



Transform Compost Products

healthy soil, healthy future

Worm Castings Verification Process

March 2023

Transform's worm castings are produced according to the requirements specified by the Canadian General Standards Board Document CAN/CGSB-32.311-2020 Amended March 2021 – Organic Production Systems Permitted Substances Lists. The requirements also refer and comply with CAN/CGSB-32.310 2020 – General Principles and Management Standards; and the CCME Guidelines for Compost Quality.

Table 4.2 in CAN/CGSB-32.311 identifies the requirements for worm castings:

“Worm castings (also called vermicompost, worm compost, vermicasts, worm humus or worm manure) are the end product of the breakdown of organic matter and compounds by some earthworm species.

Feedstocks for earthworms shall meet the criteria in Table 4.2 Compost feedstocks.

The operator shall be able to demonstrate that:

- a) worm castings produced either on the farm or obtained from off farm sources meet the limits for acceptable levels (MPN/g total solids) of human pathogens as specified in Guidelines for Compost Quality; or*
- b) that best practices known to eliminate human pathogens during vermicomposting have been used.”*

The earthworm species used to create Transform Compost Products' worm castings is the *Eisenia fetida* or red wiggler worm.

The compost feedstocks used to create Transform Compost Products' worm castings is 100% separated dairy cattle manure, where the animals are able to roam freely in a barn, and are not kept permanently in the dark, which conforms to the criteria specified in 5.5.1 of CAN/CGSB-32.310 which states:

“Animal manure produced on the operation shall be used first. When all available manure is used up, organic manure from other sources may be used. If organic manure is not commercially available, non-organic manure is permitted provided that:

- a) the non-organic source is not a fully caged system in which livestock cannot turn 360°, and*
- b) livestock is not permanently kept in the dark, and*
- c) the source and quantity of manure, type of livestock, and evaluation of the criteria in 5.5.1 a) and 5.5.1 b) shall be recorded.”*

Transform Compost Products' worm castings have a fecal coliform content of 33 MPN/g dry solids, and no *Salmonella* (analysis attached), which meets the limits for acceptable levels of human pathogens as specified in the Guidelines for Compost Quality:

“Organism content shall meet the following: “Fecal coliforms < 1000 most probable number (MPN/g) of total solids calculated on a dry weight basis, and No Salmonella sp. With a detection level <MPN/4g total solids calculated on a dry weight basis”

Best practices known to eliminate human pathogens during the vermicomposting process have been used, including precomposting the feedstock.

Transform Compost Products' worm castings meet the trace element requirements of the Guidelines for Compost Quality, and contain no foreign matter or other contaminants.

This report prepared by John Paul, PhD PAG

REPORT NO.
C23062-70001

ACCOUNT NUMBER
02653

A & L Canada Laboratories Inc.

2136 Jetstream Road, London, ON, N5V 3P5 Tel: (519) 457-2575 Fax: (519) 457-2664



TO: TRANSFORM COMPOST PRODUCTS
3911 MT LEHMAN RD
ABBOTSFORD, BC V2T5W5
CANADA
Canada

FOR: Worm Castings

Phone: 605-856-2722



CERTIFICATE OF ANALYSIS

PAGE: 1 / 3

PROJECT NO:
PO#: TCP 2023-1
LAB NUMBER: 627003
SAMPLE ID: WORM CASTINGS

SAMPLE MATRIX: COMPOST
DATE SAMPLED: 2023-03-01
DATE RECEIVED: 2023-03-03
DATE REPORTED: 2023-03-10
DATE PRINTED: 2023-03-13

PARAMETER	RESULT	UNIT	DETECTION LIMIT	METHOD REFERENCE
Arsenic	1.31	ug/g	1.00	EPA 3050B/6010B(mod) *
Cadmium	BDL	ug/g	1.00	EPA 3050B/6010B(mod) *
Cobalt	4.05	ug/g	1.00	TMECC 4.06; EPA 3050/6010(mod)*
Chromium	10.98	ug/g	1.00	TMECC.04.06; EPA 3050/6010(mod)*
Copper	79.15	ug/g	1.00	TMECC 4.06; EPA 3050/6010(mod)*
Mercury	BDL	ug/g	0.10	EPA 7471 *
Molybdenum	2.6	ug/g	1.0	TMECC.04.06; EPA 3050/6010(mod)*
Nickel	9.86	ug/g	1.00	TMECC 4.06; EPA 3050/6010(mod)*
Lead	1.44	ug/g	1.00	EPA 3050B/6010B(mod) *
Selenium	BDL	ug/g	1.00	EPA 3050/6010 (mod) *
Zinc	287.55	ug/g	1.00	TMECC 4.06; EPA 3050/6010(mod)*

Comment:

Results reported on a dry weight basis

* - accredited test

BDL - Below detectable levels

The results of this report relate to the sample submitted and analyzed. All results are released based on acceptable QC data.



C23062-70001

Results Authorized By:

Haifeng Song, Ph.D., C.Chem. Lab Director

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Additional information available upon request

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DATE RECEIVED: 2023-03-03
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DATE PRINTED: 2023-03-13

PARAMETER	RESULT	UNIT	DETECTION LIMIT	METHOD REFERENCE
E. coli	<3	MPN/g dry	3	TMECC 07.01
Salmonella spp.	NEGATIVE	P-A/25.0g(ml)	1 CFU	MFLP-75 *
Fecal Coliform	33	MPN/g dry	3	TMECC 07.01
Total sharps > 2.8 mm*	BDL	pieces/500ml		TMECC 03.08
Total sharps > 12.5 mm	BDL	pieces/500ml		TMECC 03.08
Total FM > 2.8 mm*	BDL	%	0.01	TMECC 03.08
Total FM > 25 mm	BDL	pieces/500ml		TMECC 03.08
Total plastics > 2.8 mm*	BDL	%	0.01	TMECC 03.08
Total Organic Matter @ 550 deg C	67.48	%	0.10	LOI@550C
Moisture	77.64	%	0.10	TMECC.03.09-A
Conductivity (@25 deg C 1:5)	2.26	ms/cm	0.02	TMECC.04.10
Sieve 2 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 1 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 1/2 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 3/8 Inch (% Passing)	100.00	%	0.01	ASTMD422
Sieve 1/4 Inch (% Passing)	100.00	%	0.10	ASTMD422
Compost Stability Index	8	---		TMECC.05.08-B
Respiration-mgCO ₂ -C/g OM/day	0.60	mgCO ₂ -C/ gOM/day	0.01	TMECC.05.08-B
Respiration - mgCO ₂ -C/g TS/day	0.40	mgCO ₂ -C/gTS/ day	0.01	TMECC.05.08-B

Comment:

Maturity Index: 8 - Inactive, highly matured compost, very well aged, possibly over-aged, like soil; no limitations for usage.

Results reported on a dry weight basis

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Haifeng Song, Ph.D., C.Chem. Lab Director

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PARAMETER	RESULT	UNIT	DETECTION LIMIT	METHOD REFERENCE
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1. FM (Foreign matter) = glass, metal, plastic
2. Sharps = foreign matter pieces of a size or shape that can cause human or animal injury
3. 8 mesh screen = 2.36mm
4. *2.8mm screen is used since 3.0mm screen does not exist

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Results Authorized By:



C23062-70001

Haifeng Song, Ph.D., C.Chem. Lab Director

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Report Number: C23062-10067
 Account Number: 02653

A & L Canada Laboratories Inc.

2136 Jetstream Road, London, Ontario, N5V 3P5
 Telephone: (519) 457-2575 Fax: (519) 457-2664



C23062-10067



To: TRANSFORM COMPOST PRODUCTS
 3911 MT LEHMAN RD
 ABBOTSFORD, BC V2T5W5

For: WORM CASTINGS

Reported Date:
 Printed Date: Mar 13, 2023

COMPOST REPORT

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Sample Number	Lab Number	pH	Lime Index	Available Organic Matter %	Phosphorus P ppm	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm
WORM CASTING	79146	6.4	6.9	53.9	1449	4034	2258	4097

Sulfur S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Sodium Na ppm	Nitrate-N NO3-N ppm	Soluble Salt ms/cm	Nitrogen (Total) (%)	Chloride ppm
380	112.5	58	108	8.3	7.0	994	1328	6.4	1.55	1792

INTERPRETATION

CEC		Percent Base Saturation				Proportional Equivalents (meq)				Cation Ratio		C/N Ratio
meq/100g	% BS	% K	% Mg	% Ca	% Na	K	Mg	Ca	Na	Mg/K	Ca/Mg	
53.7	100.0	19.25	34.57	38.13	8.05	10.34	18.57	20.49	4.32	2:1	1:1	23:1
Optimum Range:		3 - 5	8 - 20	60 - 80		0.5 - 1.3				7:1	5:1	

CQA

* Results reported on a dry weight basis.

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* Crop yield is influenced by a number of factors in addition to soil fertility.

No guarantee or warranty concerning crop performance is made by A & L.

Results Authorized By:

Beth Wood, Agronomist

A & L Canada Laboratories Inc.

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REPORT OF ANALYSIS

TO: TRANSFORM COMPOST PRODUCTS

3911 MT LEHMAN RD

ABBOTSFORD, BC V2T5W5

CANADA

RE: Worm Castings

DATE RECEIVED: 2023-03-03

DATE REPORTED: 2023-03-13

PAGE: 1 / 1

LAB NO.	SAMPLE ID	ANALYSIS	RESULT	UNIT	METHOD
79146	WORM CASTINGS	Nitrogen (Total)	1.5	%	TMECC.04.02-D



C23062-10067

Results Authorized By:

A handwritten signature in black ink, appearing to read 'Z Wood'.