

# Innovative Solutions for Your Sustainability Journey

**SonneNatural™**

**sonneborn™**

AN HF SINCLAIR BRAND



## SonneNatural™ Affinity

- The SonneNatural™ range reimagined
- 100% plant-based
- Waxy emollients
- Petrolatum alternatives
- Palm-free options
- Excellent ingredient for balms, ointments and creams

## SonneNatural™ Fluidity

- Patented technology
- 100% bio-based content
- High-purity and UV-stable
- Readily biodegradable
- An excellent replacement for Cyclic siloxanes [D4, D5, D6]
- An ideal alternative to low viscosity oils
- Perfect ingredient for sun care, hair care, skin care, makeup and body oils

## SonneNatural™ Synergy

- Hybrid solutions
- Truly bespoke products
- Serving multiple applications globally
- Uncompromising solutions for your sustainability journey
- Fully customizable for your formulation needs

The world is changing and your customers are changing too. Your products need to continue to meet stringent regulatory requirements, exceed customer expectations and align with broader trends toward sustainable solutions\*.

To help you navigate this landscape, Sonneborn, an HF Sinclair brand, welcomes you on a sustainability journey.

Our expanded SonneNatural™ product-brand provides the foundation for your future-proof formulations, now enhanced with Renewable White Alkanes, produced by patented technology, advanced plant-based alternatives and powerful hybrid solutions.

Whether you are seeking silicone replacements, purely plant-based ingredients or optimized hybrids, we welcome you to explore SonneNatural **Fluidity**, SonneNatural **Affinity** and SonneNatural **Synergy**.

These are more than just ingredients; they are future-ready concepts that will help you exceed customer expectations and make the world a little better.

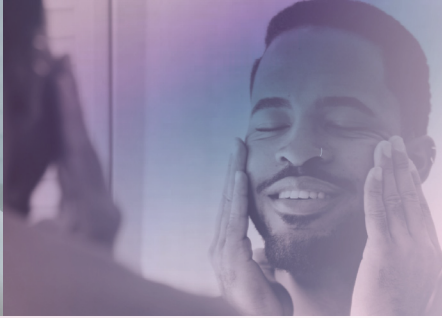
# SonneNatural™

Affinity | Fluidity | Synergy

\*SonneNatural™ represents Sonneborn's commitment to sustainability, providing innovative products based on naturally derived ingredients. Find out more at [www.sonneborn.com/sonnenatural](http://www.sonneborn.com/sonnenatural)

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# SonneNatural™ Fluidity

## Renewable White Alkanes

Reduce your carbon footprint with SonneNatural™ Fluidity 40P – a high-performance, 100% bio-based ingredient that's readily biodegradable, produced at scale and meets the highest global purity standards. It provides up to 68%\* (cradle-to-gate) product carbon footprint reduction compared to siloxanes and up to 60%\* (cradle-to-grave) compared to White Mineral Oils.

Produced using proprietary, patented technology, SonneNatural Fluidity 40P offers a renewable, high-performance alternative to cyclic siloxanes (D4, D5, D6) – materials increasingly restricted in the EU for their persistence, bioaccumulation and environmental impact. New European Chemicals Agency (ECHA) restrictions take effect June 2026, extending to personal care products in June 2027.

**Purity:** Meets USP, NF, Ph. Eur., BP and JP standards; compliant with California Proposition 65 and BDF02 PAH requirements (32PAH Grimmer Analysis).

**Inertness:** Chemically inactive, ensuring it carries and delivers active ingredients without interference.

**Readily Biodegradable (OECD 301B):**  
A sustainable ingredient to prevent environmental buildup and pollution and reduce environmental impact, making it more eco-friendly.

**Colorless and Odorless:** A clear, odorless ingredient ideal for diverse formulations. Its transparency suits translucent products like body oils and hair, skin and sun care, while its purity enhances color accuracy in makeup. The neutral scent preserves fragrance integrity for uncompromised scented products.

**UV and Thermal Stability:** Products remain stable over time and resist chemical changes when exposed to ultraviolet light from the sun or other artificial sources.

**Shelf Life:** Stabilized with Vitamin E for an anticipated three-year shelf life, comparable to petroleum-based ingredients.

**Superior Compatibility:** SonneNatural Fluidity's non-polar structure delivers silicone-like compatibility across diverse applications.

**Certifications:** 100% bio-based, not tested on animals, non-GMO\*\*, Kosher, Halal and vegan.

\*Cradle-to-Gate Analysis assumes PCF (Cradle-to-Gate) plus emissions at end of life to full oxidation of products (Gate-to-Grave). HF Sinclair L&S product LCA and PCF (Cradle-to-Gate) based on ISO 14040, 14044, 14067.

\*\*based on PCR testing.

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# Fluidity 40P

(SN-F-40P)

SonneNatural™ Fluidity's signature product, SN-F-40P

**SonneNatural Fluidity 40P** (C15-19 Alkane) is a versatile natural product, globally distinguishing itself across many applications. It is produced at scale in our Petrolia, PA facility, leveraging our backward-integrated supply chain for ultimate quality control and reliability.

**Antiperspirant and Deodorants:** A non-irritating, non-pore clogging, moisturizing, non-greasy solution; the ideal choice for sensitive skin\*.

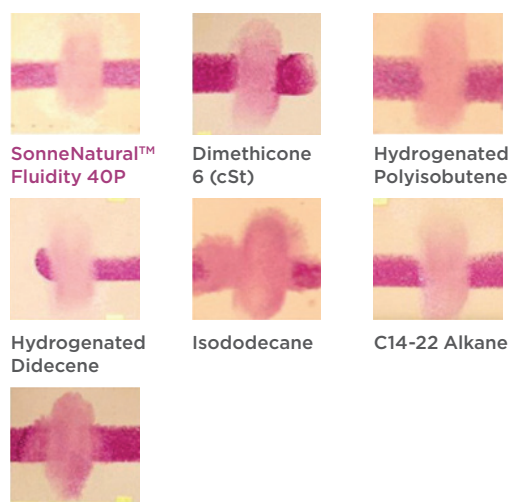
**Makeup, Cosmetics and Lip Care:** Its non-comedogenic\*\*, non-irritating\*\*\* and high-purity characteristics make it the ultimate ingredient for cosmetic applications.

**Makeup Remover and Cleansing Oils:** Similar cleaning capability as dimethicone and C14-22 Alkanes (see Image 1).

**Body Mist:** Low volatility and a dry, non-greasy finish with a luxurious feel.

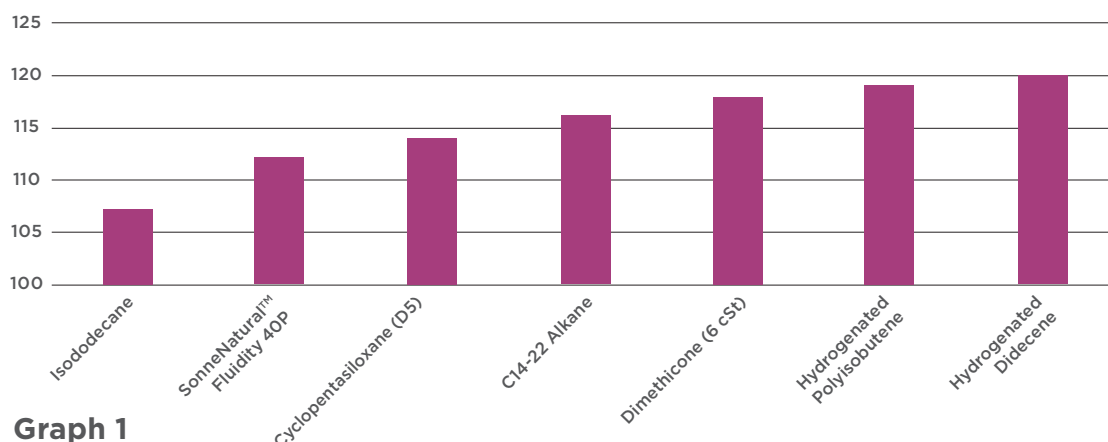
**Creams, Ointments and Balms:** High purity standards make it suitable for a wide variety of applications.

**Hair Mists and Styling:** Its low volatility ensures longer retention on hair, delivering lasting shine and conditioning benefits for mists, shines, serums and similar products (see Box Plot 1).



Cyclopentasiloxane (D5) Image 1: Cleaning capability

## Measurement of Friction (N) Measured with Frictiometer



Graph 1

\*based on HRIPT Clinical Testing completed on Fluidity 40P, semi-occlusive patch, 112 subjects aged 20-70.

\*\*based on Comedogenicity Clinical Testing completed on SonneNatural™ 40P, 20 subjects aged 18-40.

\*\*\*based on HRIPT Clinical Testing completed on Fluidity 40P, semi-occlusive patch, 112 subjects aged 20-70 and EpiOcular™ Eye Irritation Test, OECD 492.

**SonneNatural™ 40P** has similar sensory performance and properties to D4, D5, Cyclomethicone and Dimethicone, as exemplified in Tables 1 and 2.

Property	SN-F-40P	D4	D5	Dimethicone	Cyclomethicone
Cushion	+	+	+	+	+
Gloss	++	++	++	++	++
Slip	++	++	++	++	++
Playtime	++	+	+	++	++
Lubricity	++	++	++	++	++

**Table 1**

Cushion – refers to the perceived thickness of the product. A product with low cushion will feel like skin-to-skin contact.

Gloss – the amount of shine the product leaves on the skin after application.

Slip – measurement of how a product moves across the skin. Opposite of drag/resistance. A product with high slip glides easily across the skin.

Playtime – refers to how long the product stays on the skin before it is absorbed or evaporates. A product with low playtime absorbs quickly, while a product with high playtime remains on the skin for a longer period.

Lubricity – refers to being lubricious or having a smooth or slippery quality.

### Typical property values

Property	Method	SN-F-40P	D4	Cyclomethicone*	D5	Dimethicone
Viscosity @ 40°C, cSt	ASTM D445	3.2/4.5	2.25	3.04	3.05	4.62
Flash Point, °C	ASTM D92	130 Min.	51	76	73	94
Specific Gravity @ 25°C/25°C	ASTM D4052	0.7700/0.8000				

**Table 2**

\*Cyclomethicone = Mixture of D4, D5, D6.

### More Features: SN-F-40P

**Stability:** Highly stable; retains physical properties and purity for over a year at room temperature. Withstands heating to 148°C (300°F) for 90 min and remains clear, bright and odorless after 24 hours of UV exposure, making it suitable for long-term storage and use (see Image 2).

**Cleaning Capability:** SN-F-40P has good cleaning capability, outperforming Hydrogenated Polyisobutene, Isododecane and Cyclopentasiloxane, while performing similarly to Dimethicone and C14-22 Alkane.

**Frictional Properties:** Features a low-friction profile for smooth application and a less greasy feel, enhancing the sensory experience (see Graph 1).

**Volatility:** Light, dry and non-greasy; ideal for hair sprays, body mists and hand sanitizers. It's less volatile than Isododecane, improving safety and reducing flammability risk.

**Solubility:** Its non-polar structure ensures excellent blending with a wide range of ingredients, including vegetable/mineral oils, alcohols and acids.

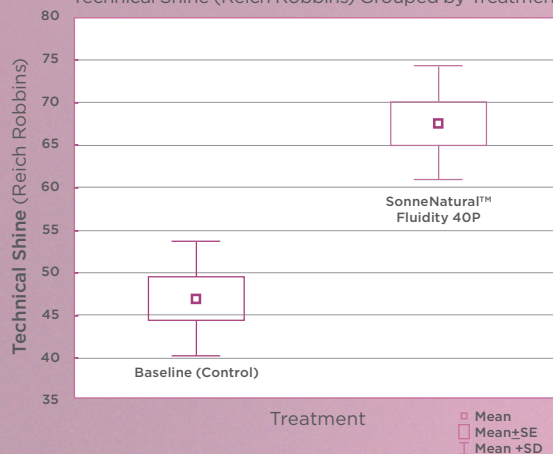
**Anti-Frizz:** Effectively reduces frizz for up to 24 hours in high humidity, showing a 55% reduction compared to untreated hair.

**Hair Shine:** Reduces hair friction by providing lubrication, resulting in smoother, shinier strands – technical hair shine will increase by 44% compared to the control (see Box Plot 1).

**Water Retention Performance:** Outperforms ingredients like Isododecane, Cyclopentasiloxane and Hydrogenated Polyisobutene in terms of water retention.

**Box Plot 1**

Technical Shine (Reich Robbins) Grouped by Treatment.



**Image 2**

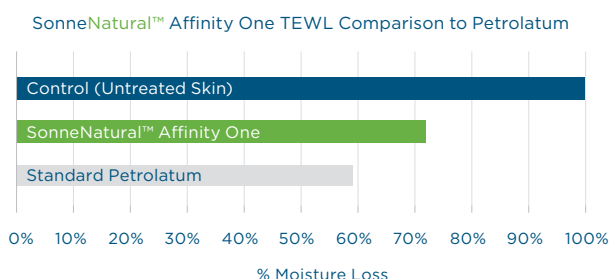
SN-F-40P does not fluoresce, indicating the absence of impurities. This also denotes superior purity compared to common vegetable oils.

# SonneNatural™ Affinity

Sonneborn's SonneNatural™ product line reimagined.

**SonneNatural Affinity** represents a significant advancement in formulation: a collection of 100% plant-based, waxy emollients, providing alternatives to petrolatums and waxes. Developed with purpose for use in balms, ointments and creams, these innovative ingredients deliver exceptional sensory performance while meeting demand for clean, sustainable formulations.

**SonneNatural Affinity** combines technical excellence with environmental responsibility – for future-focused solutions that harness nature's potential without compromise.



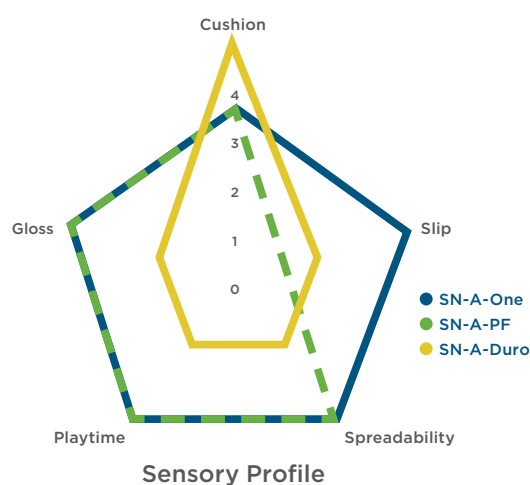
**Semi-Solid and Solid Formulations:** With its waxy texture and excellent spread, it's a perfect natural alternative to waxes and petrolatum.

**100% Plant-Based and Sustainably Sourced:** SonneNatural Affinity is 100% plant-based. Options include Affinity One (composed with a single RSPO-certified palm ingredient) and Affinity Palm-Free/Duro (completely palm-free alternatives) – varying in firmness.

**Moisture Retention:** Improves barrier function and supplements natural epidermal lipids.

**Rheology:** Behaves like petrolatum, adding substantive feel and body without the negative attributes of fillers (like starch or clay).

**Color Stable and Low Odor:** Sensory neutral solutions with a three-year shelf life, eliminating shifting hues and unwanted scents.



Within this  
reimagined  
range,  
we proudly  
present:

**SonneNatural™**

## Affinity Palm Free

(SN-A-PF)

**(Formerly SonneNatural™ PF-1)**

The palm-free version of Affinity One, delivering similar high cushion, gloss, playtime and spreadability with medium-low slip.

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## Affinity One

(SN-A-One)

**(Formerly SonneNatural™)**

This soft, translucent yellow, medium-gloss emollient is a color-stable, low-odor, natural alternative to petrolatum. It provides creamy application with high cushion, gloss, slip, playtime and spreadability for skin care, hair care and color cosmetics. It uses a single palm-derived feedstock, sourced from approved suppliers with deforestation-free certification.

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## Affinity Duro

(SN-A-Duro)

**(Formerly SonneNatural™ NXG)**

This palm-free, firm emollient is initially solid but breaks down smoothly. It is non-greasy with excellent moisture retention and a soft, occlusive afterfeel. Ideal for anhydrous formulas (potentially reducing thickeners) and its low odor may minimize fragrance needs. Sensory profile is defined by very high cushion.

Property	Test Method	SonneNatural™ Affinity One	SonneNatural™ Affinity Palm-Free	SonneNatural™ Affinity Duro
Melting Point, °C	ASTM D127	46.0/57.0	45.0/60.0	70.0/80.0
Lovibond Color, 2 in. Cell, Y	IP 17	15.0 Max.	15.0 Max.	30.0 Max.
Consistency, dmm	ASTM D937	130/220	150/210	N/A



Properties	Method	SonneNatural™ Synergy 70P	SonneNatural™ Synergy 90P	SonneNatural™ Synergy 150P	SonneNatural™ Synergy 380P
Sonneborn White Oil Offset		Carnation™ Hybrid Offset	Blandol™ Hybrid Offset	Ruddol™ Hybrid Offset	Hydrobrite™ 380PO Hybrid Offset
Viscosity @ 40C, cSt	ASTM D445	10.8/13.6	14.2/17.0	28.0/30.3	70.0/90.0
Specific Gravity @ 25°C/25°C	ASTM D4052	0.8068/0.8368	0.8149/0.8449	0.8288/0.8488	0.8454/0.8654

SonneNatural™

# Synergy

## Introducing Sonneborn's hybrid solutions.

SonneNatural™ Synergy offers truly bespoke products, serving multiple applications globally. It is a completely customizable hybrid offering, combining Renewable White Alkanes with conventional ingredients, tailored to your formulation needs.

**SonneNatural Synergy** (SN-S-70P, SN-S-90P, SN-S-150P and SN-S-380P) offers sustainable, versatile performance without compromise.

As demand for natural products grows, formulators face challenges (low viscosity, limited application range, stability issues) while meeting cost-conscious consumer needs. SonneNatural Synergy provides the solution: a hybrid combining conventional components with Renewable White Alkanes. This allows formulators to increase renewable content and meet specifications while retaining the trusted performance of a conventional ingredient, ensuring a seamless progression toward improved sustainability with minimal formula modification.

The customizable portfolio includes four distinct products, varying in viscosity and sustainable content. These grades deliver sensory performance (cushion, gloss, slip, playtime and lubricity) comparable to traditional White Mineral Oils, ranging from lighter profiles (body oils) to higher viscosities (hair, lip, sun and skin care).

SonneNatural™

## Synergy

Product names	Ointments	Sun Care	Creams
Synergy 70P (SN-S-70P)	x		
Synergy 90P (SN-S-90P)	x	x	
Synergy 150P (SN-S-150P)			x
Synergy 380P (SN-S-380P)	x	x	x

Key applications in the personal care and cosmetics industries. Highly versatile across many categories such as Creams and Lotions, various forms of Makeup, Hair Care Products, Sunscreen and Sun Care items and Depilatories.

**The answer is here.** As demand for innovative, sustainable solutions continues to grow, Sonneborn introduces the new SonneNatural™ portfolio.

Reach out to Sonneborn's experts and request your free sample at [www.sonneborn.com/sonnenatural](http://www.sonneborn.com/sonnenatural) or on LinkedIn.

SonneNatural™

**Innovative Solutions  
for Your Sustainability  
Journey.**

The world is changing.  
Let's change it for the better.

## How can we help?

Sonneborn, an HF Sinclair brand, delivers specialty products for hundreds of customers and applications worldwide, including personal care, pharmaceuticals, food and industrial uses.

The SonneNatural™ line underscores Sonneborn's commitment to sustainability with innovative, naturally derived ingredients.

Everything we develop and every action we take is based on the knowledge that nothing is more valuable to our customers who use our products than absolute confidence in our ingredients, our expertise and our services.



### LOCATIONS

#### **NORTH AMERICA AND ASIA PACIFIC**

Sonneborn, LLC  
100 Sonneborn Lane  
Petrolia, PA 16050  
USA  
Phone: +1.877.948.2688

#### **LATIN AMERICA AND CARIBBEAN**

R. Anchieta, 144 A71 VI.  
Boaventura  
13201-804 Jundiaí, SP, Brasil  
Phone: +55(11)97548-8899

#### **EUROPE, AFRICA AND MIDDLE EAST**

Sonneborn, Refined  
Products B.V.  
Mainhavenweg 6  
1043 AL Amsterdam  
The Netherlands  
Phone: +31.20.611.7475

[sonneborn.com](https://sonneborn.com)

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LUB4272E (2025.10)

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