



Amphi[®] Sophorolipids

High-activity, multifunctional biosurfactants for use in agricultural adjuvants.

Class Sophorolipids

TSCA Certified*



NATURAL

USDA certified as 100% biobased



SUSTAINABLE

Readily biodegradable with industry-low toxicity



GENTLE

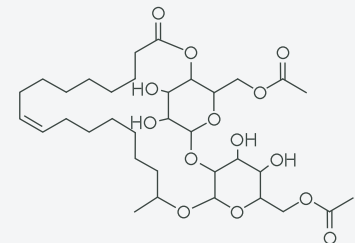
Safe and mild at use level without sacrificing performance



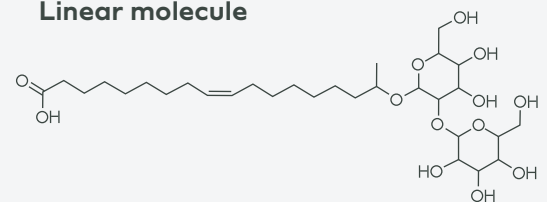
MULTIFUNCTIONAL

Non-ionic and anionic uses, can act as primary or secondary surfactants

Lactonic molecule



Linear molecule



UNMATCHED

in Performance and Sustainability

- ✓ High activity levels
- ✓ Lower usage rates
- ✓ Replace petrochemical surfactants
- ✓ Less water used in manufacturing
- ✓ Higher efficacy
- ✓ Low carbon footprint

FREE from

- ✗ Palm oil
- ✗ 1, 4-dioxane
- ✗ Ethylene oxide
- ✗ Formaldehyde
- ✗ Proposition 65 chemicals

*Amphi[®] CL & CH TSCA pending

Applications

Amphi® biosurfactants are versatile solutions with unique properties:

- ✓ **Wide HLB 6–12**
- ✓ **Surface tension reduction**
- ✓ **Low CMC**
- ✓ **Small micelle size**
- ✓ **Non-ionic and anionic character**

In formulations, Amphi® enhances performance:



WETTING

Promotes excellent spreading through contact angle reduction and a low CMC



EMULSIFIER

Low HLB and High HLB ingredients allow for matched-pair blending



DISPERSANT

Supports small particle size and micro-nutrient particles



VERSATILE

Hard water, salty water, cold water pH stability for in-tank and in-can use in the field

Formulating the Future:

Effective date: January 9, 2023

Parameter	Test	Amphi® M	Amphi® CL	Amphi® CH
Appearance	QC 017	Translucent to clear, amber liquid	Translucent to clear, amber liquid	Translucent to clear, amber liquid
Odor	QC 016	Odorless to slight acidic or sweet smell	Odorless to slight acidic or sweet smell	Odorless to slight acidic or sweet smell
Total sophorolipid content (wt%)	QC 023	≥50	≥50	≥50
Residual oleochemicals (wt%)	AC 002	≤5	≤5	≤5
pH at 0.1% in DI water	QC 005	4.0-5.5	4.0-5.0	4.5-5.5