



## ECOTOXICOLOGY OF ALCOHOL ETHOXYLATES

### Applicable to these current Stepan products:

BIO-SOFT® 35-7	BIO-SOFT® AE-3	BIO-SOFT® E-670
BIO-SOFT® E-678	BIO-SOFT® E-840	BIO-SOFT® E-847
BIO-SOFT® EC-600	BIO-SOFT® EC-639	BIO-SOFT® EC-690
BIO-SOFT® EN-600	BIO-SOFT® EN-695	BIO-SOFT® EN8-90
BIO-SOFT® ET-650	BIO-SOFT® FF-400	BIO-SOFT® FF-600
BIO-SOFT® GSB-9	BIO-SOFT® N-1200	BIO-SOFT® N-400
BIO-SOFT® N-600	BIO-SOFT® N-900	BIO-SOFT® N-901
BIO-SOFT® N-905	BIO-SOFT® N1-3	BIO-SOFT® N1-5
BIO-SOFT® N1-7	BIO-SOFT® N1-73B	BIO-SOFT® N1-9
BIO-SOFT® N23-3	BIO-SOFT® N23-5	BIO-SOFT® N23-6.5
BIO-SOFT® N25-12	BIO-SOFT® N25-3	BIO-SOFT® N25-7
BIO-SOFT® N25-9	BIO-SOFT® N45-7	BIO-SOFT® N91-2.5
BIO-SOFT® N91-6	BIO-SOFT® N91-8	BIO-SOFT® TD-630
MAKON® 30	MAKON® 50	MAKON® DA-6
MAKON® NF-12	MAKON® TD-12	MAKON® TD-18
MAKON® TD-3	MAKON® TD-30	MAKON® TD-50
MAKON® TD-6	MAKON® TD-8	MAKON® TD-9
p4mX® 1-5	p4mX® 1-7	p4mX® 25-7
p4mX® 25-79	p4mX® 400	p4mX® 900
p4mX® 91-6	p4mX® 91-8	POLYSTEP® TD-129
POLYSTEP® TD-189	POLYSTEP® TD-3	POLYSTEP® TD-507
		POLYSTEP® TD-6
		STEPANTEX® DA-6
		STEPANTEX® TD-560
		STEPANTEX® TD-630
		p4mX® 1-9
		p4mX® 23-6.5
		p4mX® 24-23
		p4mX® 24-24
		p4mX® 24-5
		p4mX® 24-7
		p4mX® 24-9
		p4mX® 25-9
		p4mX® 91-2.5
		p4mX® 25-3

Applicable to these inactive Stepan products:

BIO-SOFT® AE-1	BIO-SOFT® AE-2	BIO-SOFT® EA-10
BIO-SOFT® EA-8	POLYSTEP® AE-120	

## Toxicological Information:

<u>Test/Conditions</u>	<u>Results/Classification</u>	<u>References*</u>
Acute Aquatic Toxicity to Fish (96 hr.)	LC50 $\leq 1$ to $\geq 10$ mg/l	HERA & EHSMS
Acute Aquatic Toxicity to Invertebrates (D. magna) (48 hr.)	EC50 $\leq 1$ to $\geq 10$ mg/l	HERA & EHSMS
Acute Aquatic Toxicity (alga) (96 hr.)	ErC50 $\leq 1$ to $\geq 10$ mg/l	HERA & EHSMS
Chronic Aquatic Toxicity to Fish	NOEC $\geq 0.1$ - 10 mg/L	HERA & EHSMS
Chronic Aquatic Toxicity to Invertebrates (D. magna)	ErC10 (NOEC) $\leq 0.1$ to 10 mg/L	HERA & EHSMS
Chronic Aquatic Toxicity (alga) (72-hour survival/growth)	ErC10 (NOEC) $\leq 0.1$ to 10 mg/L	HERA & EHSMS
<p><b>Discussion:</b>                      Toxicity of Alcohol Ethoxylates (AE) generally decreases with increasing ethylene oxide (EO) and decreasing chain length (decreasing liposolubility). Branched alkyl chains are less toxic than linear alkyl chains; secondary attachment of the alcohols reduces toxicity compared to primary alcohols. Surfactants containing EO/PO (propylene oxide) block copolymers are less toxic than those containing only EO.</p>		

LC50 = lethal concentration to 50% of organisms

EC50 = effective concentration to 50% of organisms

ErC50 = effective concentration (growth rate) to 50% of organisms

NOEC = No Observed Effect Concentration

## References:

\*Human and Environmental Risk Assessment (HERA) on ingredients of European household cleaning products, 2009.

\*Talmage, S.S., "Environmental and Human Safety of Major Surfactants (EHSMS)" 1994.

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