



## ECOTOXICOLOGY OF ALCOHOL ETHOXYLATES

### Applicable to these current Stepan products:

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	POLYSTEP® TD-129
POLYSTEP® TD-189	POLYSTEP® TD-3	POLYSTEP® TD-507
POLYSTEP® TD-6	STEPANTEX® DA-6	STEPANTEX® TD-560
STEPANTEX® TD-630		

### 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	LC <sub>50</sub> = 0.29 - 72 mg/l	EHSMS <sup>1</sup>

(D. magna) (48 hr.)		
Acute Aquatic Toxicity (bluegill sunfish) (96 hr.)	LC <sub>50</sub> = 0.7 – 12.3 mg/l	EHSMS
Acute Aquatic Toxicity (fathead minnow) (96 hr.)	LC <sub>50</sub> = 0.48 – 13 mg/l	EHSMS
Acute Aquatic Toxicity (rainbow trout) (96 hr.)	LC <sub>50</sub> = 0.9 – 2.7 mg/l	EHSMS
Acute Aquatic Toxicity (golden orfe) (96 hr.)	LC <sub>50</sub> = 1.8 – 4.5 mg/l	EHSMS
Acute Aquatic Toxicity (algae) (96 hr.)	EC <sub>50</sub> (growth) = 0.9 - 39 mg/l	EHSMS
Chronic Aquatic Toxicity (D. magna) (7-day survival/growth)	*NOEC = 1-4 mg/l	EHSMS
Chronic Aquatic Toxicity (fathead minnow) (7-day survival/growth)	NOEC = 0.4-4 mg/l	EHSMS

**Discussion:**

Toxicity of Alcohol Ethoxylates (AE) generally decreases with increasing ethylene oxide (EO) 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.

**References:**

1Talmage, S.S., "Environmental and Human Safety of Major Surfactants" 1994.

\*NOEC = No Observed Effect Concentration

BIO-SOFT® ; MAKON® ; POLYSTEP® ; STEPANTEX® are registered trademarks of Stepan Company.

Last Update: 2.9.12

Revision Reference: TX052-08

Nothing contained herein grants or extends a license, express or implied, in connection with patents, issued or pending, of the manufacturer or others. The information contained herein is based on the manufacturer's own study and the works of others. The manufacturer makes no warranties, expressed or implied, as to the accuracy, completeness, or adequacy of the information contained herein. The manufacturer shall not be liable (regardless of fault) to the vendee's employees, or anyone for any direct, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy or furnishing of such information.