



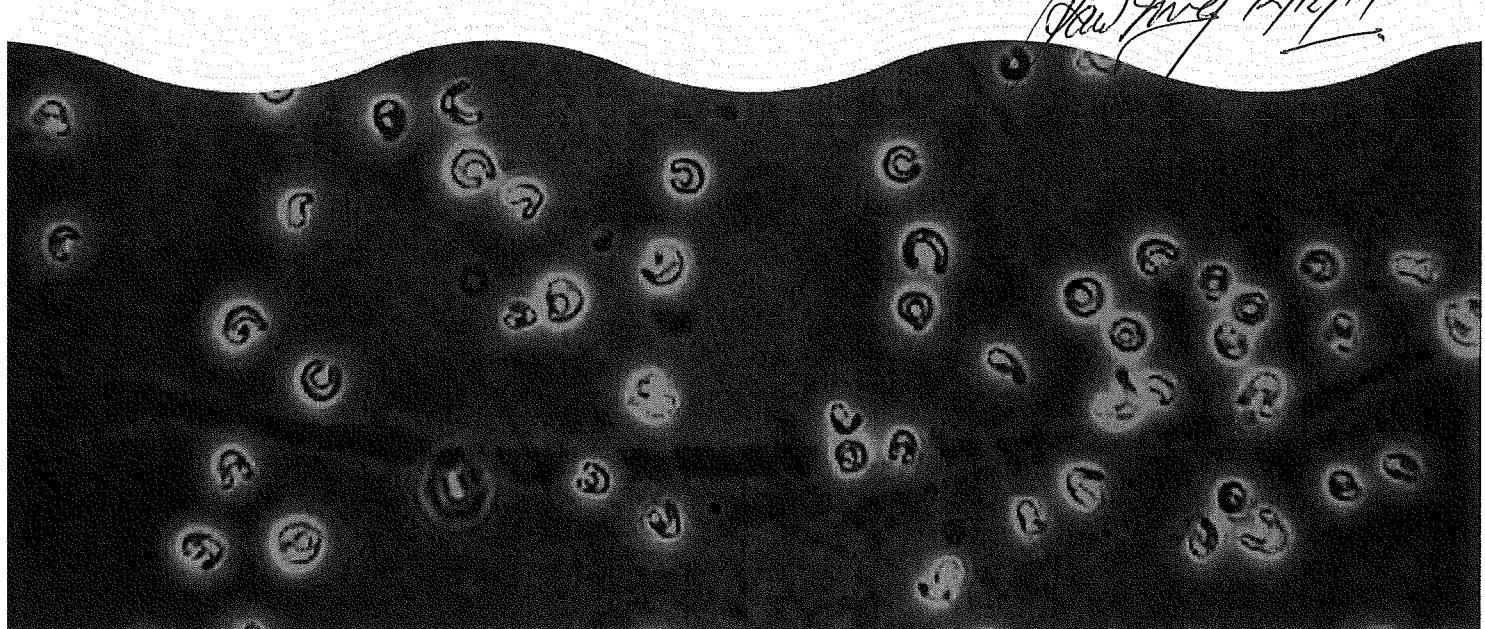
## Toxicity Assessment of Oil Spill Dispersants Finasol OSR51 [REDACTED]

Total Fluids SAS

Test Report

October 2013

This version has had parts unrelated to the Finasol/51 redacted. It makes no difference to the required Finasol/51 results.  
Dowling 12/12/14





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## Toxicity Test Report: TR1061/1

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<b>Client:</b>	Total Fluids SAS 24, Cours Michelet – La Défense 92069 Paris La defense- Cedex, France	<b>ESA Job #:</b> PR1061
<b>Attention:</b>	John-Philippe Robinson	<b>Date Sampled:</b> Not supplied
<b>Client Ref:</b>	4505225065	<b>Date Received:</b> 13 September 2013
		<b>Sampled By:</b> Client
		<b>ESA Quote #:</b> PL1061_q02

Lab ID No.:	Sample Name:	Sample Description:
6279	Finasol OSR 51	Chemical received at room temperature in apparent good condition

<b>Test Performed:</b>	48-hr larval development test using the mussel <i>Mytilus galloprovincialis</i>
<b>Test Protocol:</b>	ESA SOP 106 (ESA 2011), based on APHA (1998) and USEPA (1996)
<b>Test Temperature:</b>	The test was performed at 20±1°C.
<b>Deviations from Protocol:</b>	The test was extended to 72 hours.
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding a weighed aliquot of [REDACTED] sample 6279 'Finasol OSR 51' into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared samples.
<b>Source of Test Organisms:</b>	Farm-reared, Mercury Passage, TAS
<b>Test Initiated:</b>	16 October 2013 at 1430h

Sample 6279: Finasol OSR 51	
Concentration (mg/L)	% Normal larvae (Mean ± SD)
FSW Control	75.8 ± 5.9
1.3	74.5 ± 3.7
2.5	75.5 ± 6.6
5.0	76.0 ± 5.4
10.0	73.8 ± 4.7
20.0	1.0 ± 2.0 *

72-hr EC10 = 11.3 (9.0-12.8)mg/L  
72-hr EC50 = 13.9 (12.0-15.2)mg/L  
NOEC = 10.0mg/L  
LOEC = 20.0mg/L

\*Significantly lower percentage of normally developed larvae compared with the FSW Control (Steel's Many-One Rank Test, 1-tailed, P=0.05)



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## Toxicity Test Report: TR1061/1

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QA/QC Parameter	Criterion	This Test	Criterion met?
FSW Control mean % normal	≥70%	75.8%	Yes
Reference Toxicant within cusum chart limits	6.7-18.2µg Cu/L	8.3µg Cu/L	Yes

Test Report Authorised by:

Dr Rick Krassoi, Director on 5 November 2013

Results are based on the samples in the condition as received by ESA.

**NATA Accredited Laboratory Number: 14709**

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**Citations:**

APHA (1998) *Standard Methods for the Examination of Water and Wastewater*. 20<sup>th</sup> Ed. American Public Health Association, American Water Works Association and the Water Environment Federation, Washington, DC, USA.

ESA (2011) *Bivalve Larval Development Test*. Issue No. 10. Ecotox Services Australasia, Sydney, NSW

USEPA (1996) *Bivalve acute toxicity test (embryo larval) OPPTS 850.1055. Ecological Effects Test Guidelines*. United States Environmental Protection Agency. Prevention, Pesticides and Toxic Substances. EPA/712/C-96/137.



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## Toxicity Test Report: TR1061/2

(Page 1 of 2)

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<b>Client:</b>	Total Fluids SAS 24, Cours Michelet – La Défense 92069 Paris La defense- Cedex, France	<b>ESA Job #:</b> PR1061
<b>Attention:</b>	John-Philippe Robinson	<b>Date Sampled:</b> Not supplied
<b>Client Ref:</b>	4505225065	<b>Date Received:</b> 13 September 2013

Lab ID No.:	Sample Name:	Sample Description:
6279	Finasol OSR 51	Chemical received at room temperature in apparent good condition

<b>Test Performed:</b>	72-hr marine algal growth test using <i>Nitzschia closterium</i>
<b>Test Protocol:</b>	ESA SOP 110 (ESA 2011), based on Stauber <i>et al.</i> (1994)
<b>Test Temperature:</b>	The test was performed at 21±1°C.
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding a weighed aliquot of [REDACTED] sample 6279 'Finasol OSR 51' into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared samples.
<b>Source of Test Organisms:</b>	In-house culture, originally sourced from CSIRO Microalgae Supply Service, TAS
<b>Test Initiated:</b>	1 October 2013 at 1445h

Sample 6279: Finasol OSR 51	
Concentration (mg/L)	Cell Yield (Mean number of cells/mL $\times 10^4 \pm SD$ )
FSW Control	110.9 ± 6.7
1.3	101.7 ± 12.0
2.5	104.6 ± 13.3
5.0	106.4 ± 9.2
10.0	102.3 ± 10.6
20.0	85.2 ± 5.1 *

72-hr IC10 = 11.5mg/L\*\*  
72-hr IC50 = >20.0mg/L  
NOEC = 10.0mg/L  
LOEC = 20.0mg/L

\*Significantly lower cell yield compared with the FSW Control (Bonferroni t Test, 1-tailed, P=0.05)  
\*\*95% confidence limits are not reliable



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## Toxicity Test Report: TR1061/2

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QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean cell density	$\geq 16.0 \times 10^4$ cells/mL	$111.9 \times 10^4$ cells/mL	Yes
Control coefficient of variation	<20%	6.1%	Yes
Reference Toxicant within cusum chart limits	1.0-14.1 µg Cu/L	4.3 µg Cu/L	Yes

Test Report Authorised by:

Dr Rick Krassoi, Director on 5 November 2013

Results are based on the samples in the condition as received by ESA.

NATA Accredited Laboratory Number: 14709

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### Citations:

ESA (2011) SOP 110 – *Marine Algal Growth Test*. Issue No. 8. Ecotox Services Australasia, Sydney NSW

Stauber, J.L., Tsai, J., Vaughan, G.T., Peterson, S.M. and Brockbank, C.I. (1994) Algae as indicators of toxicity of the effluent from bleached eucalypt kraft pulp mills. National Pulp Mills Research Program, Technical Report No. 3. CSIRO, Canberra, ACT



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## Toxicity Test Report: TR1061/3

(Page 1 of 2)

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<b>Client:</b>	Total Fluids SAS 24, Cours Michelet – La Défense 92069 Paris La defense- Cedex, France	<b>ESA Job #:</b> PR1061
<b>Attention:</b>	John-Philippe Robinson	<b>Date Sampled:</b> Not supplied
<b>Client Ref:</b>	4505225065	<b>Date Received:</b> 13 September 2013
		<b>Sampled By:</b> Client
		<b>ESA Quote #:</b> PL1061_q02

Lab ID No.:	Sample Name:	Sample Description:
6279	Finasol OSR 51	Chemical received at room temperature in apparent good condition

<b>Test Performed:</b>	96-hr acute toxicity test using the amphipod <i>Allorchestes compressa</i>
<b>Test Protocol:</b>	ESA SOP 108 (ESA 2011), based on USEPA (2002) and Department of Transport and Communications (1990)
<b>Test Temperature:</b>	The test was performed at 20±1°C.
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding a weighed aliquot [REDACTED] sample 6279 'Finasol OSR 51' into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared samples.
<b>Source of Test Organisms:</b>	In-house culture, originally sourced from Queenscliff, VIC
<b>Test Initiated:</b>	26 September 2013 at 1430h

Sample 6279: Finasol OSR 51	
Concentration (mg/L)	% Unaffected (Mean ± SD)
FSW Control	100 ± 0.0
1.3	100 ± 0.0
2.5	70.0 ± 20.0 *
5.0	50.0 ± 20.0 *
10.0	0.0 ± 0.0
20.0	0.0 ± 0.0

96-hr EC10 = 2.0 (1.3-2.6)mg/L  
96-hr EC50 = 4.0 (3.3-4.9)mg/L  
NOEC = 1.3mg/L  
LOEC = 2.5mg/L

\*Significantly lower percent survival compared with the FSW Control (Steel's Many-One Rank Test, 1-tailed, P=0.05)



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## Toxicity Test Report: TR1061/3

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QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % unaffected	≥90.0%	100%	Yes
Reference Toxicant within cusum chart limits	0.4-4.9mg SDS/L	1.8mg SDS/L	Yes

Test Report Authorised by:

Dr Rick Krassoi, Director on 5 November 2013

Results are based on the samples in the condition as received by ESA.

NATA Accredited Laboratory Number: 14709

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### Citations:

Department of Transport and Communications (1990) Guidelines for Acceptance of Oil Spill Dispersants in Australian Waters. Pollution Prevention Section, Department of Transport and Communications, Canberra ACT.

ESA (2011) SOP 108 – *Amphipod Acute Toxicity Test*. Issue No 8. Ecotox Services Australasia, Sydney, NSW.

USEPA (2002) Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. Fifth Edition. United States Environmental Protection Agency, Office of Research and Development, Washington DC, EPA/600/4-90/027F.

## Toxicity Test Report: TR1061/4

(Page 1 of 2)

<b>Client:</b>	Total Fluids SAS 24, Cours Michelet – La Défense 92069 Paris La defense- Cedex, France	<b>ESA Job #:</b>	PR1061
<b>Attention:</b>	John-Philippe Robinson	<b>Date Sampled:</b>	Not supplied
<b>Client Ref:</b>	4505225065	<b>Date Received:</b>	13 September 2013
		<b>Sampled By:</b>	Client
		<b>ESA Quote #:</b>	PL1061_q02

Lab ID No.:	Sample Name:	Sample Description:
6279	Finasol OSR 51	Chemical received at room temperature in apparent good condition

<b>Test Performed:</b>	48-hr acute survival test using the copepod <i>Parvocalanus crassirostris</i>
<b>Test Protocol:</b>	ESA SOP 124 (2012)
<b>Test Temperature:</b>	The test was performed at $27 \pm 1^\circ\text{C}$ .
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding a weighed aliquot of [REDACTED] sample [REDACTED] sample 6279 'Finasol OSR 51' into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared samples.
<b>Source of Test Organisms:</b>	In house culture
<b>Age of Test Organisms:</b>	<7 days old
<b>Test Initiated:</b>	22 October 2013 at 1200h

Sample 6279: Finasol OSR 51	
Concentration (mg/L)	% Survival (Mean $\pm$ SD)
FSW Control	100 $\pm$ 0.0
0.16	95.0 $\pm$ 10.0
0.31	95.0 $\pm$ 10.0
0.63	80.0 $\pm$ 0.0 *
1.30	60.0 $\pm$ 23.1 *
2.50	0.0 $\pm$ 0.0
5.00	0.0 $\pm$ 0.0

48-hr EC10 = 0.4mg/L\*\*  
 48-hr EC50 = 1.1 (0.4-2.9)mg/L  
 NOEC = 0.3mg/L  
 LOEC = 0.6mg/L

\*Significantly lower percent survival compared with the FSW Control (Steel's Many One-Rank Test, 1-tailed, P=0.05)

\*\*95% confidence limits are not reliable

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % survival	>80.0%	100%	Yes
Reference Toxicant within cusum chart limits	5.0-29.1 $\mu\text{g Cu/L}$	6.7 $\mu\text{g Cu/L}$	Yes



## Toxicity Test Report: TR1061/4

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Test Report Authorised by:

Dr Rick Krassoi, Director on 5 November 2013

Results are based on the samples in the condition as received by ESA. This document shall not be reproduced except in full.

### Citations:

ESA (2012) SOP 124 – *Acute toxicity test using the copepod Gladioferens imparipes*. Issue No. 1. Ecotox Services Australasia, Sydney, New South Wales.



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## Toxicity Test Report: TR1061/5

(Page 1 of 2)

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<b>Client:</b>	Total Fluids SAS 24, Cours Michelet – La Défense 92069 Paris La defense- Cedex, France	<b>ESA Job #:</b> PR1061
<b>Attention:</b>	John-Philippe Robinson	<b>Date Sampled:</b> Not supplied
<b>Client Ref:</b>	4505225065	<b>Date Received:</b> 13 September 2013
		<b>Sampled By:</b> Client
		<b>ESA Quote #:</b> PL1061_q02

Lab ID No.:	Sample Name:	Sample Description:
6279	Finasol OSR 51	Chemical received at room temperature in apparent good condition

<b>Test Performed:</b>	72-hr macroalgal germination success test using <i>Ecklonia radiata</i>
<b>Test Protocol:</b>	ESA SOP 116 (ESA 2012), based on Bidwell <i>et al.</i> (1998) and Burridge <i>et al.</i> (1999)
<b>Test Temperature:</b>	The test was performed at $18 \pm 1^\circ\text{C}$ .
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding a weighed aliquot of [REDACTED] sample 6279 'Finasol OSR 51' into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared samples.
<b>Source of Test Organisms:</b>	Field collected from Mercury Passage, TAS
<b>Test Initiated:</b>	9 October 2013 at 1400h

Sample 6279: Finasol OSR 51	
Concentration (mg/L)	% Germination (Mean $\pm$ SD)
FSW Control	89.0 $\pm$ 4.8
1.3	92.5 $\pm$ 2.5
2.5	90.0 $\pm$ 2.8
5.0	92.0 $\pm$ 3.7
10.0	82.5 $\pm$ 17.2
20.0	68.0 $\pm$ 13.4 *

72-hr EC10 = 10.4 (5.3-19.4)mg/L  
72-hr EC50 = >20.0mg/L  
NOEC = 10.0mg/L  
LOEC = 20.0mg/L

\*Significantly lower percentage of germinated spores compared with the FSW Control (Dunnett's Test, 1-tailed, P=0.05)



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## Toxicity Test Report: TR1061/5

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QA/QC Parameter	Criterion	This Test	Criterion met?
FSW Control mean % germination	≥70%	89.0%	Yes
Reference Toxicant within cusum chart limits	187.4-855.9µg Cu/L	197.2µg Cu/L	Yes

Test Report Authorised by:

Dr Rick Krassoi, Director on 5 November 2013

Results are based on the samples in the condition as received by ESA.

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### Citations:

Bidwell, J. R., Wheeler, K. W., & Burridge, T. R. (1998). Toxicant effects on the zoospore stage of the marine macroalga *Ecklonia radiata* (Phaeophyta:Laminariales). *Marine Ecology Progress Series*. Vol 163 , 259-265.

Burridge, T. R., Karistanios, M., & Bidwell, J. (1999). The use of aquatic macrophyte ecotoxicological assays in monitoring coastal effluent discharges in southern Australia. *Marine Pollution Bulletin*. Vol 39 , 1-12.

ESA (2012) SOP 116 – Macroalgal Germination Success Test. Issue No. 12. Ecotox Services Australasia, Sydney NSW

## Toxicity Test Report: TR1061/6

(Page 1 of 2)

<b>Client:</b>	Total Fluids SAS 24, Cours Michelet – La Défense 92069 Paris La defense- Cedex, France	<b>ESA Job #:</b>	PR1061
<b>Attention:</b>	John-Philippe Robinson	<b>Date Sampled:</b>	Not supplied
<b>Client Ref:</b>	4505225065	<b>Date Received:</b>	13 September 2013

Lab ID No.:	Sample Name:	Sample Description:
6279	Finasol OSR 51	Chemical received at room temperature in apparent good condition

<b>Test Performed:</b>	96-hr fish imbalance toxicity test using barramundi <i>Lates calcarifer</i>
<b>Test Protocol:</b>	ESA SOP 117 (ESA 2012), based on USEPA (2002)
<b>Test Temperature:</b>	The test was performed at 25±2°C.
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding a weighed aliquot of [REDACTED] sample 6279 'Finasol OSR 51' into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared samples.
<b>Source of Test Organisms:</b>	Hatchery reared, SA
<b>Test Initiated:</b>	22 October 2013 at 1330h

Sample 6279: Finasol OSR 51	
Concentration (mg/L)	% Unaffected (Mean ± SD)
FSW Control	90.0 ± 11.6
1.3	90.0 ± 11.6
2.5	90.0 ± 11.6
5.0	95.0 ± 10.0
10.0	90.0 ± 11.6
20.0	90.0 ± 11.6

96-hr EC10 = >20.0mg/L  
 96-hr EC50 = >20.0mg/L  
 NOEC = 20.0mg/L  
 LOEC = >20.0mg/L

**Toxicity Test Report: TR1061/6**

**(Page 2 of 2)**

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % unaffected	≥80.0%	90.0%	Yes

Test Report Authorised by:

Dr Rick Krassoi, Director on 5 November 2013

Results are based on the samples in the condition as received by ESA. This document shall not be reproduced except in full.

**Citations:**

ESA (2012) SOP 117 -*Freshwater and Marine Fish Imbalance Test*. Issue No 9. Ecotox Services Australasia, Sydney, NSW

USEPA (2002) Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. Fifth edition EPA-821-R-02-012. United States Environmental Protection Agency, Office of Research and Development, Washington DC, USA

## Toxicity Test Report: TR1061/7

(Page 1 of 2)

<b>Client:</b>	Total Fluids SAS 24, Cours Michelet – La Défense 92069 Paris La defense- Cedex, France	<b>ESA Job #:</b>	PR1061
<b>Attention:</b>	John-Philippe Robinson	<b>Date Sampled:</b>	Not supplied
<b>Client Ref:</b>	4505225065	<b>Date Received:</b>	13 September 2013
		<b>Sampled By:</b>	Client
		<b>ESA Quote #:</b>	PL1061_q02

Lab ID No.:	Sample Name:	Sample Description:
6279	Finasol OSR 51	Chemical received at room temperature in apparent good condition

<b>Test Performed:</b>	96-hr fish imbalance toxicity test using Australian bass <i>Macquaria novemaculeata</i>
<b>Test Protocol:</b>	ESA SOP 117 (ESA 2012), based on USEPA (2002)
<b>Test Temperature:</b>	The test was performed at $20 \pm 2^\circ\text{C}$ .
<b>Deviations from Protocol:</b>	Nil
<b>Comments on Solution Preparation:</b>	The highest test concentration was prepared by adding a weighed aliquot of [REDACTED] sample 6279 'Finasol OSR 51' into filtered seawater (FSW). The remaining test concentrations were achieved by serially diluting the highest test concentration with FSW. A FSW control was tested concurrently with the prepared samples.
<b>Source of Test Organisms:</b>	Hatchery reared, NSW
<b>Test Initiated:</b>	17 October 2013 at 1345h

Sample 6279: Finasol OSR 51	
Concentration (mg/L)	% Unaffected (Mean $\pm$ SD)
FSW Control	100 $\pm$ 0.0
1.3	100 $\pm$ 0.0
2.5	100 $\pm$ 0.0
5.0	100 $\pm$ 0.0
10.0	100 $\pm$ 0.0
20.0	100 $\pm$ 0.0

96-hr EC10 = >20.0mg/L  
 96-hr EC50 = >20.0mg/L  
 NOEC = 20.0mg/L  
 LOEC = >20.0mg/L

**Toxicity Test Report: TR1061/7**

**(Page 2 of 2)**

QA/QC Parameter	Criterion	This Test	Criterion met?
Control mean % unaffected	≥80.0%	100%	Yes

Test Report Authorised by:

Dr Rick Krassoi, Director on 5 November 2013

Results are based on the samples in the condition as received by ESA. This document shall not be reproduced except in full.

**Citations:**

ESA (2012) SOP 117 –Freshwater and Marine Fish Imbalance Test. Issue No 9. Ecotox Services Australasia, Sydney, NSW

USEPA (2002) Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms. Fifth edition EPA-821-R-02-012. United States Environmental Protection Agency, Office of Research and Development, Washington FC, USA



## **Statistical Printouts for the Mussel Toxicity Tests**

**Bivalve Larval Development Test-Proportion Normal**

Start Date:	16/10/2013 14:30	Test ID:	PR1061/02	Sample ID:	Finasol OSR 51
End Date:	19/10/2013 14:30	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 106	Test Species:	MG-Mytilus galloprovincialis

Comments:

Conc-mg/L	1	2	3	4
FSW Control	0.7100	0.7600	0.8400	0.7200
1.3	0.7600	0.7100	0.7900	0.7200
2.5	0.7700	0.8400	0.7200	0.6900
5	0.7500	0.7000	0.8300	0.7600
10	0.7400	0.6900	0.8000	0.7200
20	0.0000	0.0400	0.0000	0.0000

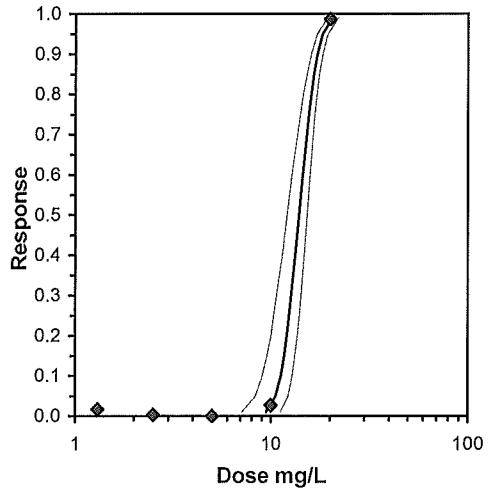
Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				Rank Sum	1-Tailed Critical	Number Resp	Total Number
			Mean	Min	Max	CV%				
FSW Control	0.7575	1.0000	1.0584	1.0021	1.1593	6.767	4		97	400
1.3	0.7450	0.9835	1.0422	1.0021	1.0948	4.103	4	17.50	10.00	102 400
2.5	0.7550	0.9967	1.0558	0.9803	1.1593	7.426	4	18.00	10.00	98 400
5	0.7600	1.0033	1.0607	0.9912	1.1458	6.028	4	17.50	10.00	96 400
10	0.7375	0.9736	1.0341	0.9803	1.1071	5.199	4	16.50	10.00	105 400
*20	0.0100	0.0132	0.0879	0.0500	0.2014	86.129	4	10.00	10.00	396 400

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution ( $p \leq 0.05$ )	0.890273	0.916	0.781989	-0.62371
Bartlett's Test indicates equal variances ( $p = 0.94$ )	1.287674	15.08627		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	10	20	14.14214	

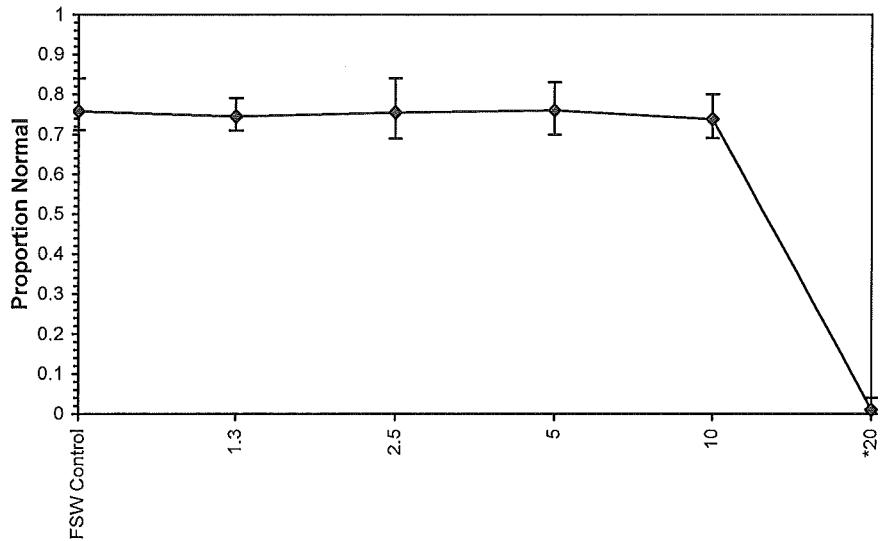
Treatments vs FSW Control

Parameter	Value	SE	Maximum Likelihood-Probit			Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
			95% Fiducial Limits	Control	Chi-Sq							
Slope	14.03755	2.108162	9.905557 18.16955			0.2425	0.25888	7.814728	0.97	1.142981	0.071237	6
Intercept	-11.0447	2.67868	-16.2949 -5.79444									
TSCR	0.245625	0.010761	0.224533 0.266717									
Point	Probits	mg/L	95% Fiducial Limits									
EC01	2.674	9.489809	7.074377 11.18177									
EC05	3.355	10.6122	8.275415 12.21									
EC10	3.718	11.26383	8.994573 12.79961									
EC15	3.964	11.72594	9.513405 13.21531									
EC20	4.158	12.1067	9.945988 13.55671									
EC25	4.326	12.44319	10.33184 13.85783									
EC40	4.747	13.33315	11.36652 14.65344									
EC50	5.000	13.89891	12.03304 15.16044									
EC60	5.253	14.48867	12.73284 15.69212									
EC75	5.674	15.52493	13.9668 16.64195									
EC80	5.842	15.95643	14.47859 17.04692									
EC85	6.036	16.47455	15.08811 17.54391									
EC90	6.282	17.15043	15.86944 18.21526									
EC95	6.645	18.20354	17.0379 19.33092									
EC99	7.326	20.35653	19.17472 21.9405									



**Bivalve Larval Development Test-Proportion Normal**

Start Date:	16/10/2013 14:30	Test ID:	PR1061/02	Sample ID:	Finasol OSR 51
End Date:	19/10/2013 14:30	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 106	Test Species:	MG-Mytilus galloprovincialis
Comments:					

**Dose-Response Plot**

**Bivalve Larval Development Test-Proportion Normal**

Start Date:	16/10/2013 14:30	Test ID:	PR1061/02	Sample ID:	Finasol OSR 51
End Date:	19/10/2013 14:30	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 106	Test Species:	MG-Mytilus galloprovincialis
Comments:					

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Mean	Min	Max	SD	CV%	N
FSW Control	% Normal	75.75	71.00	84.00	5.91	3.21	4
1.3		74.50	71.00	79.00	3.70	2.58	4
2.5		75.50	69.00	84.00	6.56	3.39	4
5		76.00	70.00	83.00	5.35	3.04	4
10		73.75	69.00	80.00	4.65	2.92	4
20		1.00	0.00	4.00	2.00	141.42	4
FSW Control	pH	8.10	8.10	8.10	0.00	0.00	1
1.3		8.10	8.10	8.10	0.00	0.00	1
2.5		8.10	8.10	8.10	0.00	0.00	1
5		8.10	8.10	8.10	0.00	0.00	1
10		8.10	8.10	8.10	0.00	0.00	1
20		8.10	8.10	8.10	0.00	0.00	1
FSW Control	Salinity ppt	34.90	34.90	34.90	0.00	0.00	1
1.3		35.30	35.30	35.30	0.00	0.00	1
2.5		35.20	35.20	35.20	0.00	0.00	1
5		35.30	35.30	35.30	0.00	0.00	1
10		35.40	35.40	35.40	0.00	0.00	1
20		35.40	35.40	35.40	0.00	0.00	1
FSW Control	DO %	97.10	97.10	97.10	0.00	0.00	1
1.3		97.70	97.70	97.70	0.00	0.00	1
2.5		97.90	97.90	97.90	0.00	0.00	1
5		97.00	97.00	97.00	0.00	0.00	1
10		97.20	97.20	97.20	0.00	0.00	1
20		97.20	97.20	97.20	0.00	0.00	1



**Statistical Printouts for the  
*Nitzschia* Growth Inhibition Tests**

**Marine Algal Growth Test-Cell Yield**

Start Date:	1/10/2013 14:45	Test ID:	PR1061/04	Sample ID:	Finasol OSR 51			
End Date:	4/10/2013 15:30	Lab ID:	6279	Sample Type:	CP-Chemical product			
Sample Date:		Protocol:	ESA 110	Test Species:	NC-Nitzschia closterium			
Comments:								
Conc-mg/L	1	2	3	4	5	6	7	8
FSW Control	104.33	112.93	116.13	98.93	108.53	119.73	111.73	114.73
1.3	97.53	119.53	96.53	93.33				
2.5	87.93	118.13	100.73	111.73				
5	93.73	110.13	115.33	106.53				
10	106.13	87.33	103.53	112.13				
20	82.33	92.73	83.53	82.13				

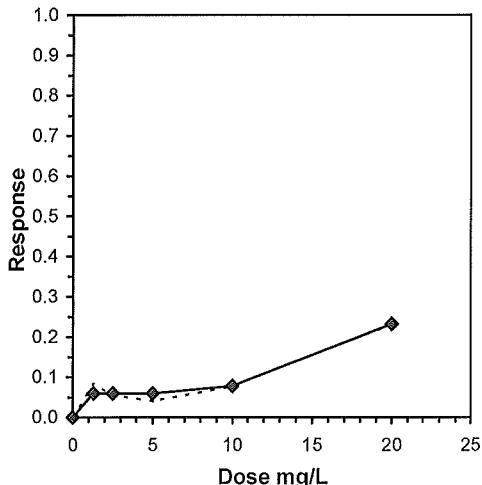
Conc-mg/L	Transform: Untransformed						t-Stat	1-Tailed Critical	Isotonic		
	Mean	N-Mean	Mean	Min	Max	CV%			MSD	Mean	N-Mean
FSW Control	110.88	1.0000	110.879	98.929	119.729	6.068	8		110.88	1.0000	
1.3	101.73	0.9175	101.729	93.329	119.529	11.797	4	1.590	2.508	14.439	104.26
2.5	104.63	0.9436	104.629	87.929	118.129	12.665	4	1.086	2.508	14.439	104.26
5	106.43	0.9599	106.429	93.729	115.329	8.649	4	0.773	2.508	14.439	104.26
10	102.28	0.9224	102.279	87.329	112.129	10.361	4	1.494	2.508	14.439	102.28
*20	85.18	0.7682	85.179	82.129	92.729	5.954	4	4.465	2.508	14.439	85.18

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution ( $p > 0.05$ )	0.985869	0.924	-0.0919	-0.28492
Bartlett's Test indicates equal variances ( $p = 0.58$ )	3.816985	15.08627		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Bonferroni t Test	10	20	14.14214	14.43882
Treatments vs FSW Control				0.130222
				366.5189
				88.36182
				0.008334
				5, 22

\* indicates IC estimate less than the lowest concentration

**Linear Interpolation (200 Resamples)**

Point	mg/L	SD	95% CL(Exp)	Skew
IC05*	1.089	3.865	0.247	19.049
IC10	11.455	3.478	0.000	17.522
IC15	14.697			
IC20	17.939			
IC25	>20			
IC40	>20			
IC50	>20			



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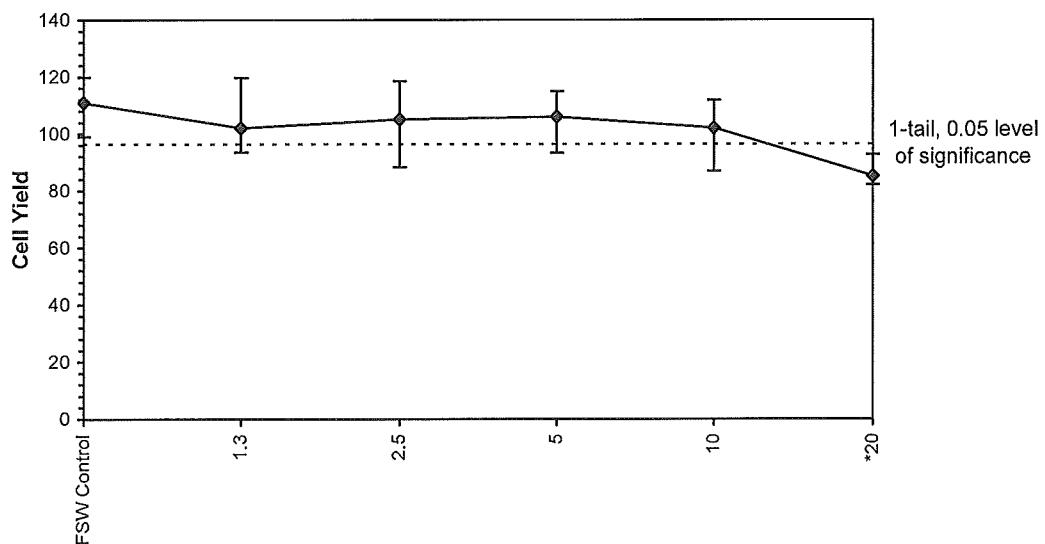
**Marine Algal Growth Test-Cell Yield**

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Start Date: 1/10/2013 14:45 Test ID: PR1061/04 Sample ID: Finasol OSR 51  
End Date: 4/10/2013 15:30 Lab ID: 6279 Sample Type: CP-Chemical product  
Sample Date: Protocol: ESA 110 Test Species: NC-Nitzschia closterium  
Comments:

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Dose-Response Plot



**Marine Algal Growth Test-Cell Yield**

Start Date:	1/10/2013 14:45	Test ID:	PR1061/04	Sample ID:	Finasol OSR 51
End Date:	4/10/2013 15:30	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 110	Test Species:	NC-Nitzschia closterium
Comments:					

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Mean	Min	Max	SD	CV%	N
FSW Control	Cell Yield	110.88	98.93	119.73	6.73	2.34	8
1.3		101.73	93.33	119.53	12.00	3.41	4
2.5		104.63	87.93	118.13	13.25	3.48	4
5		106.43	93.73	115.33	9.21	2.85	4
10		102.28	87.33	112.13	10.60	3.18	4
20		85.18	82.13	92.73	5.07	2.64	4
FSW Control	pH	8.10	8.10	8.10	0.00	0.00	1
1.3		8.20	8.20	8.20	0.00	0.00	1
2.5		8.20	8.20	8.20	0.00	0.00	1
5		8.20	8.20	8.20	0.00	0.00	1
10		8.20	8.20	8.20	0.00	0.00	1
20		8.20	8.20	8.20	0.00	0.00	1
FSW Control	Salinity ppt	35.00	35.00	35.00	0.00	0.00	1
1.3		35.40	35.40	35.40	0.00	0.00	1
2.5		35.30	35.30	35.30	0.00	0.00	1
5		35.40	35.40	35.40	0.00	0.00	1
10		35.50	35.50	35.50	0.00	0.00	1
20		35.50	35.50	35.50	0.00	0.00	1



## **Statistical Printouts for the Acute *Allorcheses* Toxicity Test**

**Amphipod Acute Toxicity Test-96 hr survival**

Start Date: 26/09/2013 14:30 Test ID: PR1061/02 Sample ID: Finasol OSR 51  
 End Date: 30/09/2013 14:00 Lab ID: 6279 Sample Type: CP-Chemical product  
 Sample Date: Protocol: ESA 108 Test Species: AC-Allorchestes compressa  
 Comments:

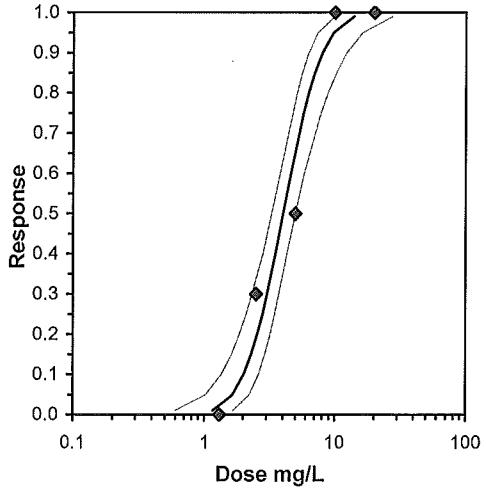
Conc-mg/L	1	2	3	4
FSW Control	1.0000	1.0000	1.0000	1.0000
1.3	1.0000	1.0000	1.0000	1.0000
2.5	0.4000	0.8000	0.8000	0.8000
5	0.4000	0.4000	0.8000	0.4000
10	0.0000	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000	0.0000

Conc-mg/L	Transform: Arcsin Square Root						Rank Sum	1-Tailed Critical	Number Resp	Total Number
	Mean	N-Mean	Mean	Min	Max	CV%				
FSW Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4		0	20
1.3	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00	0 20
*2.5	0.7000	0.7000	1.0015	0.6847	1.1071	21.089	4	10.00	10.00	6 20
*5	0.5000	0.5000	0.7903	0.6847	1.1071	26.725	4	10.00	10.00	10 20
10	0.0000	0.0000	0.2205	0.2056	0.2255	4.522	4		21	21
20	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4		20	20

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.875391	0.887	1.22E-15	2.82967
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	1.3	2.5	1.802776	

Treatments vs FSW Control

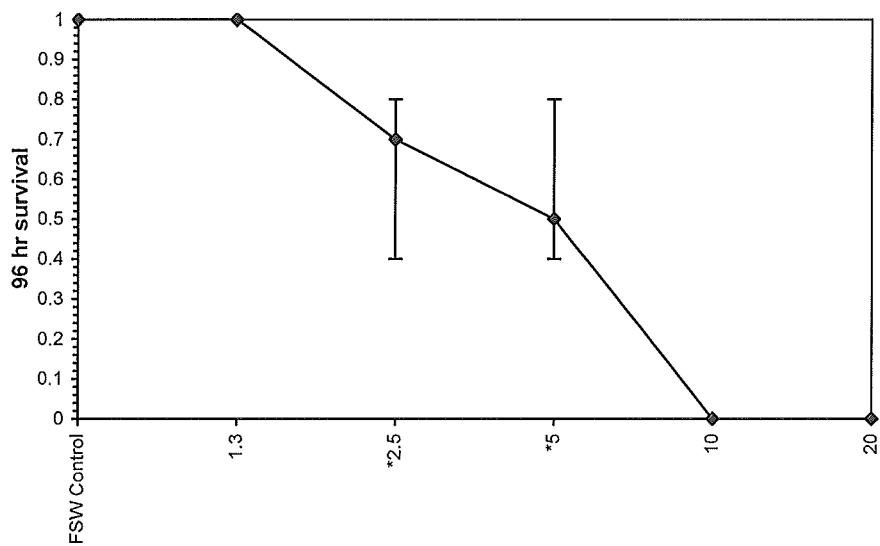
Parameter	Value	SE	Maximum Likelihood-Probit			Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
			95% Fiducial Limits	Control	Chi-Sq							
Slope	4.300588	0.733242	2.863433 5.737744	0	5.242217	7.814728	0.15	0.603561	0.232526	6		
Intercept	2.404334	0.481665	1.46027 3.348398									
TSCR												
Point	Probits	mg/L	95% Fiducial Limits									
EC01	2.674	1.15511	0.590417 1.651045									
EC05	3.355	1.663753	1.005232 2.205083									
EC10	3.718	2.020999	1.328205 2.585952									
EC15	3.964	2.304425	1.597369 2.889371									
EC20	4.158	2.55777	1.844371 3.164809									
EC25	4.326	2.797203	2.080863 3.431218									
EC40	4.747	3.504699	2.776135 4.272932									
EC50	5.000	4.013845	3.254874 4.946107									
EC60	5.253	4.596957	3.769651 5.795993									
EC75	5.674	5.759665	4.697605 7.727288									
EC80	5.842	6.298827	5.094007 8.716459									
EC85	6.036	6.991311	5.580564 10.06257									
EC90	6.282	7.971774	6.236331 12.09987									
EC95	6.645	9.683499	7.314609 15.98502									
EC99	7.326	13.94754	9.770628 27.21166									



**Amphipod Acute Toxicity Test-96 hr survival**

Start Date:	26/09/2013 14:30	Test ID:	PR1061/02	Sample ID:	Finasol OSR 51
End Date:	30/09/2013 14:00	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 108	Test Species:	AC-Allorchestes compressa
Comments:					

**Dose-Response Plot**



**Amphipod Acute Toxicity Test-96 hr survival**

Start Date:	26/09/2013 14:30	Test ID:	PR1061/02	Sample ID:	Finasol OSR 51
End Date:	30/09/2013 14:00	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 108	Test Species:	AC-Allorchestes compressa
Comments:					

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Mean	Min	Max	SD	CV%	N
FSW Control	% Non-immobilised	100.00	100.00	100.00	0.00	0.00	4
1.3		100.00	100.00	100.00	0.00	0.00	4
2.5		70.00	40.00	80.00	20.00	6.39	4
5		50.00	40.00	80.00	20.00	8.94	4
10		0.00	0.00	0.00	0.00	0.00	4
20		0.00	0.00	0.00	0.00	0.00	4
FSW Control	pH	8.20	8.20	8.20	0.00	0.00	1
1.3		8.20	8.20	8.20	0.00	0.00	1
2.5		8.20	8.20	8.20	0.00	0.00	1
5		8.20	8.20	8.20	0.00	0.00	1
10		8.20	8.20	8.20	0.00	0.00	1
20		8.20	8.20	8.20	0.00	0.00	1
FSW Control	DO %	106.90	106.90	106.90	0.00	0.00	1
1.3		100.60	100.60	100.60	0.00	0.00	1
2.5		99.10	99.10	99.10	0.00	0.00	1
5		100.30	100.30	100.30	0.00	0.00	1
10		99.30	99.30	99.30	0.00	0.00	1
20		99.30	99.30	99.30	0.00	0.00	1
FSW Control	Salinity ppt	35.20	35.20	35.20	0.00	0.00	1
1.3		35.20	35.20	35.20	0.00	0.00	1
2.5		35.20	35.20	35.20	0.00	0.00	1
5		35.20	35.20	35.20	0.00	0.00	1
10		35.30	35.30	35.30	0.00	0.00	1
20		35.30	35.30	35.30	0.00	0.00	1



## **Statistical Printouts for the Juvenile Copepod Tests**

**Marine Copepod Acute Test-48-hr Survival**

Start Date: 22/10/2013 12:00 Test ID: PR1061/15 Sample ID: Finasol OSR 51  
 End Date: 24/10/2013 11:20 Lab ID: 6279 Sample Type: CP-Chemical Product  
 Sample Date: Protocol: ESA 124 Test Species: PC-Parvocalanus crassirostris  
 Comments:

Conc-mg/L	1	2	3	4
FSW Control	1.0000	1.0000	1.0000	1.0000
0.16	1.0000	0.8000	1.0000	1.0000
0.31	1.0000	0.8000	1.0000	1.0000
0.63	0.8000	0.8000	0.8000	0.8000
1.3	0.4000	0.4000	0.8000	0.8000
2.5	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000

Conc-mg/L	Transform: Arcsin Square Root						Rank Sum	1-Tailed Critical	Number Resp	Total Number
	Mean	N-Mean	Mean	Min	Max	CV%				
FSW Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4		0	20
0.16	0.9500	0.9500	1.2857	1.1071	1.3453	9.261	4	16.00	10.00	1 20
0.31	0.9500	0.9500	1.2857	1.1071	1.3453	9.261	4	16.00	10.00	1 20
*0.63	0.8000	0.8000	1.1071	1.1071	1.1071	0.000	4	10.00	10.00	4 20
*1.3	0.6000	0.6000	0.8959	0.6847	1.1071	27.222	4	10.00	10.00	8 20
2.5	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4		20	20
5	0.0000	0.0000	0.2255	0.2255	0.2255	0.000	4		20	20

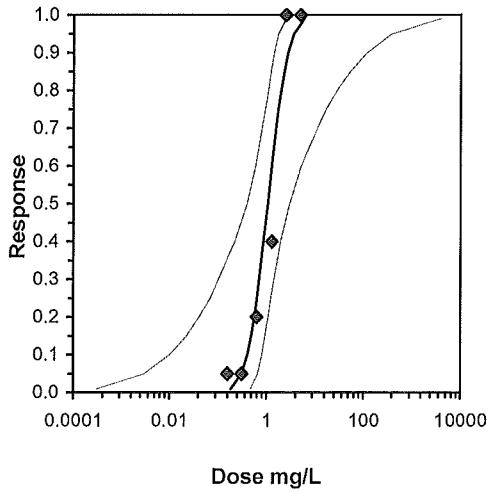
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.854776	0.905	-0.36263	0.243222
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	0.31	0.63	0.441928	

Treatments vs FSW Control

Parameter	Value	SE	Maximum Likelihood-Probit		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
			95% Fiducial Limits	Control							
Slope	3.09096	0.8734	0.666013 5.515907		0	14.14804	9.487729	6.8E-03	0.024852	0.323524	5
Intercept	4.923183	0.304191	4.078614 5.767752								
TSCR											
Point	Probits	mg/L	95% Fiducial Limits								
EC01	2.674	0.187164	0.000296 0.462044								
EC05	3.355	0.310958	0.002954 0.648899								
EC10	3.718	0.407605	0.009864 0.794038								
EC15	3.964	0.489261	0.021899 0.924602								
EC20	4.158	0.565676	0.040651 1.059553								
EC25	4.326	0.640676	0.067986 1.210646								
EC40	4.747	0.876775	0.219761 1.915011								
EC50	5.000	1.058893	0.385198 2.915836								
EC60	5.253	1.27884	0.586056 5.11484								
EC75	5.674	1.750112	0.92631 16.54626								
EC80	5.842	1.982152	1.058235 27.6769								
EC85	6.036	2.29173	1.21254 51.38389								
EC90	6.282	2.750837	1.411776 114.0863								
EC95	6.645	3.605802	1.727397 381.0306								
EC99	7.326	5.990759	2.425794 3804.476								

Significant heterogeneity detected (p = 6.84E-03)



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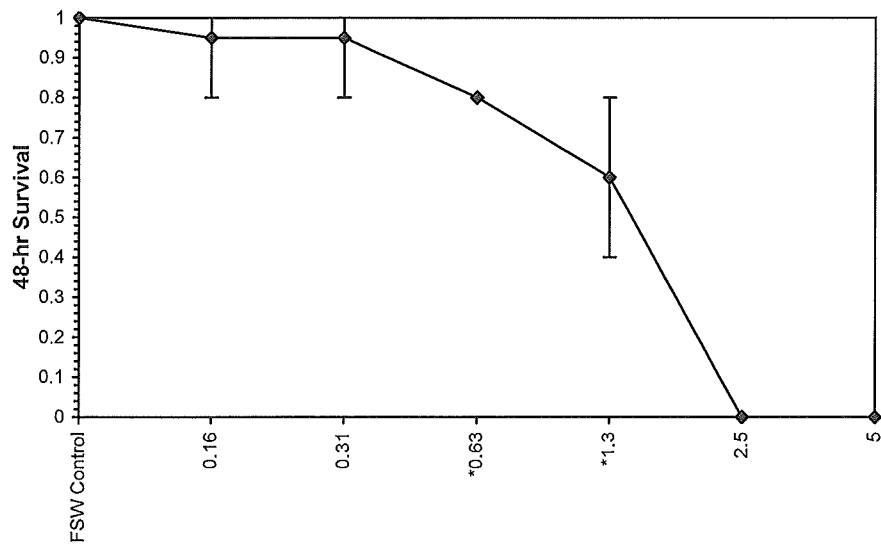
**Marine Copepod Acute Test-48-hr Survival**

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Start Date: 22/10/2013 12:00 Test ID: PR1061/15 Sample ID: Finasol OSR 51  
End Date: 24/10/2013 11:20 Lab ID: 6279 Sample Type: CP-Chemical Product  
Sample Date: Protocol: ESA 124 Test Species: PC-*Parvocalanus crassirostris*  
Comments:

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**Dose-Response Plot**



**Marine Copepod Acute Test-48-hr Survival**

Start Date:	22/10/2013 12:00	Test ID:	PR1061/15	Sample ID:	Finasol OSR 51
End Date:	24/10/2013 11:20	Lab ID:	6279	Sample Type:	CP-Chemical Product
Sample Date:		Protocol:	ESA 124	Test Species:	PC-Parvocalanus crassirostris
Comments:					

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Mean	Min	Max	SD	CV%	N
FSW Control	% Un-affected	100.00	100.00	100.00	0.00	0.00	4
0.16		95.00	80.00	100.00	10.00	3.33	4
0.31		95.00	80.00	100.00	10.00	3.33	4
0.63		80.00	80.00	80.00	0.00	0.00	4
1.3		60.00	40.00	80.00	23.09	8.01	4
2.5		0.00	0.00	0.00	0.00		4
5		0.00	0.00	0.00	0.00		4
FSW Control	pH	8.20	8.20	8.20	0.00	0.00	1
0.16		8.20	8.20	8.20	0.00	0.00	1
0.31		8.20	8.20	8.20	0.00	0.00	1
0.63		8.20	8.20	8.20	0.00	0.00	1
1.3		8.20	8.20	8.20	0.00	0.00	1
2.5		8.20	8.20	8.20	0.00	0.00	1
5		8.20	8.20	8.20	0.00	0.00	1
FSW Control	Salinity ppt	35.00	35.00	35.00	0.00	0.00	1
0.16		35.30	35.30	35.30	0.00	0.00	1
0.31		35.50	35.50	35.50	0.00	0.00	1
0.63		35.60	35.60	35.60	0.00	0.00	1
1.3		35.60	35.60	35.60	0.00	0.00	1
2.5		35.60	35.60	35.60	0.00	0.00	1
5		35.70	35.70	35.70	0.00	0.00	1
FSW Control	DO %	98.10	98.10	98.10	0.00	0.00	1
0.16		98.20	98.20	98.20	0.00	0.00	1
0.31		98.10	98.10	98.10	0.00	0.00	1
0.63		97.70	97.70	97.70	0.00	0.00	1
1.3		98.20	98.20	98.20	0.00	0.00	1
2.5		97.90	97.90	97.90	0.00	0.00	1
5		98.60	98.60	98.60	0.00	0.00	1



## **Statistical Printouts for the kelp *Ecklonia radiata* Germination Test**

**Macroalgal Germination Success Test-Proportion Germinated**

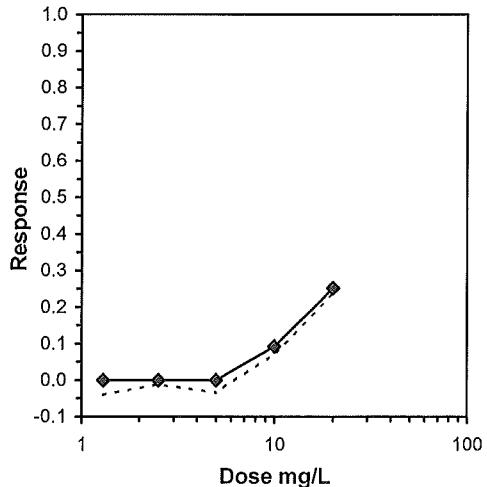
Start Date:	9/10/2013 14:00	Test ID:	PR1061/18	Sample ID:	Finasol OSR 51
End Date:	12/10/2013 14:00	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 116	Test Species:	ER-Ecklonia radiata
Comments:					

Conc-mg/L	1	2	3	4
FSW Control	0.8400	0.8600	0.9400	0.9200
1.3	0.9000	0.9600	0.9200	0.9200
2.5	0.9400	0.8800	0.8800	0.9000
5	0.9600	0.9400	0.9000	0.8800
10	0.6000	0.7800	0.9600	0.9600
20	0.7600	0.5000	0.8000	0.6600

Conc-mg/L	Transform: Arcsin Square Root							t-Stat	1-Tailed Critical	Isotonic	
	Mean	N-Mean	Mean	Min	Max	CV%	N			MSD	Mean
FSW Control	0.8900	1.0000	1.2385	1.1593	1.3233	6.283	4			0.9088	1.0000
1.3	0.9250	1.0393	1.2966	1.2490	1.3694	3.953	4	-0.663	2.410	0.2113	0.9088
2.5	0.9000	1.0112	1.2516	1.2171	1.3233	4.005	4	-0.150	2.410	0.2113	0.9088
5	0.9200	1.0337	1.2897	1.2171	1.3694	5.375	4	-0.584	2.410	0.2113	0.9088
10	0.8250	0.9270	1.1769	0.8861	1.3694	20.084	4	0.703	2.410	0.2113	0.8250
*20	0.6800	0.7640	0.9749	0.7854	1.1071	14.645	4	3.006	2.410	0.2113	0.6800

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution ( $p > 0.05$ )	0.952443	0.916	-0.51551	1.190788
Bartlett's Test indicates equal variances ( $p = 0.05$ )	10.89065	15.08627		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Dunnett's Test	10	20	14.14214	
Treatments vs FSW Control				

Log-Logit Interpolation (200 Resamples)				
Point	mg/L	SD	95% CL(Exp)	Skew
IC05	7.678	2.415	4.853 / 16.146	0.3159
IC10	10.442	2.800	5.281 / 19.381	0.1262
IC15	13.360			
IC20	16.486			
IC25	19.878			
IC40	>20			
IC50	>20			



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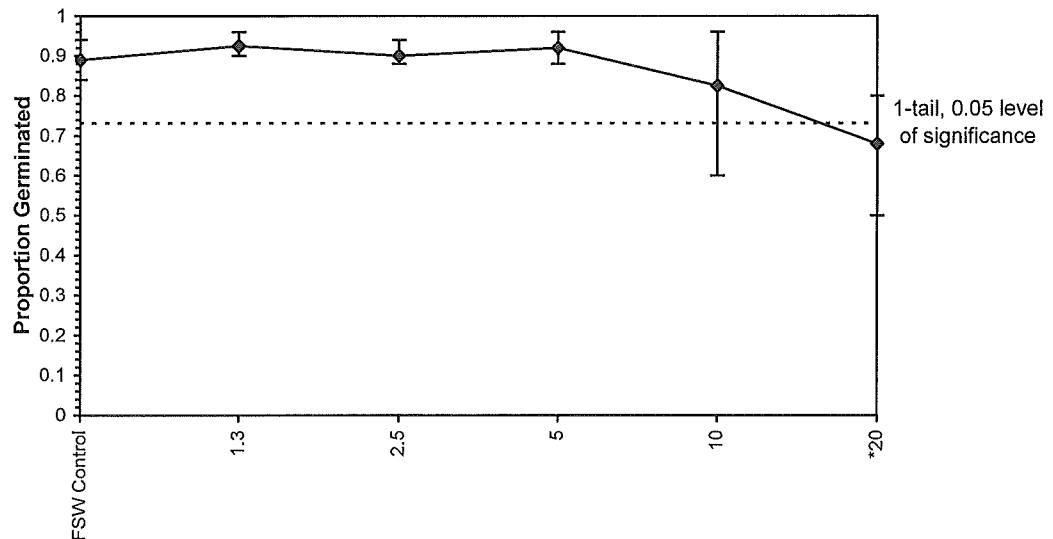
**Macroalgal Germination Success Test-Proportion Germinated**

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Start Date: 9/10/2013 14:00 Test ID: PR1061/18 Sample ID: Finasol OSR 51  
End Date: 12/10/2013 14:00 Lab ID: 6279 Sample Type: CP-Chemical product  
Sample Date: Protocol: ESA 116 Test Species: ER-Ecklonia radiata  
Comments:

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Dose-Response Plot



**Macroalgal Germination Success Test-Proportion Germinated**

Start Date:	9/10/2013 14:00	Test ID:	PR1061/18	Sample ID:	Finasol OSR 51
End Date:	12/10/2013 14:00	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 116	Test Species:	ER-Ecklonia radiata

Comments:

**Auxiliary Data Summary**

Conc-mg/L	Parameter	Mean	Min	Max	SD	CV%	N
FSW Control	Germination, %	89.00	84.00	94.00	4.76	2.45	4
1.3		92.50	90.00	96.00	2.52	1.72	4
2.5		90.00	88.00	94.00	2.83	1.87	4
5		92.00	88.00	96.00	3.65	2.08	4
10		82.50	60.00	96.00	17.23	5.03	4
20		68.00	50.00	80.00	13.37	5.38	4
FSW Control	pH	8.10	8.10	8.10	0.00	0.00	1
1.3		8.10	8.10	8.10	0.00	0.00	1
2.5		8.10	8.10	8.10	0.00	0.00	1
5		8.20	8.20	8.20	0.00	0.00	1
10		8.20	8.20	8.20	0.00	0.00	1
20		8.20	8.20	8.20	0.00	0.00	1
FSW Control	Salinity ppt	35.10	35.10	35.10	0.00	0.00	1
1.3		35.50	35.50	35.50	0.00	0.00	1
2.5		35.70	35.70	35.70	0.00	0.00	1
5		35.80	35.80	35.80	0.00	0.00	1
10		35.90	35.90	35.90	0.00	0.00	1
20		35.90	35.90	35.90	0.00	0.00	1
FSW Control	DO %	93.20	93.20	93.20	0.00	0.00	1
1.3		93.30	93.30	93.30	0.00	0.00	1
2.5		94.60	94.60	94.60	0.00	0.00	1
5		94.70	94.70	94.70	0.00	0.00	1
10		95.60	95.60	95.60	0.00	0.00	1
20		97.60	97.60	97.60	0.00	0.00	1



## **Statistical Printouts for the Larval Fish Imbalance Tests**

### Fish Imbalance Test-96 hr Imbalance

Start Date: 22/10/2013 13:30 Test ID: PR1061/12 Sample ID: Finasol OSR 51  
 End Date: 26/10/2013 13:30 Lab ID: 6279 Sample Type: CP-Chemical product  
 Sample Date: Protocol: ESA 117 Test Species: LT-Lates calcarifer  
 Comments:

Conc-mg/L	1	2	3	4
FSW Control	0.8000	0.8000	1.0000	1.0000
1.3	1.0000	0.8000	0.4000	0.6000
2.5	0.8000	0.8000	0.8000	1.0000
5	0.6000	1.0000	0.8000	1.0000
10	0.8000	0.8000	1.0000	0.6000
20	1.0000	0.8000	1.0000	1.0000

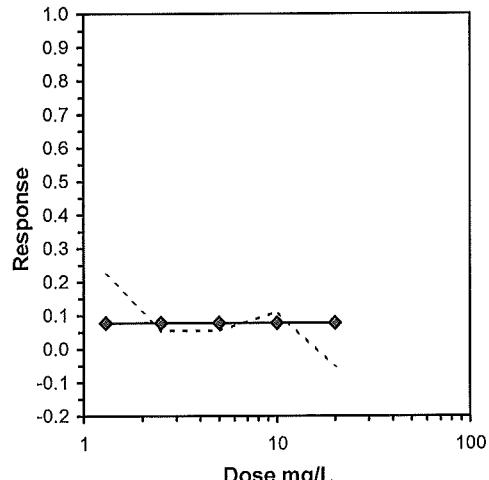
Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				t-Stat	1-Tailed Critical	Isotonic	
			Mean	Min	Max	CV%			Mean	N-Mean
FSW Control	0.9000	1.0000	1.2262	1.1071	1.3453	11.212	4		0.9000	1.0000
1.3	0.7000	0.7778	1.0058	0.6847	1.3453	28.293	4	1.658	2.410	0.3204
2.5	0.8500	0.9444	1.1667	1.1071	1.3453	10.206	4	0.448	2.410	0.3204
5	0.8500	0.9444	1.1709	0.8861	1.3453	18.840	4	0.416	2.410	0.3204
10	0.8000	0.8889	1.1114	0.8861	1.3453	16.874	4	0.864	2.410	0.3204
20	0.9500	1.0556	1.2857	1.1071	1.3453	9.261	4	-0.448	2.410	0.3204

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution ( $p > 0.05$ )	0.983316	0.916	-0.06276	-0.39818
Bartlett's Test indicates equal variances ( $p = 0.63$ )	3.47678	15.08627		
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Dunnett's Test	20	>20		
Treatments vs FSW Control				

#### Log-Logit Interpolation (200 Resamples)

Point	mg/L	SD	95% CL(Exp)	Skew
IC05*	0.7787			
IC10	>20			
IC15	>20			
IC20	>20			
IC25	>20			
IC40	>20			
IC50	>20			

\* indicates IC estimate less than the lowest concentration



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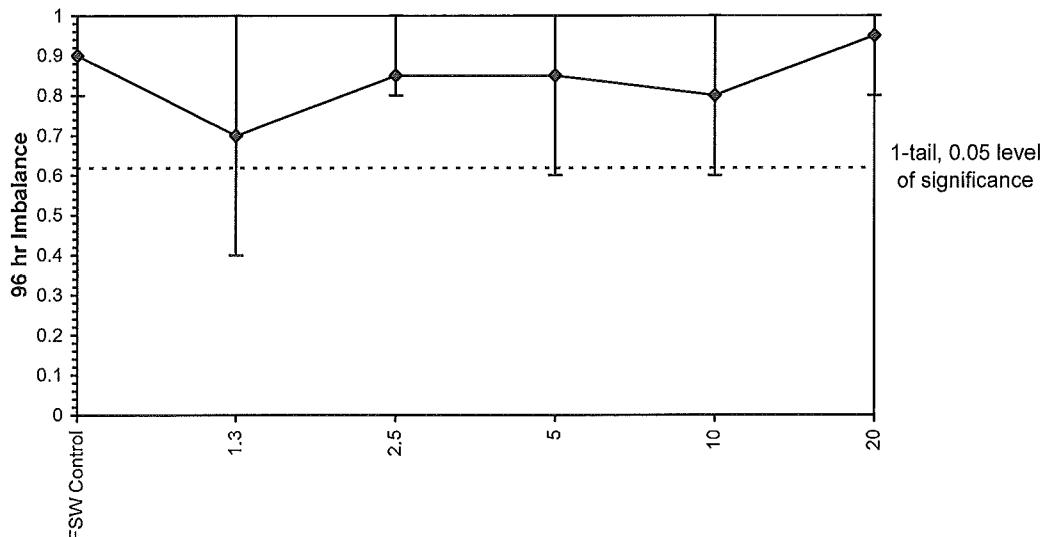
**Fish Imbalance Test-96 hr Imbalance**

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Start Date: 22/10/2013 13:30 Test ID: PR1061/12 Sample ID: Finasol OSR 51  
End Date: 26/10/2013 13:30 Lab ID: 6279 Sample Type: CP-Chemical product  
Sample Date: Protocol: ESA 117 Test Species: LT-Lates calcarifer  
Comments:

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Dose-Response Plot



**Fish Imbalance Test-96 hr Imbalance**

Start Date:	22/10/2013 13:30	Test ID:	PR1061/12	Sample ID:	Finasol OSR 51
End Date:	26/10/2013 13:30	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 117	Test Species:	LT-Lates calcarifer
Comments:					

Conc-mg/L	Parameter	Auxiliary Data Summary				
		Mean	Min	Max	SD	CV%
FSW Control	% Un-affected	90.00	80.00	100.00	11.55	3.78
1.3		70.00	40.00	100.00	25.82	7.26
2.5		85.00	80.00	100.00	10.00	3.72
5		85.00	60.00	100.00	19.15	5.15
10		80.00	60.00	100.00	16.33	5.05
20		95.00	80.00	100.00	10.00	3.33
FSW Control	pH	8.10	8.10	8.10	0.00	0.00
1.3		8.10	8.10	8.10	0.00	0.00
2.5		8.20	8.20	8.20	0.00	0.00
5		8.20	8.20	8.20	0.00	0.00
10		8.20	8.20	8.20	0.00	0.00
20		8.30	8.30	8.30	0.00	0.00
FSW Control	Salinity ppt	35.30	35.30	35.30	0.00	0.00
1.3		35.70	35.70	35.70	0.00	0.00
2.5		35.40	35.40	35.40	0.00	0.00
5		35.40	35.40	35.40	0.00	0.00
10		35.30	35.30	35.30	0.00	0.00
20		35.30	35.30	35.30	0.00	0.00
FSW Control	DO %	102.40	102.40	102.40	0.00	0.00
1.3		101.60	101.60	101.60	0.00	0.00
2.5		101.30	101.30	101.30	0.00	0.00
5		101.50	101.50	101.50	0.00	0.00
10		102.40	102.40	102.40	0.00	0.00
20		104.20	104.20	104.20	0.00	0.00

**Fish Imbalance Test-96 hr Imbalance**

Start Date:	17/10/2013 13:45	Test ID:	PR1061/10	Sample ID:	Finasol OSR 51
End Date:	21/10/2013 13:45	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 117	Test Species:	MN-Macquaria novemaculeata
Comments:					

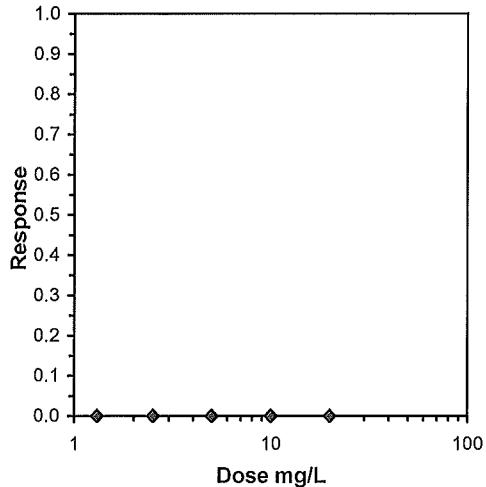
Conc-mg/L	1	2	3	4
FSW Control	1.0000	1.0000	1.0000	1.0000
1.3	1.0000	1.0000	1.0000	1.0000
2.5	1.0000	1.0000	1.0000	1.0000
5	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000
20	1.0000	1.0000	1.0000	1.0000

Conc-mg/L	Mean	N-Mean	Transform: Arcsin Square Root				Rank Sum	1-Tailed Critical	Isotonic	
			Mean	Min	Max	CV%			Mean	N-Mean
FSW Control	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4		1.0000	1.0000
1.3	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00	1.0000
2.5	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00	1.0000
5	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00	1.0000
10	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00	1.0000
20	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	18.00	10.00	1.0000

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	1	0.916		
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	20	>20		
Treatments vs FSW Control				

**Log-Logit Interpolation (200 Resamples)**

Point	mg/L	SD	95% CL(Exp)	Skew
IC05	>20			
IC10	>20			
IC15	>20			
IC20	>20			
IC25	>20			
IC40	>20			
IC50	>20			



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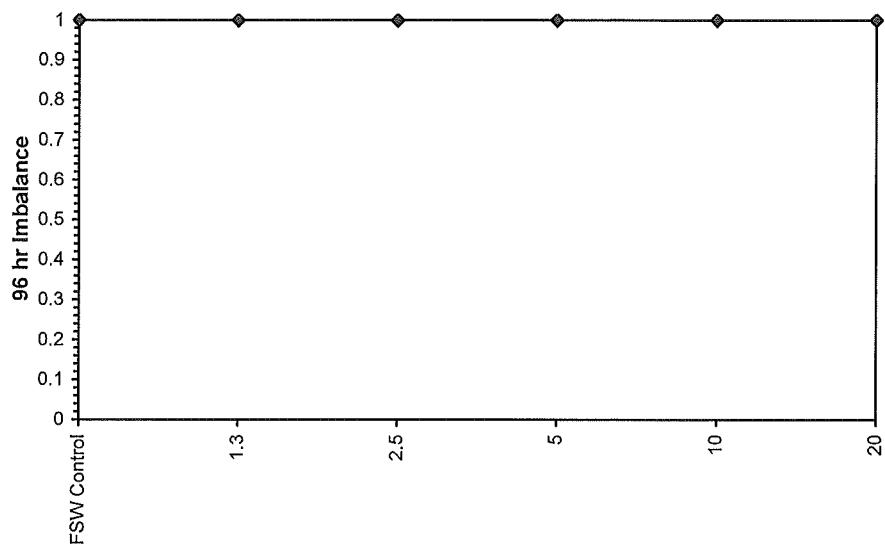
**Fish Imbalance Test-96 hr Imbalance**

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Start Date: 17/10/2013 13:45 Test ID: PR1061/10 Sample ID: Finasol OSR 51  
End Date: 21/10/2013 13:45 Lab ID: 6279 Sample Type: CP-Chemical product  
Sample Date: Protocol: ESA 117 Test Species: MN-Macquaria novemaculeata  
Comments:

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**Dose-Response Plot**



**Fish Imbalance Test-96 hr imbalance**

Start Date:	17/10/2013 13:45	Test ID:	PR1061/10	Sample ID:	Finasol OSR 51
End Date:	21/10/2013 13:45	Lab ID:	6279	Sample Type:	CP-Chemical product
Sample Date:		Protocol:	ESA 117	Test Species:	MN-Macquaria novemaculeata
Comments:					

Conc-mg/L	Parameter	Auxiliary Data Summary				
		Mean	Min	Max	SD	CV%
FSW Control	% Un-affected	100.00	100.00	100.00	0.00	0.00
1.3		100.00	100.00	100.00	0.00	0.00
2.5		100.00	100.00	100.00	0.00	0.00
5		100.00	100.00	100.00	0.00	0.00
10		100.00	100.00	100.00	0.00	0.00
20		100.00	100.00	100.00	0.00	0.00
FSW Control	pH	8.10	8.10	8.10	0.00	0.00
1.3		8.10	8.10	8.10	0.00	0.00
2.5		8.10	8.10	8.10	0.00	0.00
5		8.10	8.10	8.10	0.00	0.00
10		8.20	8.20	8.20	0.00	0.00
20		8.20	8.20	8.20	0.00	0.00
FSW Control	Salinity ppt	35.30	35.30	35.30	0.00	0.00
1.3		35.40	35.40	35.40	0.00	0.00
2.5		35.40	35.40	35.40	0.00	0.00
5		35.40	35.40	35.40	0.00	0.00
10		35.30	35.30	35.30	0.00	0.00
20		35.30	35.30	35.30	0.00	0.00
FSW Control	DO %	103.40	103.40	103.40	0.00	0.00
1.3		103.00	103.00	103.00	0.00	0.00
2.5		102.30	102.30	102.30	0.00	0.00
5		103.10	103.10	103.10	0.00	0.00
10		103.60	103.60	103.60	0.00	0.00
20		105.40	105.40	105.40	0.00	0.00