

**KINECTRICS INC.**

800 Kipling Ave., Unit 2, Toronto, Ontario, M8Z 5G5

Daphnia magna - 48 Hour Serial Dilution Test:

TWI_DM_Acute_Toxicity_R10.0

Client: Nunavut PNR-EED-12020

Sampling Method: Grab
Sampled by: C.D.
Date Collected: 3 August, 2021 Time Collected: 15:02
Date Received: 6 August, 2021 Time Received: 9:58
Date Test Initiated: 6 August, 2021 Time Initiated: 14:35
Date Test Completed: 8 August, 2021 Time Completed: 14:35
Temperature on Arrival (°C): 15.0
Test Initiated by: DS

Test Organisms:

Batch: 22 July, 2021
Days to First Brood: 9
Culture % Mortality (7 days prior to testing): 0 %
Average Number of Neonates/Brood: 22.0
Sample Weight: 200 g
Number of Replicates: 2
Test Organisms/Replicate: 10
Total Organisms/Test Level: 20
Sample Weight/Daphnia: 20 g

Test Notes: No pH adjustment; Samples were not frozen**Initial Chemistry:** pH 9.6; D.O. 5.0 mg/L; Cond. 1214 µS/cm; Temp. 19.0°C**Sample Description:** Opaque, brown, with debris

Pre-aeration Duration (min): 30

Test Results: Mortality/Immobility Observations:

Conc. (%)	24-hour: Immortality	48-hour: Immortality/Mortality
0	0	0
1) 1.56	0	0
1) 3.13	0	0
2) 6.25	0	0
3) 12.5	0	0
4) 25.0	0	0
5) 50.0	0	0
6) 100.0	0	0
Analyst(s)	SRF	DS

TOX_Dm Acute Serial Test R.2

Toxicity Analysis Number: 21-01458-5 (B)**Test Observations:**

Conc. (%)	Parameter	0-hour	48-hour
Control	pH	8.2	8.1
	D.O. (mg/L)	9.1	9.0
	Cond. (µS/cm)	291	298
	Temp. (°C)	20.4	20.5
Hardness (mg CaCO ₃ /L)		125.8	N/A
	pH	8.3	8.1
	D.O. (mg/L)	9.0	9.0
	Cond. (µS/cm)	313	314
1) 1.56	Temp. (°C)	21.3	20.5
	pH	8.4	8.1
	D.O. (mg/L)	8.9	9.0
	Cond. (µS/cm)	330	330
2) 3.13	Temp. (°C)	21.4	20.5
	pH	8.5	8.2
	D.O. (mg/L)	8.9	8.9
	Cond. (µS/cm)	362	363
3) 6.25	Temp. (°C)	21.4	20.5
	pH	8.8	8.2
	D.O. (mg/L)	8.9	8.9
	Cond. (µS/cm)	425	428
4) 12.5	Temp. (°C)	21.3	20.5
	pH	9.0	8.3
	D.O. (mg/L)	8.8	8.7
	Cond. (µS/cm)	548	559
5) 25.0	Temp. (°C)	21.3	20.5
	pH	9.3	8.5
	D.O. (mg/L)	8.6	8.5
	Cond. (µS/cm)	794	812
6) 50.0	Temp. (°C)	21.3	20.5
	pH	9.6	8.7
	D.O. (mg/L)	6.2	7.7
	Cond. (µS/cm)	1233	1305
7) 100.0	Temp. (°C)	19.7	20.5
	Hardness (mg CaCO ₃ /L)	236.1	N/A
	Analyst(s)	DS	DS

Instruments used to measure temperature, pH, D.O., and conductivity:

YSI 650 MDS: S/N 01C065AA

Calibrated Thermometer: S/N 15J21856 KIN 04673 (Temperature has been adjusted and recorded according to correction factor of -0.25°C as per certificate number 114793).

Test Results:

LC50: >100 %

Lower 95 % Limit: N/A

Upper 95 % Limit: N/A

Method of LC50 Calculation: Linear Interpolation (ICPIN) CETIS™ v1.9.3.0

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Reference Toxicant Summary - Rainbow trout acute toxicity test

Reference Chemical:	Potassium Chloride Lot # 210448	96 h LC50:	3.03 g/kg
Rainbow Trout Batch:	LFH – 28 April, 2021	95% Confidence Limits:	2.70 – 3.40 g/kg
Date of Toxicity Test:	5 July, 2021	Method of Calculation:	Spearman - Kärber (CETIS v1.9.3.0)

Historic Reference Data of Last 20 Tests:

Geometric Mean LC50 (log mean):	3.59 g/kg
Warning Limits (log mean $\pm$ 2SD):	2.91 – 4.24 g/kg
Control Limits (log mean $\pm$ 3SD):	2.65 – 4.66 g/kg
Coefficient of Variation:	1.15 %

Comments: Reference tests assess the relative sensitivity of the test culture to a reference toxicant, and the precision and reliability of the data produced by the laboratory under standardized conditions (Environment Canada 1992). These reference toxicant results indicate that test sensitivity to potassium chloride, and data precision and reliability are within established limits.

Instruments used to monitor physical and chemical parameters are calibrated daily.

Method Reference:	EPS 1/RM/13, Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, December 2000, Second Edition, plus all amendments to date.
Procedure Reference:	TWI_RBT_Acute_Toxicity_R11.0, Analytical & Environmental Laboratory, Kinectrics.

Reference Toxicant Summary – *Daphnia magna* acute toxicity test

Reference Chemical:	Sodium Chloride Lot # 202790	48 h LC50:	5.70 g/kg
<i>Daphnia magna</i> Batch:	DM 13 July, 2021	95% Confidence Limits:	5.55 – 5.85 g/kg
Date of Toxicity Test:	3 August, 2021	Method of Calculation:	Spearman - Kärber (CETIS v1.9.3.0)

Historic Reference Data of Last 20 Tests:

Geometric Mean LC50 (log mean):	5.68 g/kg
Warning Limits (log mean $\pm$ 2SD):	5.40 – 5.97 g/kg
Control Limits (log mean $\pm$ 3SD):	5.26 – 6.12 g/kg
Coefficient of Variation:	0.29 %

Comments: Reference tests assess the relative sensitivity of the test culture to a reference toxicant, and the precision and reliability of the data produced by the laboratory under standardized conditions (Environment Canada 1992). These reference toxicant results indicate that test sensitivity to sodium chloride, and data precision and reliability are within established limits.

Instruments used to monitor physical and chemical parameters are calibrated daily.

Method Reference:	EPS 1/RM/14, Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to <i>Daphnia magna</i> , December 2000, Second Edition, plus all amendments to date.
Procedure Reference:	TWI_DM_Acute_Toxicity_R10.0, Analytical & Environmental Laboratory, Kinectrics.

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KINECTRICS Inc.,

800 Kipling Ave., Unit 2, Toronto, Ontario, M8Z 5G5

Toxicity Analysis Number: 21-01458-5

Rainbow Trout - 96 Hour Serial Dilution Test:

TWI_RBT_Acute_Toxicity_R11.0

Client: Nunavut PNR-EED-12020

Sampling Method: Grab
 Sampled by: C.D.
 Date Collected: 3 August, 2021 Time Collected: 15:02
 Date Received: 6 August, 2021 Time Received: 9:58
 Date Test Initiated: 6 August, 2021 Time Initiated: 17:15
 Date Test Completed: 10 August, 2021 Time Completed: 17:15
 Temperature on Arrival (°C): 15.0
 Test Initiated by: EMS

Test Organisms:

Batch: LFH-28 April, 2021
 Cumulative Holding Tank Mortality (%) (7 days prior to testing): 0 %
 Mean Fish Weight (g): 0.60
 Mean Fish Fork Length +/- SD (mm): 39.7 ± 2.1
 Number of Replicates: 1
 Test Organisms/Replicate: 10
 Total Organisms/Test Level: 10
 Sample Weight (kg): 15
 Load Density (g/kg): 0.40

Test System:

Aeration rate* (mL/min/kg): 6.5 ± 1
 (mL/min/test weight): 97.5
 Pre-aeration Duration (min): 90
 *Pre-aeration and during testing

NOTES: No pH adjustment; Samples were not frozen

Initial Chemistry: pH 9.6; D.O. 5.2 mg/L; Cond. 1123 µS/cm; Temp. 15.5°C

Sample Description: Opaque, brown, with debris

Test Notes:

*Unable to conduct observation due to sample appearance

Mortality/Impairment Observations:

Conc. (%)	24 hour	48 hour	72 hour	96 hour
0	0	0	0	0
1) 1.56	0	0	0	0
2) 3.13	0	0	0	0
3) 6.25	0	0	0	0
4) 12.5	0	0	0	0
5) 25.0	0	0	0	0
6) 50.0	0	0	0	0
7) 100.0	*0	*0	*0	2 Dead
Analyst(s):	SRF	EMS	SRF	SRF

TOX_RBT Acute Serial Test R.2

Test Observations:

Conc. (%) /Initials	Parameter	0 hour	96 hour
Control	pH	8.2	8.0
	D.O. (mg/L)	10.1	10.1
	Cond. (µS/cm)	259	266
	Temp. (°C)	15.1	15.5
1) 1.56	pH	8.3	8.0
	D.O. (mg/L)	10.1	10.0
	Cond. (µS/cm)	273	281
	Temp. (°C)	15.1	15.5
2) 3.13	pH	8.4	8.0
	D.O. (mg/L)	10.0	10.0
	Cond. (µS/cm)	287	296
	Temp. (°C)	15.2	15.6
3) 6.25	pH	8.6	8.0
	D.O. (mg/L)	10.0	9.9
	Cond. (µS/cm)	315	326
	Temp. (°C)	15.2	15.6
4) 12.5	pH	8.8	8.1
	D.O. (mg/L)	10.0	9.9
	Cond. (µS/cm)	371	384
	Temp. (°C)	15.3	15.7
5) 25.0	pH	9.1	8.1
	D.O. (mg/L)	9.9	9.9
	Cond. (µS/cm)	481	500
	Temp. (°C)	15.3	15.7
6) 50.0	pH	9.4	8.2
	D.O. (mg/L)	9.8	9.9
	Cond. (µS/cm)	695	732
	Temp. (°C)	15.3	15.8
7) 100.0	pH	9.6	8.3
	D.O. (mg/L)	8.1	9.9
	Cond. (µS/cm)	1118	1173
	Temp. (°C)	15.3	15.9
Analyst (s)		EMS	SRF

Instruments used to measure temperature, pH, D.O., and conductivity:

YSI 650 MDS: S/N 01C065AA

Calibrated Thermometer: S/N 15J21856 KIN 04673 (Temperature has been adjusted and recorded according to correction factor of 0.01°C as per certificate number 114793).

Test Results:

LC50: >100 % Lower 95 % Limit: N/A
 Upper 95 % Limit: N/A

Method of LC50 Calculation: Linear Interpolation (ICPIN) CETIS™ v1.9.3.0