

DOW SUSTAINABLE TERGITOL™ NONIONIC SURFACTANTS IN INSTITUTIONAL LAUNDRY CLEANING

ECOSURF™ SA series, TERGITOL™ 15-S series and BA series enable you to formulate high performance laundry cleaning indetergency, wetting and whiteness maintenance, while helping achieve the desired foam and concentration profile.

ECOSURF™ SA & TERGITOL™ 15-S series are high performance primary surfactants while TERGITOL™ BA series are effective assecondary surfactants to improve emulsification in given laundry formulation.

Physical Properties

	ECOSURF™ SA-7	ECOSURF™ SA-9	TERGITOL™ 15-S-7	TERGITOL™ 15-S-9	TERGITOL™ BA-6	TERGITOL™ BA-9
Actives (%)	100	100	100	100	100	100
HLB	10-12	11-13	12.1	13.3	11-12	13-14
Cloud Point, 1% aqueous (°C)	37	57	37	60	40	61
Pour Point (°C)	3	3	1	9	5	16
Surface Tension, 1% (mN/m)	29	29	30	30	30	31

Performance Comparison Chart for Laundry

Performance	ECOSURF™ SA	TERGITOL™ 15-S	Tridecyl C13 Alcohol Ethoxylate	Linear C12-14 Alcohol Ethoxylate
Whiteness Maintenance	++	+++	+	+++
Wetting	++	+++	+	+
Emulsification	+++	++	++	+
Low Foam Performance	+++	+	+	+
Handling / Stability	+++	+	+	+

+++ Excellent ++ Good + Moderate



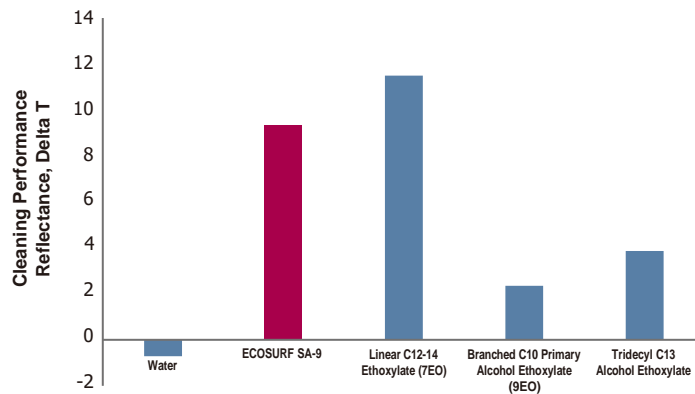
Environmental Profile

ECOSURF™ SA series, TERGITOL™ 15-S series and CA series help you to upgrade the environmental profile of your institutional laundry cleaning formulations.

Product Series	Environmental Profile
ECOSURF™ SA	Biobased hydrophobe Readily biodegradable (OECD 301) Listed on CleanGredients Approved for US EPA Safer Choice Formulations
TERGITOL™ 15-S	Readily biodegradable (OECD 301) Selected products listed on CleanGredients Approved for US EPA Safer Choice Formulations Extensive FDA clearances
TERGITOL™ BA	Excellent low aquatic toxicity (EC50 >10 mg/L) readily biodegradable (OECD 301)

Good Whiteness Maintenance

In Laundry, whiteness maintenance is a measure of fabric whiteness after many cycles of repeated laundry. This shows the detergent performance after repeated laundry. ECOSURF™ SA shows good whiteness maintenance while TERGITOL™ 15-S also shows similar performance. TERGITOL™ BA can be formulated together as secondary surfactant to improve oil emulsification, therefore enhancing the whiteness maintenance.

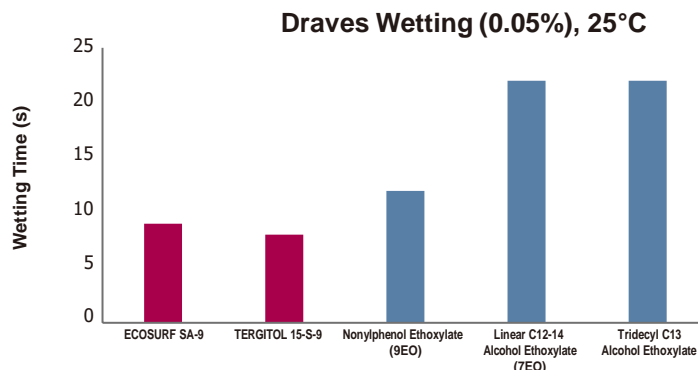


Test Conditions:

- Laundry cycles 15; Soil Type: Clay/Oil soil.
- 1g/L detergent, formulated with above ethoxylates as Primary surfactant & TERGITOL™ BA as secondary surfactant.

Excellent Wetting Properties

ECOSURF™ SA series and 15-S series exhibit excellent wetting property. Shorter wetting time in the standard Draves Wetting indicates a faster wetting in a typically short wash cycle. This enables the detergent to be more effective in soil removal.

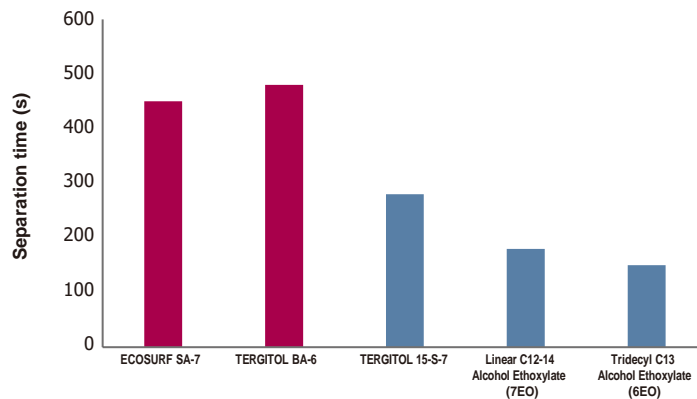


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General Business

Excellent Emulsification Property

ECOSURF™ SA series, TERGITOL™ 15-S series and BA series exhibit excellent oil emulsification property. The longer separation time shows that oily soil will stay longer in suspension during the wash cycle. This will reduce the soil from redepositing back on the fabric.

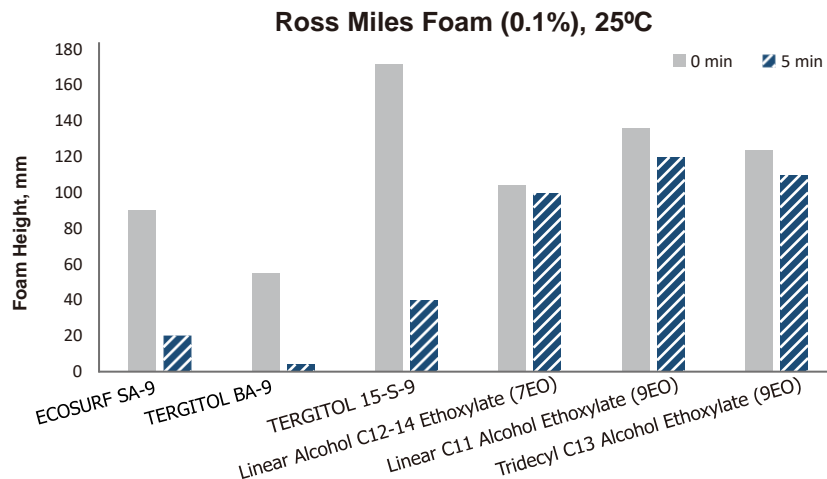


Test Conditions:

- 5g/L surfactant solution 20mL + 20mL liquid paraffin in 100mL cylinder.
- Vibrate the cylinder up and down for 10 times, standing for 1min, repeat the vibration 5 times.
- Record the phase separation time. Longer time means better emulsifying power.

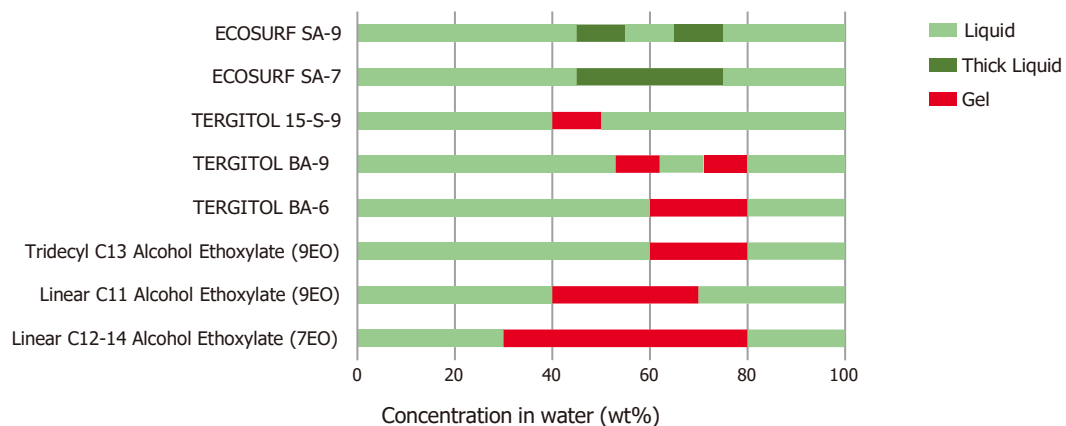
Excellent Foaming Properties

ECOSURF™ SA series and TERGITOL™ BA series are low foamers with rapid foam collapse. TERGITOL™ 15-S are flash foamers with fast foam collapse. This makes them ideal to be in Institutional Laundry formulations. Low foam/fast foam collapse surfactants enable you to develop the short rising time laundry cleaner.



Enable Concentrate Formulation

In Institutional Laundry, the preferred formulations are always concentrates. This presents a challenge to formulators. ECOSURF™ SA series is excellent here as there is NO gel range. TERGITOL™ BA and 15-S series exhibit NARROW gel range. When formulating at high concentrations, they can also function as thickeners for rheology improvement.



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General Business

Starting Formulations

High Alkaline Liquid Commercial Laundry

Ingredients	A	B	C	D
Water	23.6	25.0	27.0	28.8
ECOSURF™ SA-9 or TERGITOL™ 15-S-9	5.0	5.0	5.0	5.0
ACUSOL™ 810A	5.0	5.0	5.0	5.0
ACUSOL™ 445N	3.0	3.0	3.0	3.0
Sodium Silicate 3.22 (38%)	8.4	2.0	0.0	8.2
NaOH (50%)	55.0	60.0	60.0	50.0
Total	100	100	100	100

Note: Use hydrotrope surfactant TRITON™ H series if the formulation needs to be transparent

Light Duty Liquid Commercial Laundry

Ingredients	A	B	C
Water	82.5	76.7	66.7
ACUSOL™ 820	2.5	3.3	3.3
ECOSURF™ SA-9 or TERGITOL™ 15-S-9	5.0	10.0	10.0
NaOH (50%)	10.0	10.0	20.0
Total	100	100	100

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