The planet is ready for 100% Natural Luxury Skin Care... **Are you?** 





# AminoSensyl<sup>™</sup> SC Breakthrough Technology



#### **High Performance**

- ✓ Self-Emulsifying
- ✓ High Oil Loading
- ✓ Soft, Velvety Skin Feel
- ✓ Gentle to Skin & Eyes

### **Eco-Friendly**

- ✓ Renewable Sources
- ✓ Quat-Free
- ✓ Readily Biodegradable

### 100% Natural

- ✓ Essential Amino Acid
- ✓ Brassica Alcohol
- ✓ Green Chemistry
- ✓ No PEG or EO

### **Scientific Innovation**

- ✓ Amphiphilic and Cationic Amino Lipid
- ✓ Forms Lamellar Liquid Crystals



# **Amino Lipids Technology Platform**



Proprietary Technology Platform for development of tailored and high performance amino lipids with superior environmental and safety profiles

# Building Blocks of INOLEX Amino Lipids:

#### Amino Acid

- ✓ Derived from biofermentation
- ✓ Contains amine functionality
- ✓ Provides a natural cationic charge

#### **Fatty Alcohol**

- ✓ Derived from renewable plant oil
- ✓ Contains hydrophobic carbon chain
- ✓ Plant oils chosen for desired mixture of carbon chain lengths

# Key Features of INOLEX Amino Lipids:

- ✓ 100% Natural
- ✓ Non-Quat Cationic Charge
- ✓ Based on Amino Acid
- ✓ Safe for Skin & Eyes
- ✓ Form Liquid Crystalline structures



# AminoSensyl<sup>™</sup> SC Innovative Technology Design



#### Essential Amino Acid - Valine:

- ✓ Derived from biofermentation of sugarcane glucose
- ✓ Provides a natural cationic charge for lamellar liquid crystal (LLC) formation
- ✓ Valine occurs naturally in skin

#### Fatty Alcohol & Glycerides Brassica Alcohol and Brassica Glycerides:

- ✓ Derived from the *Brassica Rapa* seed oil
- ✓ Genus *Brassica* contains a variety of nutrient rich plants
- ✓ Provides an optimized mixture of C18 C22 carbon chains for LLC formation and desirable skin feel

#### INCI:

Brassica Alcohol (and) Brassicyl Valinate Esylate (and) Brassica Glycerides



# Global Skincare Trends focus on Indulgence and "Slow Beauty"



#### Global Skincare Trend

Focus on the indulgent and sensory Brands can tap into the 'slow beauty' movement and strongly emphasise how body, hand and footcare products can pamper.

#### North America Skincare Trend

#### Engage consumers with sensory concepts

More brands can **focus on pampering the** skin and tap into the Slow Beauty movement.

#### **European Skincare Trend**

#### Tie in with holiday and 'slow beauty' themes

Products that care for skin pre- and post-summer holiday can appeal given high use of body moisturisers during this period. Brands that provide **indulgent experience to be enjoyed at a leisurely pace** ... can expand and tap into the slow beauty movement.

A Year of Innovation in Body, Hand, and Footcare 2018, August 2018





Amino Lipid Formulation Science for Naturally Indulgent Skin Care Products



### AminoSensyl<sup>™</sup> SC Self-Emulsifies for Easy Formulation Design

Trade Name	Ingredient (INCI) Function		%(w/w)		
Oil Phase					
AminoSensyl™ SC	Brassica Alcohol (and) Brassicyl Valinate Esylate (and) Brassica Glycerides	Self-Emulsifying System	10.00		
Sunflower Seed Oil	Helianthus Annuus (Sunflower) Seed Oil	Oil	13.33		
Lexol GT-865 MB	exol GT-865 MB Caprylic/Capric Triglyceride		13.33		
Lexol IPP MB	IPP MB Isopropyl Palmitate		13.33		
Main Batch					
Deionized Water Deionized Water			46.60		
Zeastat	Caprylhydroxamic Acid (and) Propanediol	Natural Preservation	2.00		
Calcium Gluconate	Calcium Gluconate	Neutralizer	1.40		

# Easy Formulation Design AminoSensyl<sup>™</sup> SC:

- ✓ Self-Emulsifying optimized system
- ✓ Easy formulation design: no HLB experimentation needed
- ✓ Works with variety of oil types and polarities
- ✓ Use traditional O/W formulation processing

#### Procedure: F# 660-029A

- Combine Oil Phase and heat to 75-80°C. Mix until clear.
- Combine Main Batch and heat to 75-80°C. Mix until uniform.
- Add Oil Phase to Main Batch and mix (400rpm) at 75-80°C.
- Homogenize at 3000rpm for 3 minutes.
- Allow to cool with low mixing until 40-50°C.



### AminoSensyl<sup>™</sup> SC Stabilizes Oil Loadings up to 40%



#### Oil Loading Test AminoSensyl<sup>™</sup> SC:

- ✓ Oil loadings up to 40% can be stabilized with 10% AminoSensyl<sup>™</sup> SC
- ✓ Oil load stability is dependent on amount of AminoSensyl<sup>™</sup> SC in formulation
- High oil load stability is observed in simple chassis and full formulations

#### Test Method:

- + Test Formulation: 660-029 chassis with varying % w/w oil and AminoSensyl SC
- Formulate using described procedure
- Evaluate stability at these temperatures: Freeze/Thaw; 22C (RT), 45°C, 50°C
- Stability endpoints: Visual appearance, Viscosity, pH



### Lamellar Liquid Crystals Provide Unique Formulation Benefits



# Lamellar Liquid Crystals **Key Benefits:**

- ✓ High oil load stability
- ✓ Non-greasy skin feel
- Desirable formulation aesthetics using therapeutic emollients, e.g. petrolatum
- ✓ Traditionally formulated with cationic surfactants



# AminoSensyl<sup>™</sup> SC Active Forms Liquid Crystal Structures



#### Liquid Crystal Formation Brassicyl Valinate Esylate:

- Amphiphilic Amino Lipids form Lamellar Liquid Crystals (LLCs) and vesicles with fatty alcohols
- ✓ Brassicyl Valinate Esylate (25%) combined with Brassica Alcohol (75%) and Oil (2.5%) forms LLCs and vesicles
- LLCs allow high oil loading with a soft, powdery, non-greasy feel
- ✓ Amphiphilic Amino Lipids, like the active in AminoSensyI™ SC, have superior skin & eye safety profiles



## AminoSensyl<sup>™</sup> SC Active Has a Superior Safety Profile



#### Superior Safety Brassicyl Valinate Esylate:

- Cationic Amino Lipids are safer for delicate, dry, or sensitive skin than cationic surfactants traditionally used to make LLC emulsions
- ✓ Cationic Amino Lipids are **non-irritating to skin and eyes**
- ✓ Cationic Amino Lipids are not skin corrosives





### **Deep Hydration Day + Night Cream**

Trade Name	Ingredient (INCI)	%(w/w)
AminoSensyl™ SC¹	Brassica Alcohol (and) Brassicyl Valinate Esylate (and) Brassica Glycerides	10.00
Sunflower Seed Oil <sup>2</sup>	Helianthus Annuus (Sunflower) Seed Oil	8.33
Lexol <sup>®</sup> GT-865 MB <sup>1</sup>	Caprylic/Capric Triglyceride	8.33
Lexol <sup>®</sup> IPP MB <sup>1</sup>	Isopropyl Palmitate	8.33
Deionized Water	Deionized Water	62.61
Spectrastat™ G2 Natural MB¹	Caprylhydroxamic Acid (and) Glyceryl Caprylate (and) Glycerin	1.00
Calcium Gluconate <sup>3</sup>	Calcium Gluconate	1.40
		100.00
<sup>1</sup> INOLEX <sup>2</sup> Now Solutions <sup>3</sup> Sigma-Aldrich		SC-1085

A versatile, deeply hydrating cream to reinvigorate dry, dull skin. The emulsification power coupled with the novel quat-free cationic structure of **AminoSensyI™ SC** allows for a high oil load with a soft, powdery after-feel.

#### **Deep Hydration Day + Night Cream** is a self-emulsifying formulation with 25% oil loading.



# **Ultra Moisture Body Lotion**

Trade Name	Ingredient (INCI)	%(w/w)
Deionized Water	Deionized Water	70.90
Sodium Chloride <sup>2</sup>	Sodium Chloride	0.01
Calcium Gluconate <sup>3</sup>	Calcium Gluconate	0.84
Glycerin	Glycerin	12.00
Colloidal Oatmeal <sup>4</sup>	Colloidal Oatmeal	1.00
AminoSensyl™ SC¹	Brassica Alcohol (and) Brassica Valinate Esylate (and) Brassica Glycerides	6.00
Lexol <sup>®</sup> IPP MB <sup>1</sup>	Isopropyl Palmitate	3.00
Vaseline <sup>®5</sup>	Petrolatum	4.00
XIAMETER™ PMX-200 Silicone Fluid 20 cSt <sup>6</sup>	Dimethicone	1.25
Benzostat <sup>™1</sup> Caprylhydroxamic Acid (and) Benzyl Alcohol (and) Glycerin		1.00
		100.00
<sup>1</sup> INOLEX <sup>2</sup> Morton Salt <sup>3</sup> Sigr	BB-1072	

A therapeutic body lotion to nourish dry, cracked skin and provide a strong moisture-barrier for protection against further drying. **AminoSensyl™ SC** creates a rich texture that blankets the skin leaving it soft to the touch.

**Ultra Moisture Body Lotion** is a selfemulsifying formulation with skin soothing emollients and skin protectants.



# **Smooth Shave Lotion**

Trade Name	Ingredient (INCI)	%(w/w)
AminoSensyl™ SC¹	Brassica Alcohol (and) Brassicyl Valinate Esylate (and) Brassica Glycerides	9.00
LexFeel <sup>®</sup> WOW-A <sup>1</sup>	Triheptanoin (and) C13-15 Alkane	4.00
LexFeel <sup>®</sup> N100 MB <sup>1</sup>	Diheptyl Succinate (and) Capryloyl Glycerin/Sebacic Acid Copolymer	4.00
Jojoba Oil²	Organic Simmondsia Chinensis (Jojoba) Seed Oil	2.00
Deionized Water	Deionized Water	75.40
Glycerin	Glycerin	3.00
Spectrastat™ G2 Natural MB1 Caprylhydroxamic Acid (and) Glyceryl Caprylate (and) Glycerin		1.00
Calcium Gluconate <sup>3</sup>	Gluconate <sup>3</sup> Calcium Gluconate	
Orange Oil <sup>2</sup>	Citrus Aurantium Dulcis (Orange) Peel Oil	0.15
Oil, Euc/Spearmint BBW Type <sup>4</sup>	Fragrance	0.15
		100.00
<sup>1</sup> INOLEX <sup>2</sup> Now Solutions <sup>3</sup> Sigma-Al	BB-1071	

This silky shave lotion with amino acid based AminoSensyl™ SC conditions and preps skin for a comfortable and moisturized shave. Quat-free AminoSensyl™ SC is gentle on sensitive skin and delivers slip and easy glide for the ideal shaving experience.

100% of consumers\* agreed **Smooth Shave Lotion** was gentle and left their skin feeling moisturized, soft, and smooth.

\* Consumer use shave study. Results available upon request.



# Formulating with AminoSensyl<sup>TM</sup> SC



# Formulation Flexibility AminoSensyl<sup>™</sup> SC:

- ✓ AminoSensyl<sup>™</sup> SC combination of Brassicyl Valinate Esylate, Brassica Alcohol, and Brassica Glycerides is optimized for easy formulation design and superior formulation performance
- Stable emulsions are easy to design and formulate using traditional O/W emulsion processes
- ✓ Solid AminoSensyl<sup>™</sup> SC format is easy to handle with a formulation temperature near 80°C
- ✓ Ideal AminoSensyl<sup>™</sup> SC use level depends on oil loading
  - ✓ 6.0 9.0% AminoSensyl<sup>™</sup> SC for oil loading up to 20%
  - ✓ **10.0 12.0% AminoSensyl**<sup>™</sup> **SC** for oil loading up to 40%





Green Chemistry for Sustainable Innovation in Skincare



### **Global Skincare Trends focus on Free From and Natural**



### Face/Neck Care Claims Natural & Free-From:

Nature can evoke pleasing emotions, and more consumers are seeking out the health benefits of natural/organic foods and skincare. Mentioning natural ingredients on pack and in marketing campaigns creates a more positive vibe than freefrom claims for consumers seeking out 'clean' product purchases.

#### Partnering natural claims with free-from ingredient claims has generally increased across the globe

The Future of Facial Skincare:2019, Mintel, March 2019



# **Green Chemistry at INOLEX**



At INOLEX, innovation is guided by the **principles of green chemistry** and **life cycle thinking**. Our goal is to provide ingredients that deliver objective, measurable improvements in performance, consumer preference, AND sustainability.

#### Key strategies:

- Effective use of renewable, plant-based feedstocks; pursuit of new bio-based alternatives
- Safe, simple chemistry with sophisticated performance
- Articulating and minimizing trade-offs to avoid hidden costs/consequences of *"natural"*

Anastas, P. T.; Warner, J. C. Green Chemistry: Theory and Practice, Oxford University Press: New York, 1998, p. 30.



# AminoSensyl<sup>™</sup> SC is Eco-Friendly



- Developed and manufactured according to the **Principles of Green Chemistry**
- 100% renewable and sustainable raw material feedstocks
- Solvent-free manufacturing process
- No heavy metal catalysts and moderate reaction temperatures for low energy consumption
- Water is the only reaction by-product
- Brassicyl Valinate Esylate is readily biodegradable
- Non toxic and Non irritating



### Amino Lipids have Superior Safety and Environmental profiles

		Cationic Amino Lipids	Quaternary Surfactants		
		e.g. Brassicyl Valinate Esylate	e.g. Behentrimonium Chloride	e.g. Distearyldimonium Chloride	
Irritation Potential to Skin and Eyes	Increases with decreasing alkyl chain length	Non-hazardous		SKIN CORROSION	
Aquatic Toxicity	Potentially toxic to fish, invertebrates, algae	Non-hazardous			REFERENCES • Safety Assessment of Trimoniums as Used In Cosmetics, 2012.
Environmental Persistence	Increases with increasing alkyl chain length (i.e. increasing hydrophobicity)	Readily Biodegradable	~80% Biodegradable	Readily Biodegradable	<ul> <li>SCCS Opinion on Alkyl (C16, C18, C22) Trimethylammoniur Chloride, 2009.</li> <li>Ecotoxicological Behavior of some Cationic and Amphoteric Surfactants, 2013.</li> <li>ECHA Substance Information</li> </ul>
Petro-chemical derived carbon	Quaternary ammonium head groups rely on petrochemical-derived carbon	100% NATURAL	Petrochemical PETRO DERIVED	PETRO DERIVED	INOLEX

# AminoSensyl<sup>™</sup> SC Enables Ingredient & Environmental Claims



### AminoSensyl<sup>™</sup> SC Ingredient & Sustainability Claims:

- ✓ Amino Acid
- ✓ Quat-Free / Non-Quat
- ✓ PEG-Free / EO-Free
- ✓ Silicone-Free
- ✓ 100% Natural / 100% Biobased
- ✓ Brassica Derived / Vegetable Family
- ✓ Non-GMO / Gluten Free / Vegan
- ✓ Non-palm source
- ✓ Low energy consumption
- ✓ No chemical waste
- ✓ Solid format no water shipment
- ✓ Readily biodegradable

Mintel GNPD, Global Skincare Claims 2016-2018



# **AminoSensyl<sup>™</sup> SC Enables Performance-Based Claims**



### AminoSensyl<sup>™</sup> SC Performance & Innovation Claims:

- ✓ Enables Moisturizing Claims
- ✓ Velvety / Powdery Feel
- ✓ Skin pH Balanced Formulations
- ✓ Microbiome-Friendly
- ✓ Sensitive Skin
- ✓ Hypoallergenic
- ✓ Safe for Delicate Eye Area
- ✓ Fragrance Free Formulations

Mintel GNPD, Global Skincare Claims 2016-2018



The planet is ready for 100% Natural Luxury Skin Care... **Are you?** 



