

Jeechem® NDA Series

Naturally-derived silicone alternatives



Silicone alternatives

Emollients

Solvents

Solubilizers

Setting modifiers

De-tackifiers

Carriers

Dispersants

Recommended applications



Skin care



Makeup



Hair care



Body care

The Jeechem® NDA Series are naturally-derived*, multifunctional products created to serve as silicone alternatives.

The Jeechem® NDA series exhibit great versatility- vastly simplifying incorporation of difficult ingredients such as UV Filters, high purity actives, silicones, and silicone derivatives into formulations.

The Jeechem® NDA range's soft and velvety sensorial benefits mask their powerful performance as formulation solutions in cosmetic ingredients.

Their functional properties are limited only by the formulation need and/or the creativity of the formulator using them.

The Jeechem® NDA series can be used as individual ingredients or in combination with other Jeechem® NDAs.

Isoparaffin-free, non-irritating, non-sensitizing, and suitable for both leave-on and rinse-off formulations in a wide variety of personal care applications.

**100% naturally-derived from vegetable feedstock*



A closer look at the Jeechem® NDA Series

In skin care and color cosmetics...

- ✓ Offers a smooth application that glides on easily.
- ✓ Leaves a soft, powdery/velvety feel.
- ✓ Impacts finish product's feel/texture and playtime.
- ✓ Light NDA's impact initial feel and texture.
- ✓ Heavier NDA's offer comfort and glide.
- ✓ Can be used as a quick drying/setting agent for foundations.

In hair care...

- ✓ Contributes emollience
- ✓ Adds shine
- ✓ Offers transient conditioning in shampoos, conditioners and rinses
- ✓ Serves as an ideal vehicle to replace more volatile hydrocarbons in styling gels and heat-activated products
- ✓ Acts as a co-dispersant and solvent in hair colorants, masks and styling products

In sun care...

- ✓ Mitigates the greasy feel associated with sunscreens without compromising SPF levels
- ✓ Adds a velvety, emollient feel to finished SPF formulations
- ✓ Imparts soft cushion with adequate playtime
- ✓ Superb dispersants for minerals, such as titanium dioxide and zinc oxide
- ✓ Minimizes greasiness



liquid

Jeechem® NDA—LC

INCI: C9-12 Alkane

Jeechem® NDA—CC

INCI: C13-14 Alkane

Jeechem® NDA—5

INCI: C15-19 Alkane



crystalline solid

Jeechem® NDA—HC

INCI: C18-21 Alkane

The ¹⁴C activity of Jeechem® NDA—LC, CC and HC are equivalent to 96-102% of the 2017 and present day ¹⁴C reference activity 13.7 dpm/gC. This indicates no addition or dilution with fossil fuel derived material to these three samples.

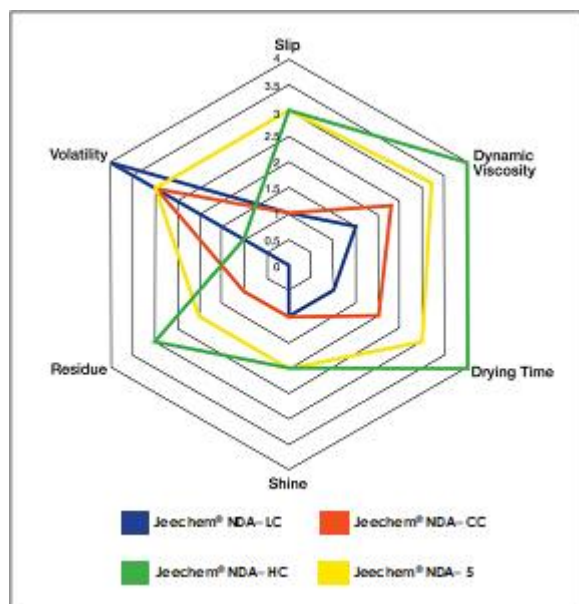
Jeechem® NDA	¹⁴ C dpm/gC	± 1 σ
Jeechem® NDA - LC	13.93	0.08
Jeechem® NDA - CC	13.16	0.08
Jeechem® NDA - HC	13.93	0.08
Jeechem® NDA - 5	13.48	0.08

Recommended materials to formulate Jeechem® NDA Series with:

Natural emollients
Glyceryl Stearate
Cetyl Palmitate
Myristyl Myristate
Myristyl Stearate
Cetyl Esters
Behenyl Alcohol
Cetyl Alcohol
Cetearyl Alcohol
Stearyl Alcohol
Oleyl Alcohol
Stearic Acid
Palmitic Acid

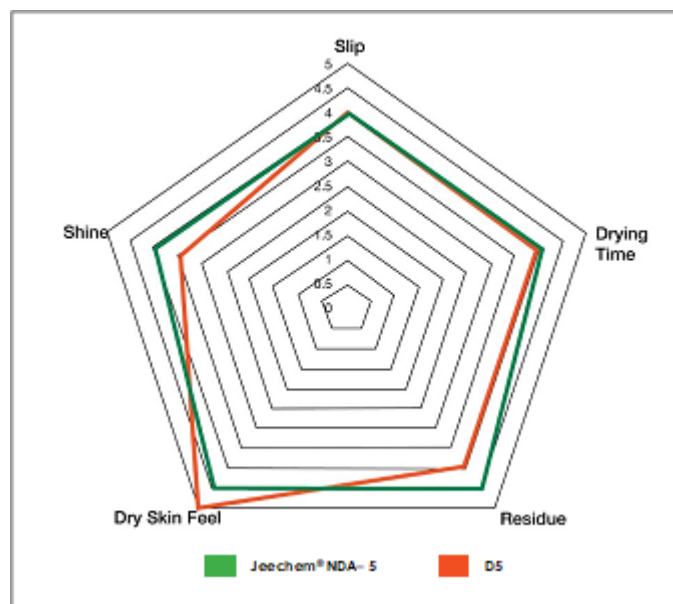
Natural emulsifiers
Polyglyceryl-4 Oleate
Sorbitan Laurate
Sorbitan Oleate
Sorbitan Palmitate
Sorbitan Stearate

Jeechem® NDA – Characteristics & comparison



A closer look at how the Jeechem® NDA series compares to one another regarding:

- ✓ slip
- ✓ volatility
- ✓ drying time
- ✓ viscosity
- ✓ residue
- ✓ shine



Jeechem® NDA – 5 proves to be an exceptional match to D5 in:

- ✓ slip
- ✓ dry skin feel
- ✓ drying time
- ✓ shine
- ✓ residue

Jeechem® NDA – Solubility test @ 30% alkane

	Jeechem® NDA- LC	Jeechem® NDA- CC	Jeechem® NDA- HC	Jeechem® NDA- 5
Natural Oils	Soluble	Soluble	Soluble	Soluble
Castor Oil	Insoluble	Insoluble	Insoluble	Insoluble
Shea Butter	Soluble	Soluble	Soluble	Soluble
Cocoa Butter	Soluble	Soluble	Soluble	Soluble
Caprylic / Capric Triglyceride	Soluble	Soluble	Soluble	Soluble
Oleyl Oleate	Soluble	Soluble	Soluble	Soluble
C12-15 Alkyl Benzoate	Soluble	Soluble	Soluble	Soluble
Isopropyl Myristate	Soluble	Soluble	Soluble	Soluble
Isopropyl Palmitate	Soluble	Soluble	Soluble	Soluble
Isononyl Isononanoate	Soluble	Soluble	Soluble	Soluble
Mineral Oil	Soluble	Soluble	Soluble	Soluble
Polydecene	Soluble	Soluble	Soluble	Soluble
Isopropyl Alcohol	Soluble	Soluble	Insoluble	Soluble
Dimethicones	Soluble	Soluble	Soluble	Soluble
Cyclopentasiloxane	Soluble	Soluble	Soluble	Soluble
Phenyltrimethicone	Soluble	Soluble	Soluble	Soluble

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	Jeechem® NDA—LC	Jeechem® NDA—CC	Jeechem® NDA—5	Jeechem® NDA—HC
Appearance @ 25°C	Clear, Colorless Liquid	Clear, Colorless Liquid	Clear, Colorless Liquid	White Waxy Solid
Flash Point (°C)	71.0	115.0	135.0	165.0
Molecular Weight (Da)	170	198	226	254
Kinematic Viscosity (cSt 30°C)	1.8	2.5	3.5	5.0
Recommended Use Levels*	0.5 – 50%	0.5 – 60%	0.5 – 90%	0.5 – 80%

Formulation guidelines

In emulsions systems, Jeechem® NDA can be incorporated in the oil phase. Jeechem® NDA—5, Jeechem® NDA—CC, and Jeechem® NDA—HC can be heated to 70-80°C. Jeechem® NDA—LC is better to add when the emulsion is cooling down at 45°C. HLB 11-12 surfactant is needed to emulsify JEECHEM® NDA.

In anhydrous systems, Jeechem® NDA—5, Jeechem® NDA—CC, and Jeechem® NDA—HC can be heated to 70-75°C. Jeechem® NDA—LC is better to add when the emulsion is cooling down at 45°C. If the desired end viscosity is liquid or semi-liquid, add Jeechem® NDA in sequence with the other ingredients from highest to lowest viscosity at ≤ 85°C with homo-mixing or propeller-mixing. If finished product is in stick form, add Jeechem® NDA in sequence with the other ingredients (waxes and oils) from highest to lowest melting point at ≤ 85°C with homo-mixing or propeller-mixing.

The Jeechem® NDA Series is compatible with any natural fatty acids, fatty alcohols and esters. It is very important to match the Hydrophilic-Lipophilic Balance (HLB) of the emulsifier system to the required HLB of the oil phase when formulating with the Jeechem® NDA Series. Typically, the HLB range should be; W/O system: 2 – 6 | O/W: 6 – 11

The Jeechem® NDA Series is compatible with silicones and silicone gels. They are either miscible or completely soluble.

Jeechem® NDA Series is not a simple 1:1 replacement for silicones. Jeechem® NDA Series and silicones have similar sensorial properties however, chemically, they belong to two different categories. Reformulation may be required when trying to replace silicones with Jeechem® NDA in an existing formulation.

Jeechem® NDA Series is most compatible with lipophilic surface treated pigments / colorants.

The Jeechem® NDA Series is not soluble in water and is not compatible with aqueous formulas.

For fragrances, Jeechem® NDA is used as a solubilizer at ≤ 99% for essential oils and absolutes if the oils are Jeechem® NDA soluble or at ≤ 75% as a co-solubilizer in the pre-mix with the remaining solvents. For hand sanitizers, Add Jeechem® NDA to non-alcohol-based hand sanitizers.

*Recommended use levels based on application:

<u>Skin Care</u>	<u>Hair Care</u>	<u>Color cosmetics</u>	<u>Sun Care</u>
Leave On: 1-75%	Leave On: 1-90%	1-40%	1-20%
Rinse off 1-30%	Rinse off 1-20%		