistant to wash-off. It provides increased film visibility, film presence and greasiness, which reinforces perception of the film presence. Patients will appreciate the alcohol-free formulation that has low odor compared to a competitive alternative made with alcohol.

**Figure 3:** Substantivity versus washes



**Figure 4:** Sensory evaluation by paired comparison



### Composition

Product	Chemical Description	Water-Resistant Barrier Spray 2776 % w/w
Liveo™ TI-7012 Solid Resin	Trimethylsiloxysilicate	12
Liveo™ TI-1050 Fluid, 1.5 cSt	Dimethicone	88

## Intense 40 Urea Emulsion<sup>1</sup>

Typical uses of urea-containing formulations include:

- Moisturizing and softening dry, cracked skin and the callused, rough or hardened skin on feet, hands or elbows
- Exfoliating and moisturizing very dry skin
- Treating eczema, psoriasis, itchy skin and cradle cap by softening and moisturizing skin

This keratolytic cream formulation is a clear water-in-silicone emulsion containing 40% Urea.

**Figure 5:** Clear gel emulsion



### Composition

Product	Chemical Description	Intense 40 Urea Emulsion 2304 % w/w
<b>Phase A</b>		
W/Si Emulsifier	PEG-10 Dimethicone	2
Liveo™ TI-7012 Solid Resin	Trimethylsiloxysilicate	5
Liveo™ TI-2021 AMS Specialty Fluid	Caprylyl Methicone	10
<b>Phase B</b>		
Water	Aqua	41.5
Urea	Urea	40
Sodium Chloride	Sodium Chloride	1
Preservative <sup>2</sup>	Preservative <sup>2</sup>	0.5

<sup>1</sup>A drop in viscosity can be observed over time.

<sup>2</sup>Preservative options: Diazolidinyl Urea, Imidazolidinyl Urea or DMDM Hydantoin.



## Make DuPont your innovation partner

With more than 60 years of healthcare market experience in the design of silicone-based systems, you can rely on DuPont for:

- A reliable global supply of reputable, cost-effective silicone-based topical ingredients manufactured specifically for healthcare applications
- Proven aesthetics and functional film characteristics, such as breathability and substantivity
- Test data to support specific claims
- Formulation, regulatory and product development expertise and support
- A regulatory information package aligned with the requirements of the consumer healthcare market



To learn more about DuPont's healthcare solutions visit:  
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