

Soy-Based Cationic Surfactant

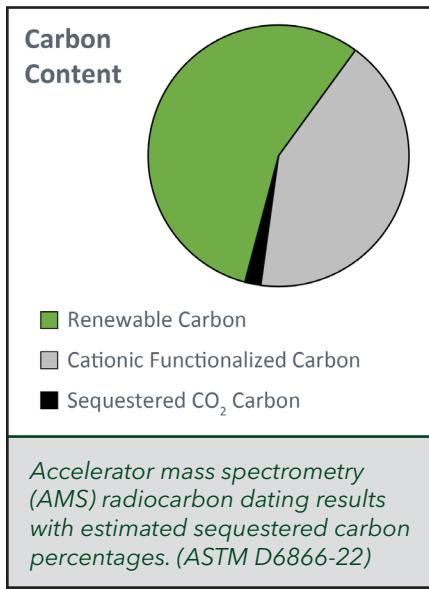
Surfactants are compounds that decrease the surface tension between materials. Surfactants may act, for example, as cleaning agents by making the unwanted substance easier to remove. Cationic surfactants are particularly effective in a wide range of applications, including coatings, textiles, metals, and water purification. However, these compounds are increasingly revealed to have hazardous properties and to persist in the environment after disposal.

Airable Research Lab has synthesized a bio-based cationic surfactant that can replace more toxic products. The Airable product provides a secondary environmental benefit: a unique technology that sequesters greenhouse gases by consuming CO₂ in synthesis.

THE TECHNOLOGY

Soybean oil is functionalized to impart water solubility characteristics. The oil treatment also allows the oil to absorb and sequester CO₂, a primary greenhouse gas. The result is a bio-based cationic surface-acting agent.

To determine how much of the carbon chemistry is bio-based (vs. fossil-fuel-derived) carbon, researchers conducted radiocarbon dating (see carbon content chart).



POTENTIAL APPLICATIONS

- Surface cleaning
- Dispersants / emulsifiers
- Oil and gas recovery

BENEFITS

- High foaming
- Surface tension of 37 dynes/cm
- Bio-based, with 57% renewable carbon
- 8 %wt CO₂
- High solubility, critical micelle concentration of 0.1 % wt. in water

