

Result Summary

Client: NOR239
Reference: 08-0183-01-TRD

Client: Bodycote Testing Group; operation Edmonton

Sample: 600124-1

AC Carbon Synthetic

Collection: collected on NA at NA by NA

Receipt: received on 2008/02/07 at 0930 by A. Crawford

Containers: received small plastic bags at 7 °C, in good condition with no seals and no initials

Description: type: powder, collection method: NA

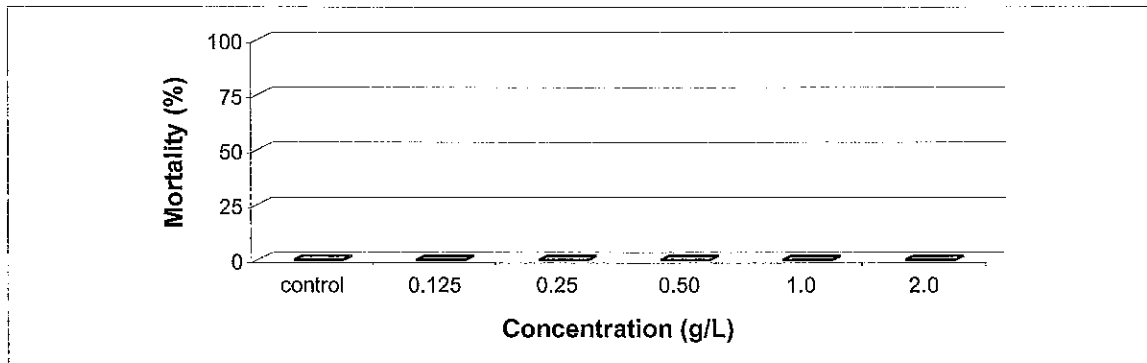
Test: started on 2008/02/11 ; ended on 2008/02/15

Contents	
Result Summary.....	1
Test Conditions.....	2
Test Data.....	3
Comments/Statistics..	5
QA/QC.....	6

Result:

	Endpoint (96-hour)	Value (g/L)	Confidence Limits (95%)		Method Calculated
			lower	upper	
Acute: (mortality)	LC50	>2.0			could not be calculated
	LC25	>2.0			could not be calculated

Notes: LC25 & LC50, concentrations lethal to 25% and 50% of the test population




Authorized by S. Krishnappa, B.Sc., Quality Coordinator
The test data and results are verified correct.

Our liability is limited to the cost of the test requested. The test results only relate to the sample as received. No liability in whole or in part is assumed for the collection, handling or transport of the sample, application or interpretation of the test data or results.

Test Conditions

Client: NOR239
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Method: Biological Test Method: Acute Lethality Using Rainbow Trout, 1990
with May 2007 amendments, Environment Canada, EPS 1/RM/9.

Test type: Trout 96-h Static Acute Test (HQ 4.4.4.1)

Species: *Oncorhynchus mykiss*

Organism source: Sun Valley Trout Farms (Batch 20080116TR)

Acclimation: 26 days (must be ≥ 2 weeks)

Stock mortality: 0.13% (seven days preceding testing)

Sample initial chemistry: pH: na; EC: na ($\mu\text{S}/\text{cm}$); DO: na (mg/L); temperature: na $^{\circ}\text{C}$
hardness (mg CaCO_3/L): na; colour: na; odour: na

Sample holding time: 0 days (must be ≤ 5 days)

Sample storage: $4 \pm 2^{\circ}\text{C}$ in darkness

The test was conducted in 22 L plastic pails with polyethylene liners

Test vessel: 20 Litres (depth of solution in each test vessel $\geq 15\text{cm}$)

Test volume: All test solutions and controls were pre-aerated for 30 minutes

Sample pre-treatment: Dissolved oxygen in 100 % sample was 6.6 mg/L after pre-aeration
The sample was not filtered or pH adjusted prior to or during testing

Loading density: 0.305 g/Litre (must be ≤ 0.5 g/Litre)

Control/dilution water: Dechlorinated City of Calgary water acclimated to test conditions

Test concentrations: 5 concentrations (0.125, 0.250, 0.5, 1.0, 2.0 g/L (v/v) plus a negative control)

Test replicates: One replicate per treatment; 10 fish per replicate

Feeding: Fish are not fed 24 hours before test initiation and no feeding during test

Measurements: pH, conductivity, dissolved oxygen and temperature measured daily

Aeration: All treatments aerated at 6.5 ± 1 mL/min/L by oil-free compressed air
passed through airline tubes connected to disposable air stones

Lighting: Overhead full spectrum fluorescent lights; 100-500 lux at surface

Photoperiod: 16h light:8h dark

Test temperature: $15 \pm 1^{\circ}\text{C}$

Endpoint: Mortality, 96-h LC50 (with 95% confidence limits)

Test validity: The control had 100% survival (must $\geq 90\%$)

Reference toxicant: 96-h test with Phenol ($\text{C}_6\text{H}_6\text{O}$) initiated January 25, 2008; current results
(96-h LC50 and 95% confidence limits) = 1.11 (1.01-1.20) log (mg/L Phenol)

Note: Outlined sections are protocol deviations explained on the comment page; v/v, volume per volume

Test Data

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Test Log:

Date	Day	Time	Technician	Comment/Observation
2008/02/11	0	1230	E. Blais/T. McDonald/L. Henson	test fish loaded at 1230 h
2008/02/12	1	1000	E. Blais/T. McDonald	all test fish appear normal
2008/02/13	2	1030	E. Blais/A. Bennion	all test fish appear normal
2008/02/14	3	1000	E. Blais/A. Bennion	all test fish appear normal
2008/02/15	4	1130	E. Blais/A. Bennion	all test fish appear normal

Chemistry:

Conc. (g/L)	control	0.125	0.25	0.50	1.0	2.0		

Day

pH (units)

Day	control	0.125	0.25	0.50	1.0	2.0		
0	7.9	7.9	7.9	8.0	7.8	7.9		
1	8.7	8.6	8.5	8.5	8.4	8.4		
2	8.7	8.6	8.5	8.5	8.5	8.5		
3	8.6	8.6	8.6	8.6	8.5	8.6		
4	8.5	8.6	8.5	8.5	8.4	8.5		

Conductivity (µS/cm)

Day	control	0.125	0.25	0.50	1.0	2.0		
0	NR	NR	NR	NR	NR	NR		
1	NR	NR	NR	NR	NR	NR		
2	462	457	462	457	451	459		
3	471	465	464	438	457	459		
4	472	468	465	460	461	461		

Notes: NR, not reported

Dissolved Oxygen (mg/L)

Day	control	0.125	0.25	0.50	1.0	2.0		
0	6.5	6.5	6.6	6.7	6.6	6.6		
1	6.4	6.5	6.6	6.6	6.6	6.6		
2	6.9	6.9	6.9	6.9	6.9	6.9		
3	7.1	7.2	7.1	7.2	7.2	7.2		
4	7.3	7.5	7.3	7.5	7.4	7.6		

Temperature (°C)

Day	control	0.125	0.25	0.50	1.0	2.0		
0	15	15	15	15	15	15		
1	15	15	15	15	15	15		
2	15	15	15	15	15	15		
3	14	14	14	14	14	14		
4	15	15	15	15	15	15		

Test Data

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Number Alive:

Conc. (g/L)	control	0.125	0.250	0.5	1.0	2.0		
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Day

0	10	10	10	10	10	10		
1	10	10	10	10	10	10		
2	10	10	10	10	10	10		
3	10	10	10	10	10	10		
4	10	10	10	10	10	10		

Mortality (%)

4	0	0	0	0	0	0		
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Biology Summary Tables:

Control Fish	Length (cm)	Wet Weight(g)
1	4.0	0.6
2	3.9	0.6
3	4.0	0.6
4	4.2	0.7
5	4.4	0.6
6	4.2	0.6
7	5.0	1.0
8	4.0	0.5
9	3.9	0.4
10	4.0	0.5

Conc. (g/L)	Group Wet Weight (g)
control	6.1
0.125	7.1
0.250	6.6
0.5	7.6
1.0	6.6
2.0	6.4

average	4.2	0.6
sd	0.3	0.2
cv(%)	8.0	26.1

Notes: nd, not done; na, not applicable;
sd, standard deviation; cv(%), coefficient of variation

Comments/Statistics

Client: NOR239 Reference: 08-0183-01-TRD

Test Result Comments:

Days 0 and 1 conductivity values not reported due to faulty meter.

Data Analysis:

Endpoints for mortality could not be calculated. No effect occurred.

Protocol Deviations:

Sample was not fully dissolved, continued with testing as per client request.