



BIODEGRADATION OF ALKANOLAMIDES

Applicable to these current Stepan products:

DREWPLAST® 154	NINOL® 0018	NINOL® 11-CM
NINOL® 128	NINOL® 1281	NINOL® 1285
NINOL® 1301	NINOL® 201	NINOL® 30-LL
NINOL® 40-CO	NINOL® 49-CE	NINOL® 50-LL
NINOL® 5020	NINOL® 5024	NINOL® 96-SL
NINOL® C-5	NINOL® CMP	NINOL® COMF-N
NINOL® GR	NINOL® LMP	NINOL® SCMP
STEPAN® SXS-LMMEA Blend	NINOL® CMEA-E	

Applicable to these inactive Stepan products:

NINOL® 1285	NINOL® 70-SL	NINOL® C12 LMP
NINOL® COMF	NINOL® L-5	NINOL® L-9
NINOL® SCDEA	NINOL® SMP	NINOL® SR-100
NINOL® C-2	NINOL® L-2	NINOL 55-LL

Biodegradation Information:

Alkanolamides, discovered in 1937, gradually found acceptance in a number of specialty applications. By the 1950's, practically all of the light and heavy duty detergents, shampoos, and specialty detergent formulations contained alkanolamides. Because of the extensive use, their ability to biodegrade is very critical.

Laboratory studies have shown that both ethoxylated and nonethoxylated alkanolamides are readily biodegradable. Lauric monoethanolamides and diethanolamides, as well as ethoxylated coco monoethanolamides, will undergo primary biodegradation (100% in 3 hours to 3 days) while the ultimate biodegradation was determined to be 93% in 15 days (River Water Dieaway Test, Warburg Respirometer). OECD Modified Closed Bottle Testing of an alkanolamide product, NINOL® 11-CM, showed this product to be readily biodegradable.

References:

* Swisher, R.D., "Surfactant Biodegradation", Vol. 18, 2nd Edition, Marcel Dekker, Inc., 1987, p. 862, 871.

* Knaggs, E.A., "Alkylolamides in 'Soft' Detergents", Soap and Chemical Specialties, Dec. 1964, January 1965.

* Asahara, T, et. al, "Biodegradation Test Method for Nonionic Surfactants", Detergent Comm., Japan Oil Chemical 80c, 21(1), 1972, pp. 33-36.

* Stepan Study No. 86-007A.

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