

Telomer Research Program



Clariant



Report Title: Aqueous Stability of 8-2 Telomer B Alcohol as a Function of pH

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Study Dates:

Study Initiation Date:	6-May-2002
Experimental Start Date:	15-July-2002
Experimental Completion Date:	9-September-2002
Study Completion Date:	25-March-2003

Study Objective:

1. To determine if a compound is stable in an aqueous environment,
2. To provide a material mass balance that accounts for greater than 90% of the initially applied test substance.

Materials and Methods

The aqueous stability of the test substance 8-2 Telomer B Alcohol (i.e., 8-2 TBA; CAS Name: 1-Decanol, 3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptafluoro-; CAS# 678-39-7) in sterile aqueous solutions buffered at pH 1.2, 4.0, 7.0, and 9.0 was determined. Test systems consisted of the test substance in aqueous buffered solutions in sterilized containers. The test system was incubated in the dark at 50°C at pH 4, 7, and 9 and at 37°C at pH 1.2. An unstable test substance is indicated by a 10% or greater loss of test substance within 5 days.

Findings

The test substance, 8-2 TBA, is stable under the conditions of the test at pH 4, 7, and 9 at 50°C and pH 1.2 at 37°C.

Data table follows.

TABLE 1.

CONCENTRATION OF 8-2 TBA AT PH 1.2 AT 37°C AND AT PH 4, 7, AND 9 AT 50°C AFTER 0 AND 5 DAYS

pH	Time	Date	8-2 TBA Average Concentration	Difference between Day 5 and Day 0†
	Day		ug L ⁻¹	%
1.2	0	21-Aug-2002	183 ± 10.9‡	
1.2	5	26-Aug-2002	195 ± 8.00	+6.4
4	0	24-Jul-2002	156 ± 4.22	
4	5	29-Jul-2002	143 ± 10.0	-8.7
7	0	21-Aug-2002	199 ± 9.12	
7	5	26-Aug-2002	181 ± 12.6	-9.5
9	0	21-Aug-2002	169 ± 5.99	
9	5	26-Aug-2002	175 ± 10.5	+3.5

† Difference between Day 5 and Day 0, % = $(C_5 - C_0)/((C_5 + C_0)/2) \times 100$, where:

C_0 = 8-2 TBA concentration at Day 0

C_5 = 8-2 TBA concentration at Day 5

‡ Mean ± standard deviation; n = 4.

Conclusion

The time in which 50% of the test substance will transform in water at environmentally relevant pH ranges and temperatures is greater than one year ($t_{1/2} > 1$ year), because >90% of the test substance added at Day 0 was recovered after 5 days at pH 1.2 and 37°C and pH 4.0, 7.0, and 9.0 and 50°C.

Publications / Presentations

SETAC North America 2002 Platform Presentation