

Stepan 

Alkoxylates

**Collaborative Chemistry.
Creative Solutions.**



MAKON[®] UD-Series



MAKON UD-Series

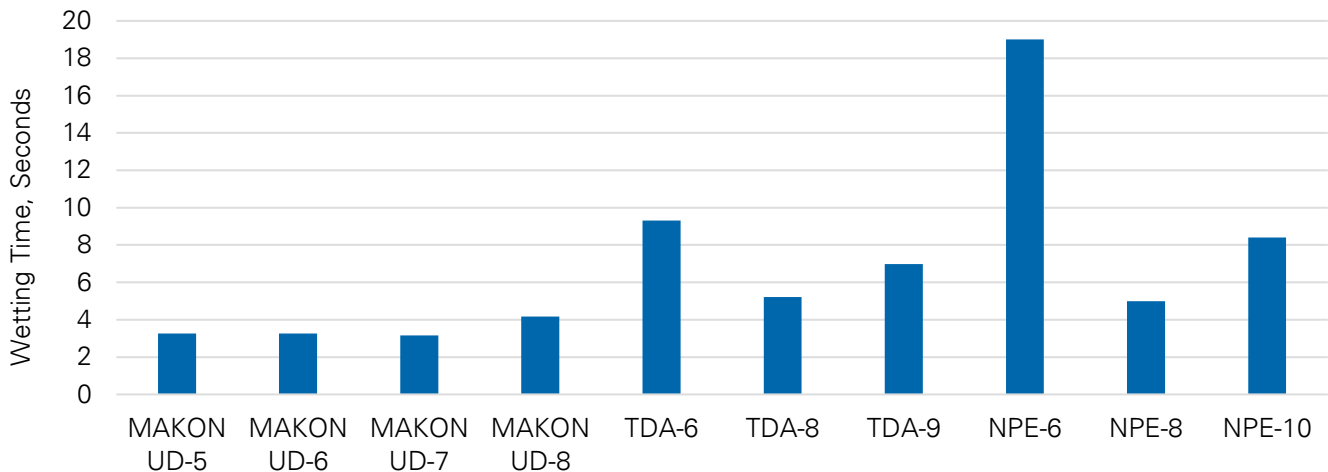
Stepan Company's **MAKON UD-Series** can be used to formulate a wide variety of products including degreasers, hard surface cleaners, industrial and institutional (I&I) laundry and other functional applications. These C11 branched alcohol ethoxylates are very effective wetting agents, demonstrate fast foam decay and are easy to handle.

Tradename	Applications	HLB
MAKON UD-5	I&I Cleaning, Wetting Agent	10.9
MAKON UD-6	I&I Cleaning, Wetting Agent	11.9
MAKON UD-7	I&I Cleaning, Fragrance Solubilizing, I&I Laundry, Wetting Agent	12.8
MAKON UD-8	Fragrance Solubilizing, Wetting Agent	13.2

Rapid Wetting

The **MAKON UD-Series** of products are fast wetters due to their branched carbon chain. They are faster wetters than nonylphenol ethoxylates (NPE) and tridecyl alcohol ethoxylates (TDA).

Draves Wetting at 25°C



Method: Draves wetting, ASTM D2188-10, 0.1 wt% in deionized water

Ease of Use

MAKON UD-7 and **MAKON UD-8** do not go through a gel phase in water, making them well-suited for high concentrate formulations.

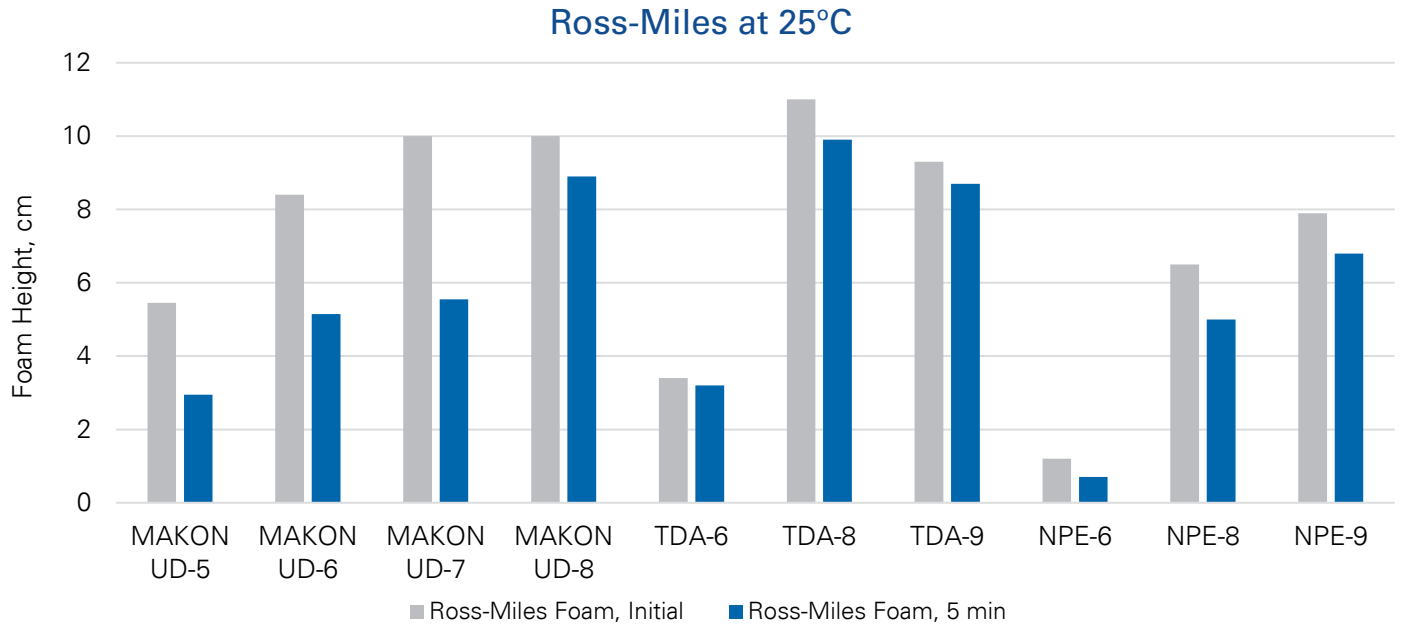
Liquid
 Gel
 Partial Gel
 Insoluble

Wt% in Water	10	20	30	40	50	60	70	80	90
MAKON UD-5	Insoluble	Insoluble	Insoluble	Liquid	Liquid	Partial Gel	Partial Gel	Liquid	Liquid
MAKON UD-6	Liquid	Liquid	Liquid	Liquid	Liquid	Partial Gel	Partial Gel	Liquid	Liquid
MAKON UD-7	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
MAKON UD-8	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid	Liquid
TDA-8	Liquid	Liquid	Liquid	Liquid	Liquid	Partial Gel	Partial Gel	Partial Gel	Liquid
TDA-9	Liquid	Liquid	Liquid	Liquid	Liquid	Partial Gel	Partial Gel	Partial Gel	Liquid
NPE-8	Liquid	Liquid	Liquid	Liquid	Liquid	Partial Gel	Partial Gel	Partial Gel	Liquid
NPE-9	Liquid	Liquid	Liquid	Partial Gel	Partial Gel	Partial Gel	Partial Gel	Liquid	Liquid

Method: 25°C gel phase in deionized water

Foam Profile

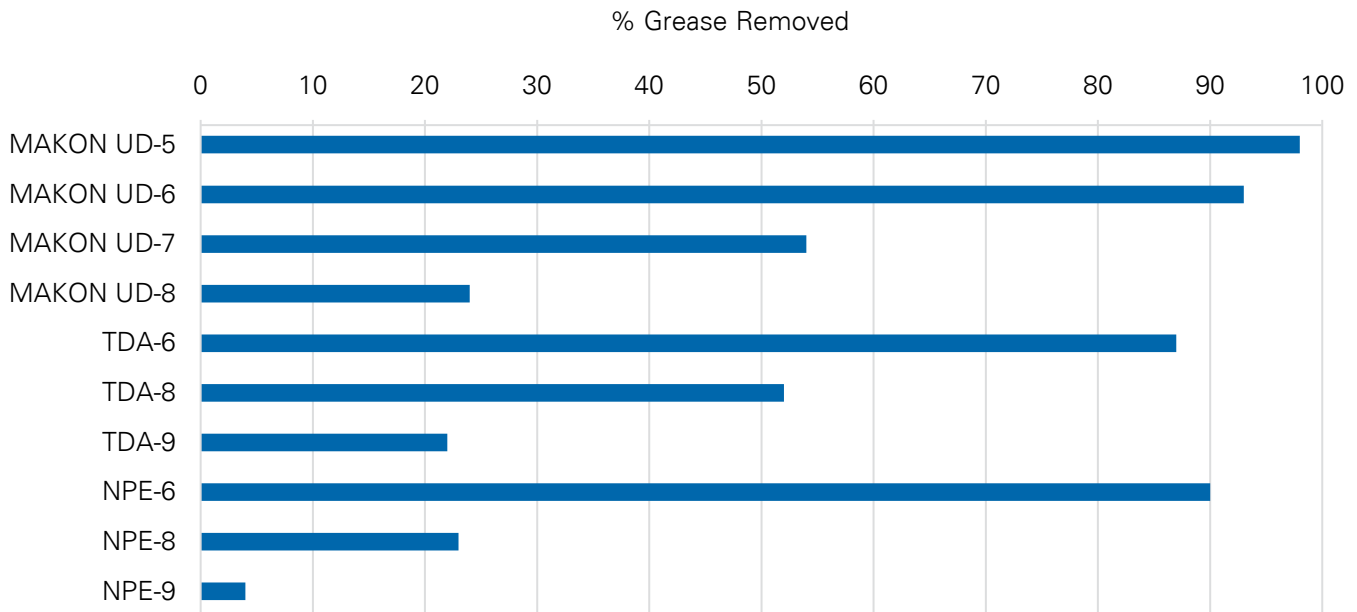
The **MAKON UD-Series** of products have good initial foam height with fast foam break. This quality is useful in applications such as industrial clean-in-place and laundry.



Method: Ross-Miles Foam Test, Stepan Method 010-0 (ASTM D1173-53, 2001), 0.1 wt% in deionized water

Heavy Duty Degreasing

MAKON UD-5 and **MAKON UD-6** are effective degreasers that cut through industrial-type soils.



Method: Immersion degreasing, lithium grease/used motor oil (50/50 by wt%), stainless steel, 22°C, 1000 RPM, 30 min, gravimetric analysis, required HLB for lithium grease (mixture of lithium stearate and lithium hydroxystearate) = 15 and petroleum oils = 10

Formulation: 1 wt% nonionic, 1 wt% potassium hydroxide (45%), 1 wt% sodium metasilicate

Solubility

Tradename	Deionized Water	Ethanol (>99%)	Isopropanol	Methanol	Ethylene Glycol	Propylene Glycol	Toulene	Kerosene	Mineral Oil (light)	Xylene	Perchloroethylene
MAKON UD-5	Dispersible, <10	>10	>10	>10	>10	>10	>10	Insoluble	Insoluble	>10	>10
MAKON UD-6	>10	>10	>10	>10	>10	>10	>10	Insoluble	Insoluble	>10	>10
MAKON UD-7	>10	>10	>10	>10	>10	>10	>10	Insoluble	Insoluble	>10	>10
MAKON UD-8	>10	>10	>10	>10	>10	>10	>10	Insoluble	Insoluble	>10	>10

Solutions evaluated at 25°C.

<10 indicates the surfactant forms a clear solution at less than 10 wt% in solvent.

>10 indicates the surfactant forms a clear solution at greater than 10 wt% in solvent.

Insoluble indicates the surfactant does not form a clear solution at 1 wt% or lower, and a bilayer is observed.

Dispersible indicates that a hazy solution is formed but no separation occurs.

Typical Properties

	MAKON UD-5	MAKON UD-6	MAKON UD-7	MAKON UD-8
Applications	I&I Cleaning, Wetting Agent	I&I Cleaning, Wetting Agent	I&I Cleaning, Fragrance Solubilizing, I&I Laundry, Wetting Agent	Fragrance Solubilizing, Wetting Agent
NPE Equivalent	NPE-6	NPE-8	NPE-9	NPE-10
TDA Equivalent	TD-6	TD-8	TD-9	TD-9
HLB	10.9	11.9	12.8	13.2
Molecular Weight, g/mol	394	438	482	525
Actives, %	100	100	100	100
Cloud Point, °C (°F), (1% aqueous)	<10 (50)	35 (95)	53 (128)	64 (147)
Cloud Point, °C (°F), (5g in 25g BDG ¹ 25%)	63 (145)	69 (156)	74 (165)	77 (171)
Pour Point, °C (°F)	4 (40)	9 (49)	12 (54)	12 (59)
Surface Tension (0.1% aqueous), dynes/cm	26.8	26.8	26.9	27.2
Critical Micelle Concentration, mg/L	198.2	251.4	304.6	357.8
Draves Wetting at 25°C (0.1 wt% aqueous), seconds	3	3	3	4
Ross-Miles, 0.1 wt%, Initial, cm	5.5	8.4	10.0	10.0
Ross-Miles, 0.1wt%, 5 min, cm	3.0	5.2	5.6	8.9

¹ BDG = Butyl Carbitol

Visit www.stepan.com/alkoxylates for Stepan's full product portfolio.

For further information, contact North America Technical Service at techserv@stepan.com or (800) 745-7837.

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December 2018