

# Isethionate Surfactant

## Iselux®

INCI Name: Sodium Lauroyl Methyl Isethionate

CAS N°: 928663-45-0 (CAS N°:156572-81-5 Europe Only) REACH N° 01-2119401252-59-0000 EINECS N° 700-150-3

Iselux® is our latest technological breakthrough in surfactant chemistry. Iselux® is an extremely mild surfactant that can be used in formulations as a primary or secondary surfactant and is ideally used where a dense, luxurious foam and elegant after-feel is desired. It provides gentle yet thorough cleansing with outstanding rinseability. The excellent water solubility properties allow the formulator to produce crystal clear liquid cleansing systems.

### Applications

The secondary ester structure of Iselux® makes it more hydrolytically stable than many common esters and this coupled with its broad pH stability range makes formulating easy. Iselux® is ideal for use in shower gels, facial cleansers, shampoos, liquid cleansing systems, and luxury foam baths. Iselux® can also be used to prepare high performance, "sulfate-free" personal cleansing products as well as structured liquid systems.



Feature	Benefit
Structured Systems achievable	Dramatic formulation flexibility and enhanced creativity
Dense creamy long-lasting lather Elegant after-feel	Creates a luxurious bath and shower experience
Ultra mild surfactant	Ideal for sensitive skin
Excellent water solubility	Can be used in clear systems
Sulfate free 1,4-Dioxane free Nitrosamine free	Safe at all use levels
Readily biodegradable Derived from natural/renewable resources	Friendly to the environment
Formulates like an ether sulphate Broad pH stability	Formulating ease and flexibility

### TYPICAL PROPERTIES

Not intended for use in preparing specifications

Appearance	White to off-white flakes or chips
Colour, APHA (5% solution in 30% n-Propanol/70% distilled water + EDTA)	25 maximum
Odour	Mild, characteristic
Activity, %	80 minimum
Free fatty acid, %	7 maximum
Moisture, %	1 maximum
pH 10% @35°C	5.5-7.0



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## How to Formulate

- Add sufficient level of chelating agent such as Natrlquest E30\* or EDTA to water and mix. Typical use levels of chelating agent are 0.3% active chelating agent for every 10% active Iselux®.  
*Use levels of chelating agents can be reduced or eliminated by using co-surfactants such as sodium alkylamphoacetate or disodium alkylamphodiacetate.*
- Add Iselux® and begin heating to 50-60°C; continue to mix until all of the Iselux® is dissolved.
- Add remaining materials (co-surfactants, polymers, conditioning agents, etc.) and cool solution once uniform
- Adjust to desired pH. When using amphoteric co-surfactants optimum clarity is achieved at pH 5.0 to 6.0
- Iselux solutions thicken easily with electrolytes such as sodium chloride when used in combination with co-surfactants such as cocoamidopropyl betaine and sodium lauroamphoacetate

\*INCI: Trisodium Ethylenediamine Disuccinate, Innospec's biodegradable chelating agent

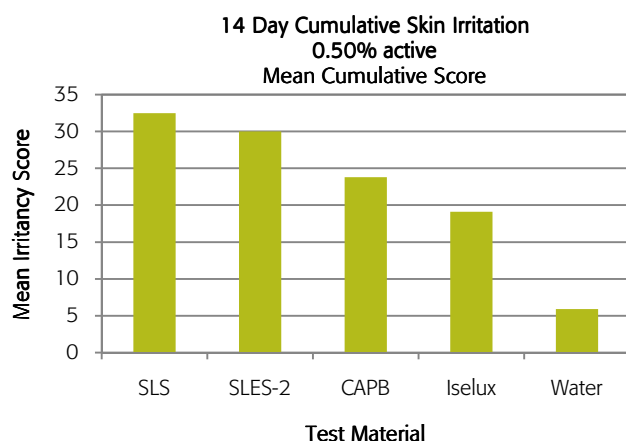
## Performance Properties

### Clarity

Sufficient use of a chelating agent and/or co-surfactants, such as alkylamphoacetates, is recommended to achieve optimum clarity in systems containing Iselux®.

### Mildness

Iselux® shows a reduced irritancy profile versus other common surfactants.

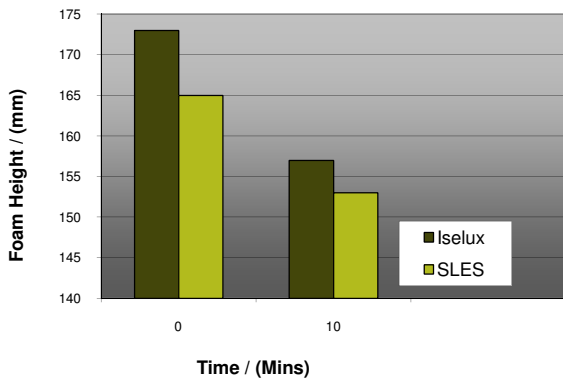


### Foaming Profile

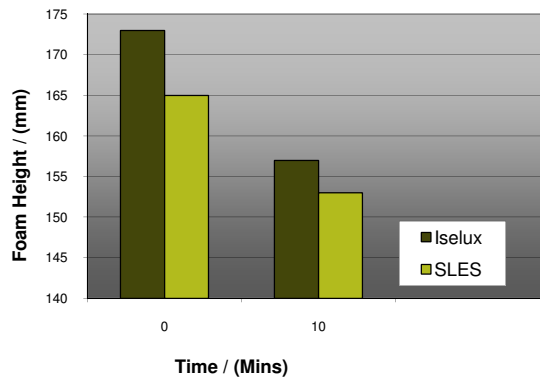
Iselux® has an excellent foaming profile. Its flash foam is comparable to that of sodium laureth sulfate and it forms dense creamy long-lasting bubbles.

## Ross Miles Foam Height Iselux® vs. SLES

Deionized Water



Hard Water

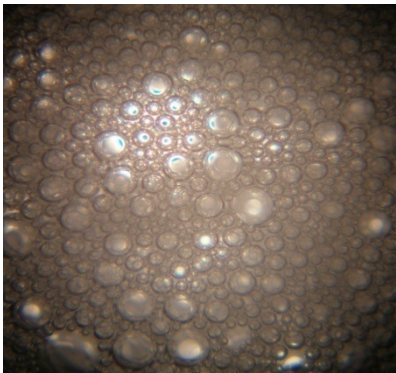


Surfactant Conc: 1% w/w  
Temperature 40°C

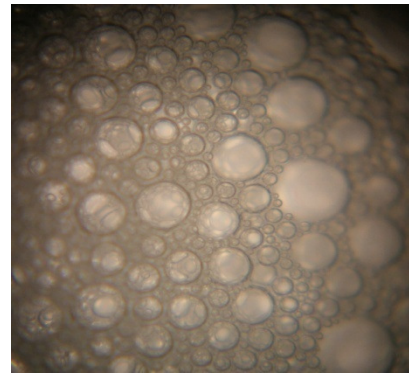
100ppm Ca<sup>2+</sup>, 20ppm Mg<sup>2+</sup>

## Foam Density Iselux® vs. SLES

Iselux



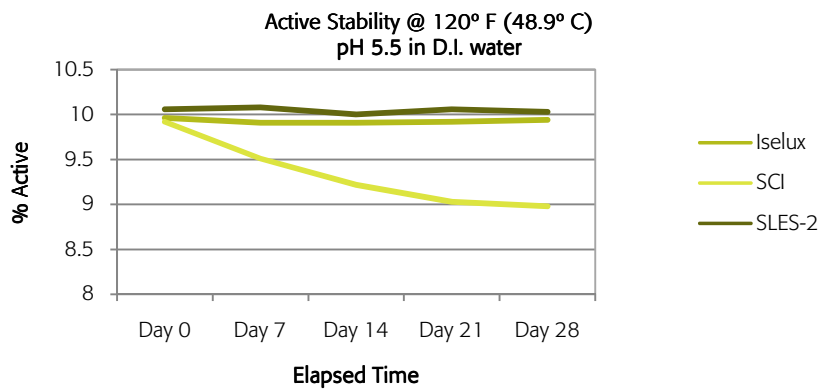
SLES



Blender Foam (0.3%w/w), Temp 20°C,  
Water Hardness: 50ppm Ca<sup>2+</sup>, 10ppm Mg<sup>2+</sup>

## pH Stability

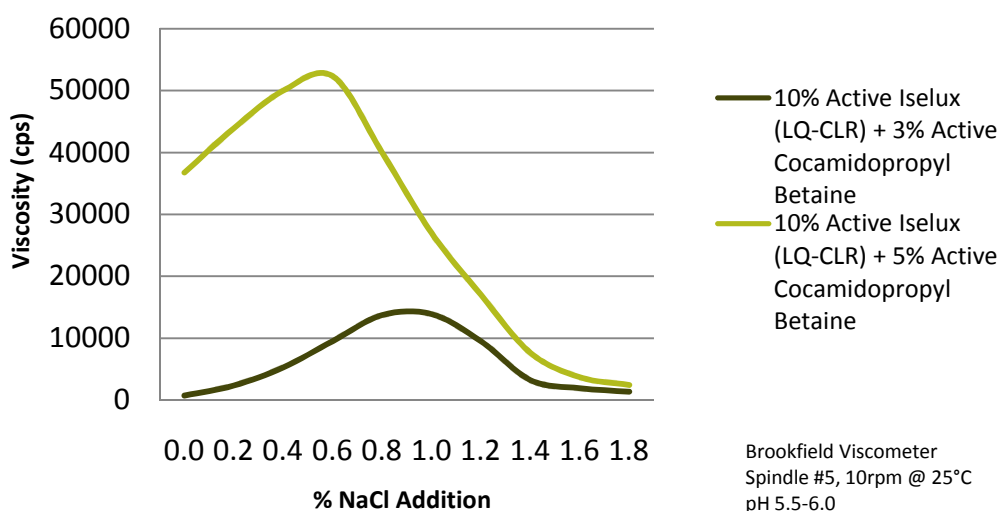
Iselux® shows excellent stability over a broad pH range and can be incorporated into formulations ranging from pH 4.5 - 8.5. It has also proven to be stable in formulations under high and low temperature stability conditions.



## Thickening

Iselux® solutions will thicken slightly with the addition of electrolytes such as Sodium Chloride. The addition of secondary surfactants such as Cocamidopropyl Betaine can be used to further enhance viscosity.

### Iselux® Salt Thickening in the Presence of Cocamidopropyl Betaine



## Suggested Formulations: Skin Care, Hair Care

### Sulfate-Free Shampoo, AC121a

A crystal clear shampoo formulation featuring the dense luxurious lather of Iselux® sulfate-free surfactant. Natrlquest E30 acts as the environmentally friendly biodegradable chelating agent that facilitates the clarity of this formulation.

	INCI Ingredients	Tradename (Supplier)	% w/w
A	Water		q.s to 100
	Trisodium Ethylenediamine disuccinate	Natrlquest™ E30 (Innospec)	0.20
	Sodium Lauroyl Methyl Isethionate	Iselux® (Innospec)	11.75
	Sodium Lauroamphoacetate	Pureact LAA (Innospec)	4.00
	Cocamidopropyl Betaine (35% solution)	Mirataine BET C-30 (Rhodia)	9.00
B	Glycerin		1.50
	Polyquaternium-10	Ucare Polymer JR-125 (Dow)	0.20
C	Preservative		q.s
D	Citric acid (50% solution)		q.s. to pH 5.5-6.0
E	Sodium Chloride		0.20

## Preparation Procedure

1. Dissolve the Natrlquest E30 in deionised water
2. With smooth agitation slowly blend ingredients of phase A, one at a time, into system. Begin heating to 50-60°C with smooth agitation and mix until uniform.
3. Add the pre-mix B and mix until uniform
4. Cool down system to 30-35°C with smooth agitation
5. Add preservative and mix until uniform
6. Adjust pH of the system to 5.5-6.0 with a 50% citric acid solution as needed
7. Add sodium chloride incrementally as needed and mix thoroughly

## Properties

Appearance	Clear solution
pH	5.5 - 6.0
Viscosity*	4,000 - 8,000 cps
Stability	Passed 1 month at 45°C

\* Brookfield DV-E@10 rpm, 35 °C, #3 spindle

## AC127 Body Wash – Structured Formulation

This body wash is a mild sulfate-free cleanser featuring Iselux® and Pureact WS Conc to produce a dense creamy lather upon application. It demonstrates how Iselux® can be used in structured formulations allowing higher levels of oils to be used. The Activsoft C-17 imparts a soft, elegant feel to the skin and also helps improve the foam quality. The Activsoft S and the Aminol CM flakes thicken this formulation and help stabilise the foam. The Finsolv® TN acts as a mild solubilising agent to gently remove soils from the skin as well as to provide conditioning. Natrlquest E30 is Innospec's biodegradable chelating agent.

	INCI Ingredients	Tradename (Supplier)	% w/w
A	Water		q.s.
	Trisodium Ethylenediamine Disuccinate	Natrlquest™ E30 (Innospec)	0.15
B	Sodium Chloride		4.00
C	Guar Hydroxypropyltrimonium Chloride	Activsoft C-17 (Innospec)	0.20
D	Disodium Cocoamphodiacetate	Miranol C2M Conc. N.P. (Rhodia)	7.50
E	Sodium Methyl Cocoyl Taurate	Pureact WS Conc. (Innospec)	7.50
F	Cyamopsis Tetragonoloba Guar Gum	Activsoft S (Innospec)	0.35
	Glycerin		1.00
G	Sodium Lauroyl Methyl Isethionate	Iselux® (Innospec)	12.50
H	Cocamide MEA	Aminol CM Flakes (Innospec)	3.50
I	Cocamidopropyl Betaine	Mirataine BET C-30 (Rhodia)	10.00
J	Canola Oil	Rita Canola Oil (Rita)	10.00
	C12-15 Alkyl Benzoate	Finsolv® TN (Innospec)	2.00
K	Preservative, dye(s), fragrance		q.s.
L	Citric acid (50% solution)		q.s. to – pH 5.0-5.6

## Preparation Procedure

1. Dissolve the Natrlquest E30 in deionised water
2. Dissolve sodium chloride in deionised water system
3. With smooth mechanical agitation slowly blend Activsoft C-17 in water system. Mix until completely dispersed and uniform.
4. Slowly blend Miranol C2M Conc into system. Mix until uniform. Warm system to 50-60°C with smooth mechanical agitation.
5. Slowly blend Pureact WS Conc into heated system and mix until completely dissolved.
6. In a separate mixing vessel combine Activsoft S and Glycerin. Mix into a soft slurry that is completely uniform. Slowly blend this pre-mix slurry into main system and mix until uniform.
7. Slowly blend Iselux<sup>®</sup> into system. Mix until uniform.
8. Slowly blend Aminol CM flakes into system. Mix until uniform, Remove heat.
9. Slowly blend Mirataine BET C-30 into system. Mix until uniform.
10. In a separate mixing vessel combine canola oil and Finsolv<sup>®</sup> TN. Mix until uniform and blend into main system with smooth agitation.
11. Add compatible fragrance, dye(s) and preservative.
12. Adjust pH of system to 5.0-6.0 with citric acid solution (50% Aq.) as required. The system should thicken noticeably with the pH adjustment. Mix for at least 30 minutes to reach final consistency.

*Technology invented by*

**HUNTSMAN**

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