



Environmental Leadership

STL

**A Non-Regulatory Report for
LANXESS LTD**

**The Acute Toxicity of
ADDITIN RC 2317 to the
Marine Alga *Skeletonema costatum*
in a Non-Regulatory Screening Study**

Study No.: STL042746

November 2004

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Study No: STL042746

SUMMARY

In study STL042746 a sample of ADDITIN RC 2317 was assessed for its potential toxicity to the marine alga *Skeletonema costatum* in a static test over 72 hours according to the procedure described in EN ISO 10253 : 1998 and as detailed in STL Runcorn SOP III.19.

Water Accomodated Fractions (WAF's) containing concentrations of ADDITIN RC 2317, were prepared as a screening test at 1.0, 10.0, 100.0 and 1000.0 mg l⁻¹. Cultures of *Skeletonema costatum* were exposed to determine the concentration, which inhibited algal growth rate by 50% over 72 hours (EC₅₀). The results of the study are summarised in the table below.

Summary Table Percentage inhibition of growth rate (I_{μi}) values determined for each test media containing ADDITIN RC 2317, in study STL042746.

Exposure Period (Hours)	Test material concentration (mg l ⁻¹)				
	Control	1.0	10.0	100.0	1000.0
72		2.0	15.3	>100.0	>100.0

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Comments: Microscopic examination indicated no unusual cell growth or deformity at any of the test concentrations. Algal cells were numerated in this study using the Coulter Z2 Particle Analyzer.

The lowest concentration of test material producing complete (100%) inhibition of the test culture was determined to be 100.0 mg l⁻¹ in this study.

All parameters measured in this study lay within the acceptable tolerance limits.

1.0 INTRODUCTION

This study was undertaken by STL Runcorn to determine the potential toxicity of ADDITIN RC 2317 to the marine alga *Skeletonema costatum*. The study provides data to enable an assessment of the potential toxicity of the test material to aquatic life to be conducted.

2.0 TEST MATERIAL

- 2.0.1 Identification:** ADDITIN RC 2317
- 2.0.2 Supplied by:** LANXESS LTD
- 2.0.3 STL Runcorn reference:** 423216
- 2.0.4 Date of receipt:** 28th September 2004
- 2.0.5 Characterisation:** No characterisation of test material was carried out, no details were supplied by the sponsor. Characterisation of test material is the responsibility of the sponsor.

3.0 TEST SPECIES

- 3.0.1 Name:** *Skeletonema costatum* CCAP1077/5.
- 3.0.2 Supplier:** Culture Collection of Algae and Protozoa, Dunstaffnage.
- 3.0.3 Culturing method:** Stock cultures were maintained in Guillard's f/2 medium + Si in accordance with STL Runcorn SOP I.18.

4.0 TEST CONDITIONS

- 4.0.1 Test media:** Guillard's f/2 medium + Si.
- 4.0.2 Behaviour in seawater:** The sample was found to be insoluble in seawater and so Water Accomodated Fractions (WAF's) were prepared using the test media.

- 4.0.3 Test conditions:** Two replicate control flasks and two replicate flasks at each test concentration, were prepared with algae added from a culture concentrate to give an initial algal cell concentration of approximately 4408 cells per ml as determined using the Coulter counter. The culture flasks were incubated in a rotary incubator at a target temperature of $20 \pm 2^\circ\text{C}$ under continuous white light (6000-10000 lux) for 72 hours.
- 4.0.4 Parameters:** The pH of the highest concentration used in this study was found to be within the acceptable limits of a definitive test, 8.0 ± 1.0 , as detailed in SOP III.19.
- 4.0.5 Cell density measurement:** 5 -10 ml sub-samples of the contents of each test vessel were removed after 72 hours of incubation and cell numbers determined according to STL Runcorn SOP III.19.
- 4.0.6 Test dates:** Exposures were conducted between the 12th October and 15th October 2004.

5.0 RESULTS

Table 1 Mean cell numbers (per ml) determined for each control and test media containing ADDITIN RC 2317, in study STL042746.

Exposure Period (Hours)	Test material concentration (mg l^{-1})				
	Control	1.0	10.0	100.0	1000.0
0	4408	4408	4408	4408	4408
72	94778	89271	59321	1315	756

Appendix 1 pH data for media in control and test flasks in study STL042746.

Test material Conc.	Hours			
(mg l ⁻¹)	0	24	48	72
0	8.20			8.46
1.0	8.60			8.28
10.0	8.60			8.35
100.0	8.60			8.20
1000.0	8.61			8.17

Appendix 2 Temperature (°C) data for media in control and test flasks in study STL042746.

Test material conc.	Hours			
(mg l ⁻¹)	0	24	48	72
0	19.5			20.0
1.0	19.5			20.0
10.0	19.5			20.0
100.0	19.5			20.0
1000.0	19.5			20.0

6.0 ARCHIVING

Copies of the Final Report and Study Plan together with all data generated in the course of the study will be archived on site in accordance with STL Runcorn SOP IV.11. A sample of the test material will be archived on site for one year from the date of receipt, in accordance with STL Runcorn SOP IV.11, after which time the material will be returned to the client.

7.0 REFERENCES

EN ISO 10253 : 1998 Water Quality – Marine Algal Growth Inhibition Test with *Skeletonema costatum* and *Phaedodactylum tricorutum*

OECD Guidelines for the Testing of Chemicals Method 201 – Alga Growth Inhibition Test

DOCUMENT RELEASE AUTHORISATION

Title: The Acute Toxicity of ADDITIN RC 2317 to the
Marine Alga *Skeletonema costatum*

Study No: STL042746

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Contact: Dr Colin Gatward

STUDY DIRECTOR'S STATEMENT

I, the undersigned, hereby declare that this study was performed under my supervision
In accordance with the methods detailed in the attached document and in accordance
with the OECD Principles. This report constitutes a true and faithful account of the
procedures adopted and the results obtained.



Neal Rowlands
Study Director

02.11.04

Date

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