



ECOTOXICOLOGY OF ALPHA OLEFIN SULFONATES (AOS)

Applicable to these current Stepan products:

BIO-TERGE® AS-40 CG BIO-TERGE® AS-40A POLYSTEP® A-18 BIO-TERGE® AS-40 BIO-TERGE® AS-40 CG-P STEPANTAN® AS-18	BIO-TERGE® AS-40 CG-PN BIO-TERGE® AS-40K POLYSTEP® A-18S POLYSTEP® A-18-LV BIO-TERGE® AS-40 CG-K	BIO-TERGE® AS-40 HA BIO-TERGE® AS-90 BEAD STEPANTAN® AS-1216 STEPANTAN® AS-12
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Applicable to these inactive Stepan products:

STEPANTAN® 39N STEPANFLO® 30	STEPANTAN® AS-40 STEPANFLO® 70	1618 AOS
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Toxicological Information:

<u>Test/Conditions</u>	<u>Results/Classification</u>	<u>References</u>
Acute Aquatic Toxicity (static) (goldfish) (48 hr.)	LC ₅₀ (Lethal Concentration) = 6.9 mg/l (moderately toxic)	EHSMS ¹ , CIR ²
Acute Aquatic Toxicity (static) (golden orfe) (96 hr.)	LC ₅₀ = 3.4 mg/l (moderately toxic)	EHSMS
Acute Aquatic Toxicity (static) (fathead minnow) (24 hr.)	LC ₅₀ = 8.2 mg/l (moderately toxic)	EHSMS
Acute Aquatic Toxicity (static) (guppy) (96 hr.)	LC ₅₀ = 9.7 mg/l (moderately toxic)	EHSMS
Acute Aquatic Toxicity (continuous) (harlequin fish) (96 hr.)	LC ₅₀ = 3.3 mg/l (moderately toxic)	EHSMS
Acute Aquatic Toxicity (static) (brown trout) (96 hr.)	LC ₅₀ = 3.1 mg/l (moderately toxic)	EHSMS
Acute Aquatic Toxicity (static) (rainbow trout) (48 hr.)	LC ₅₀ = 3.5 mg/l (moderately toxic)	EHSMS

<u>Test/Conditions</u>	<u>Results/Classification</u>	<u>References</u>
Acute Aquatic Toxicity	LC ₅₀ = 16.6 mg/l	EHSMS

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(static) (<i>D. magna</i>) (24 hr.)	(slightly toxic)	
Acute Aquatic Toxicity (green algae) (72 hr.)	EC ₅₀ (Effective Concentration) = 45 mg/l (slightly toxic)	EHSMS
Embryonic Studies (fathead minnow)	No effect on survival of hatched eggs was observed at 1.8 mg/l	EHSMS
Chronic Aquatic Toxicity (midges) (2-generation exposure)	No effect on first or second generation was found at 4.5 mg/l	EHSMS
Germination/Growth Study (plants) (does: 10, 25 and 40 mg/l)	No significant difference in germination /growth up to 40 mg/l	EHSMS

Discussion:

Toxicity values do not appear to vary greatly with fish species or test conditions. The above results suggest that *D. magna* are more tolerant to alpha olefin sulfonates than the fish species tested. One plant study concerning the toxicity of AOS to plants showed no significant effect on germination or growth (tomato, barley, bean plants) when watered with AOS solution, up to 40 mg/l.

References:

1Environmental and Human Safety of Major Surfactants (EHSMS), Vol. 1, Anionic Surfactants, Part 4. Alpha Olefin Sulfonates. Final Report to: The Soap and Detergent Association, August 1993.

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