





13611 B Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 • FAX (402) 334-9121 • www.midwestlabs.com

Lab #	8604386	Report of Analysis		Report Number: 19-092-4016																																																																																																																																																	
Account: 43761	COMPOST TECHNOLOGIES LLC COMPOST TECHNOLOGIES LLC 48414 COUNTY RD B CENTER CO 81125		 Robert Ferris Account Manager 402-829-9871																																																																																																																																																		
Date Sampled: Date Received: Sample ID:	2019-03-18 All Lines Spring 2019				Compost Technologies COMPOST																																																																																																																																																
Total content, lbs per ton (as rec'd)																																																																																																																																																					
<table border="1"> <thead> <tr> <th></th> <th></th> <th>Analysis (as rec'd)</th> <th>Analysis (dry weight)</th> <th></th> </tr> </thead> <tbody> <tr> <td colspan="5">NUTRIENTS</td> </tr> <tr> <td colspan="5">Nitrogen</td> </tr> <tr> <td>Total Nitrogen</td> <td>%</td> <td>1.33</td> <td>1.72</td> <td>26.6</td> </tr> <tr> <td>Organic Nitrogen</td> <td>%</td> <td>1.19</td> <td>1.54</td> <td>23.8</td> </tr> <tr> <td>Ammonium Nitrogen</td> <td>%</td> <td>0.120</td> <td>0.156</td> <td>2.4</td> </tr> <tr> <td>Nitrate Nitrogen</td> <td>%</td> <td>0.02</td> <td>0.03</td> <td>0.4</td> </tr> <tr> <td colspan="5">Major and Secondary Nutrients</td> </tr> <tr> <td>Phosphorus</td> <td>%</td> <td>0.65</td> <td>0.84</td> <td>13.0</td> </tr> <tr> <td>Phosphorus as P2O5</td> <td>%</td> <td>1.49</td> <td>1.93</td> <td>29.8</td> </tr> <tr> <td>Potassium</td> <td>%</td> <td>1.93</td> <td>2.50</td> <td>38.6</td> </tr> <tr> <td>Potassium as K2O</td> <td>%</td> <td>2.32</td> <td>3.01</td> <td>46.4</td> </tr> <tr> <td>Sulfur</td> <td>%</td> <td>0.94</td> <td>1.22</td> <td>18.8</td> </tr> <tr> <td>Calcium</td> <td>%</td> <td>3.52</td> <td>4.56</td> <td>70.4</td> </tr> <tr> <td>Magnesium</td> <td>%</td> <td>0.80</td> <td>1.04</td> <td>16.0</td> </tr> <tr> <td>Sodium</td> <td>%</td> <td>0.440</td> <td>0.571</td> <td>8.8</td> </tr> <tr> <td colspan="5">Micronutrients</td> </tr> <tr> <td>Iron</td> <td>ppm</td> <td>20000</td> <td>25937</td> <td>40.0</td> </tr> <tr> <td>Manganese</td> <td>ppm</td> <td>551</td> <td>715</td> <td>1.1</td> </tr> <tr> <td>Boron</td> <td>ppm</td> <td>< 100</td> <td>---</td> <td>---</td> </tr> <tr> <td colspan="5">OTHER PROPERTIES</td> </tr> <tr> <td>Moisture</td> <td>%</td> <td>22.89</td> <td></td> <td></td> </tr> <tr> <td>Total Solids</td> <td>%</td> <td>77.11</td> <td></td> <td>1542.2</td> </tr> <tr> <td>Organic Matter</td> <td>%</td> <td>23.30</td> <td>30.22</td> <td>466.0</td> </tr> <tr> <td>Ash</td> <td>%</td> <td>53.60</td> <td>69.51</td> <td>1072.0</td> </tr> <tr> <td>Total Carbon</td> <td>%</td> <td>11.07</td> <td>14.36</td> <td></td> </tr> <tr> <td>Chloride</td> <td>%</td> <td>0.56</td> <td>0.73</td> <td></td> </tr> <tr> <td>pH</td> <td></td> <td>7.9</td> <td></td> <td></td> </tr> <tr> <td>Conductivity 1:5 (Soluble Salts)</td> <td>mS/cm</td> <td>12.6</td> <td></td> <td></td> </tr> </tbody> </table>							Analysis (as rec'd)	Analysis (dry weight)		NUTRIENTS					Nitrogen					Total Nitrogen	%	1.33	1.72	26.6	Organic Nitrogen	%	1.19	1.54	23.8	Ammonium Nitrogen	%	0.120	0.156	2.4	Nitrate Nitrogen	%	0.02	0.03	0.4	Major and Secondary Nutrients					Phosphorus	%	0.65	0.84	13.0	Phosphorus as P2O5	%	1.49	1.93	29.8	Potassium	%	1.93	2.50	38.6	Potassium as K2O	%	2.32	3.01	46.4	Sulfur	%	0.94	1.22	18.8	Calcium	%	3.52	4.56	70.4	Magnesium	%	0.80	1.04	16.0	Sodium	%	0.440	0.571	8.8	Micronutrients					Iron	ppm	20000	25937	40.0	Manganese	ppm	551	715	1.1	Boron	ppm	< 100	---	---	OTHER PROPERTIES					Moisture	%	22.89			Total Solids	%	77.11		1542.2	Organic Matter	%	23.30	30.22	466.0	Ash	%	53.60	69.51	1072.0	Total Carbon	%	11.07	14.36		Chloride	%	0.56	0.73		pH		7.9			Conductivity 1:5 (Soluble Salts)	mS/cm	12.6		
		Analysis (as rec'd)	Analysis (dry weight)																																																																																																																																																		
NUTRIENTS																																																																																																																																																					
Nitrogen																																																																																																																																																					
Total Nitrogen	%	1.33	1.72	26.6																																																																																																																																																	
Organic Nitrogen	%	1.19	1.54	23.8																																																																																																																																																	
Ammonium Nitrogen	%	0.120	0.156	2.4																																																																																																																																																	
Nitrate Nitrogen	%	0.02	0.03	0.4																																																																																																																																																	
Major and Secondary Nutrients																																																																																																																																																					
Phosphorus	%	0.65	0.84	13.0																																																																																																																																																	
Phosphorus as P2O5	%	1.49	1.93	29.8																																																																																																																																																	
Potassium	%	1.93	2.50	38.6																																																																																																																																																	
Potassium as K2O	%	2.32	3.01	46.4																																																																																																																																																	
Sulfur	%	0.94	1.22	18.8																																																																																																																																																	
Calcium	%	3.52	4.56	70.4																																																																																																																																																	
Magnesium	%	0.80	1.04	16.0																																																																																																																																																	
Sodium	%	0.440	0.571	8.8																																																																																																																																																	
Micronutrients																																																																																																																																																					
Iron	ppm	20000	25937	40.0																																																																																																																																																	
Manganese	ppm	551	715	1.1																																																																																																																																																	
Boron	ppm	< 100	---	---																																																																																																																																																	
OTHER PROPERTIES																																																																																																																																																					
Moisture	%	22.89																																																																																																																																																			
Total Solids	%	77.11		1542.2																																																																																																																																																	
Organic Matter	%	23.30	30.22	466.0																																																																																																																																																	
Ash	%	53.60	69.51	1072.0																																																																																																																																																	
Total Carbon	%	11.07	14.36																																																																																																																																																		
Chloride	%	0.56	0.73																																																																																																																																																		
pH		7.9																																																																																																																																																			
Conductivity 1:5 (Soluble Salts)	mS/cm	12.6																																																																																																																																																			

13611 B Street • Omaha, Nebraska 68144-3693 • (402) 334-7770 • FAX (402) 334-9121 • www.midwestlabs.com

Lab #	8604386	Biological & Physical Properties			Report Number: 19-092-4016																																																																																																																																																												
Account:	43761	COMPOST TECHNOLOGIES LLC COMPOST TECHNOLOGIES LLC 48414 COUNTY RD B CENTER CO 81125			 Robert Ferris Client Service Representative 402-829-9871																																																																																																																																																												
Date Sampled:	Date Received:					Sample ID:	2019-03-18	All Lines Spring 2019																																																																																																																																																									
		Compost Technologies			COMPOST																																																																																																																																																												
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;"></th> <th style="width: 15%;">Analysis (as rec'd)</th> <th style="width: 15%;">Analysis (dry weight)</th> <th style="width: 10%;">Units</th> <th style="width: 10%;">Detection Limit</th> <th style="width: 15%;">Method</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="background-color: #f4a460;">Biological Properties</td> </tr> <tr> <td>Germination</td> <td>100</td> <td></td> <td>%</td> <td>1</td> <td>TMECC 05.05A</td> </tr> <tr> <td>Germination Vigor</td> <td>70</td> <td></td> <td>%</td> <td>1</td> <td>TMECC 05.05A</td> </tr> <tr> <td>CO₂ OM Evolution</td> <td>0.68</td> <td></td> <td>mgCO₂-C/gOM/day</td> <td>0.01</td> <td>TMECC 05.08B</td> </tr> <tr> <td>CO₂ Solids Evolution</td> <td>0.55</td> <td></td> <td>mgCO₂-C/gTS/day</td> <td>0.01</td> <td>TMECC 05.08B</td> </tr> <tr> <td>Fecal Coliform</td> <td></td> <td>< 0.2</td> <td>mpn/g</td> <td>0.2</td> <td>EPA 1681</td> </tr> <tr> <td>Salmonella</td> <td></td> <td>< 0.01</td> <td>mpn/4g</td> <td>0.01</td> <td>EPA 1682</td> </tr> <tr> <td>Stability Rating</td> <td>Stable</td> <td></td> <td>N/A</td> <td>N/A</td> <td>TMECC 05.08B</td> </tr> <tr> <td colspan="6" style="background-color: #f4a460;">Physical Properties</td> </tr> <tr> <td>Bulk Density (Loose)</td> <td>1163</td> <td></td> <td>lbs/cu yard</td> <td>1</td> <td>WT/VOL</td> </tr> <tr> <td>Bulk Density (Packed)</td> <td>1348</td> <td></td> <td>lbs/cu yard</td> <td>1</td> <td>WT/VOL</td> </tr> <tr> <td>Film Plastics</td> <td>n.d.</td> <td></td> <td>%</td> <td>0.25</td> <td>Microscopic</td> </tr> <tr> <td>Glass Fragments</td> <td>n.d.</td> <td></td> <td>%</td> <td>0.25</td> <td>Microscopic</td> </tr> <tr> <td>Hard Plastics</td> <td>n.d.</td> <td></td> <td>%</td> <td>0.25</td> <td>Microscopic</td> </tr> <tr> <td>Metal Fragment</td> <td>n.d.</td> <td></td> <td>%</td> <td>0.25</td> <td>Microscopic</td> </tr> <tr> <td>Sharps</td> <td>0</td> <td></td> <td>---</td> <td>---</td> <td>Microscopic</td> </tr> <tr> <td>Max. Particle Length</td> <td></td> <td>0.5</td> <td>inches</td> <td>N/A</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 3"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 2"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 1.5"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 1"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 3/4"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 5/8"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 3/8"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> <tr> <td>Sieve % Passing 1/4"</td> <td></td> <td>100</td> <td>%</td> <td>0.01</td> <td>TMECC Sieve</td> </tr> </tbody> </table>							Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method	Biological Properties						Germination	100		%	1	TMECC 05.05A	Germination Vigor	70		%	1	TMECC 05.05A	CO ₂ OM Evolution	0.68		mgCO ₂ -C/gOM/day	0.01	TMECC 05.08B	CO ₂ Solids Evolution	0.55		mgCO ₂ -C/gTS/day	0.01	TMECC 05.08B	Fecal Coliform		< 0.2	mpn/g	0.2	EPA 1681	Salmonella		< 0.01	mpn/4g	0.01	EPA 1682	Stability Rating	Stable		N/A	N/A	TMECC 05.08B	Physical Properties						Bulk Density (Loose)	1163		lbs/cu yard	1	WT/VOL	Bulk Density (Packed)	1348		lbs/cu yard	1	WT/VOL	Film Plastics	n.d.		%	0.25	Microscopic	Glass Fragments	n.d.		%	0.25	Microscopic	Hard Plastics	n.d.		%	0.25	Microscopic	Metal Fragment	n.d.		%	0.25	Microscopic	Sharps	0		---	---	Microscopic	Max. Particle Length		0.5	inches	N/A	TMECC Sieve	Sieve % Passing 3"		100	%	0.01	TMECC Sieve	Sieve % Passing 2"		100	%	0.01	TMECC Sieve	Sieve % Passing 1.5"		100	%	0.01	TMECC Sieve	Sieve % Passing 1"		100	%	0.01	TMECC Sieve	Sieve % Passing 3/4"		100	%	0.01	TMECC Sieve	Sieve % Passing 5/8"		100	%	0.01	TMECC Sieve	Sieve % Passing 3/8"		100	%	0.01	TMECC Sieve	Sieve % Passing 1/4"		100	%	0.01	TMECC Sieve
	Analysis (as rec'd)	Analysis (dry weight)	Units	Detection Limit	Method																																																																																																																																																												
Biological Properties																																																																																																																																																																	
Germination	100		%	1	TMECC 05.05A																																																																																																																																																												
Germination Vigor	70		%	1	TMECC 05.05A																																																																																																																																																												
CO ₂ OM Evolution	0.68		mgCO ₂ -C/gOM/day	0.01	TMECC 05.08B																																																																																																																																																												
CO ₂ Solids Evolution	0.55		mgCO ₂ -C/gTS/day	0.01	TMECC 05.08B																																																																																																																																																												
Fecal Coliform		< 0.2	mpn/g	0.2	EPA 1681																																																																																																																																																												
Salmonella		< 0.01	mpn/4g	0.01	EPA 1682																																																																																																																																																												
Stability Rating	Stable		N/A	N/A	TMECC 05.08B																																																																																																																																																												
Physical Properties																																																																																																																																																																	
Bulk Density (Loose)	1163		lbs/cu yard	1	WT/VOL																																																																																																																																																												
Bulk Density (Packed)	1348		lbs/cu yard	1	WT/VOL																																																																																																																																																												
Film Plastics	n.d.		%	0.25	Microscopic																																																																																																																																																												
Glass Fragments	n.d.		%	0.25	Microscopic																																																																																																																																																												
Hard Plastics	n.d.		%	0.25	Microscopic																																																																																																																																																												
Metal Fragment	n.d.		%	0.25	Microscopic																																																																																																																																																												
Sharps	0		---	---	Microscopic																																																																																																																																																												
Max. Particle Length		0.5	inches	N/A	TMECC Sieve																																																																																																																																																												
Sieve % Passing 3"		100	%	0.01	TMECC Sieve																																																																																																																																																												
Sieve % Passing 2"		100	%	0.01	TMECC Sieve																																																																																																																																																												
Sieve % Passing 1.5"		100	%	0.01	TMECC Sieve																																																																																																																																																												
Sieve % Passing 1"		100	%	0.01	TMECC Sieve																																																																																																																																																												
Sieve % Passing 3/4"		100	%	0.01	TMECC Sieve																																																																																																																																																												
Sieve % Passing 5/8"		100	%	0.01	TMECC Sieve																																																																																																																																																												
Sieve % Passing 3/8"		100	%	0.01	TMECC Sieve																																																																																																																																																												
Sieve % Passing 1/4"		100	%	0.01	TMECC Sieve																																																																																																																																																												

Compost Results Interpretations

Page 1

Report #: 19-092-4016
 DATE RECEIVED: 2019-03-18

Organic Matter %		
23.30	As Received	Greater than 20% indicates a desirable range for compost on a dry weight basis.
30.22	Dry Weight	
<p>Compost is a significant source of Organic Matter, which is an important supplier of carbon. Organic Matter improves soil and plant efficiency by improving soil physical properties, providing a source of energy to beneficial organisms, and enhancing the reservoir of soil nutrients.</p>		

C/N Ratio		
8.3:1		20-30 indicates an ideal range for the initial compost process. 10-20 indicates an ideal range for a finished compost.
<p>All organic matter is made up of substantial amounts of carbon with lesser amounts of nitrogen. The balance of these two elements is called the Carbon/Nitrogen Ratio. For the best performance, the compost pile requires the correct proportion of carbon for energy and nitrogen for protein production. If the C:N ratio is too high (excess carbon) decomposition slows down. If the C:N ratio is too low (excess Nitrogen) the compost pile could be difficult to manage.</p>		

Moisture %		
22.89		<35% = Indicates overly dry compost
		>55% = Indicates overly wet compost
<p>Moisture Percent is the measure of water present in the compost and expressed as a percentage of total weight. Moisture present affects handling and transport. Overly dry will be light and dusty while overly wet will be heavy and clumpy. A desirable moisture content of finished compost will range between 40 to 50%.</p>		

Compost Results Interpretations

Page 2

Report #:

19-092-4016

DATE RECEIVED:

2019-03-18

Conductivity or Soluble Salts measures the conductance of electrical current in a liquid compost slurry. Excessive soluble salt content in a compost can prevent or delay seed germination and proper root growth. Conductivity analysis is done on a 1:5 basis.

Conductivity 1:5
12.6

Conductivity Level	Interpretation
Greater than 10	Very High nutrient content. Use for Ag Applications
5 - 10	High nutrient content. Use for Ag Applications
3 - 5	Higher than desirable for salt sensitive plants, some loss of vigor
0.6 - 3	Desirable range for most plants
0.3 - 0.6	Ideal range for greenhouse growth media
0.0 - 0.3	Very Low: Indicates very low nutrient status: plants may show deficiencies.

Compost Results Interpretations
Page 3

Report #: 19-092-4016
DATE RECEIVED: 2019-03-18

pH Value
7.9

0 to 14 scale with 6 to 8 as normal pH levels for compost
A pH in the 6 to 8 pH range indicates a more mature compost

pH measures the acidity or alkalinity of the compost, and is a measurement of the hydrogen ion activity of a soil or compost on a logarithmic scale. The pH scale ranges from 0 to 14 and 7 indicates a neutral pH. Growing media with a higher pH or pH greater than 7 can benefit from a compost that has a more acidic pH or pH below 7. This type of application will possibly lower the soil pH making the soil more conducive to plants that thrive in a more acidic soil condition.

Nutrient Index (Ag Index)
5.1

The Nutrient Index normally runs between 1 and 10.

The Nutrient Index is obtained by dividing the total nutrients (N,P,K) by the amount of salt (Sodium and Chloride). The higher the Nutrient Index the less chance of having a toxic buildup of Sodium (salt) in the soil.

AG INDEX CHART											
salt injury possible		use on soils with excellent drainage characteristics, good water quality and low salts				you may use on soils with poor drainage, poor water quality, or high salts				for all soils	
1	2	3	4	5	6	7	8	9	10	> 10	

Nutrients (N+P205+K20)
6.67 Average Nutrient Content Dry Weight <2 = Low, >5 = High
1.5-1.5-2.5 Rating As Received

The most commonly used compost data is the amount of Nitrogen, Phosphate, and Potash (abbreviated as N,P,K) present and the information is similar to that found in common fertilizers. If a compost result has the rating 1-2-2 it means that the compost has 1% Nitrogen, 2% Phosphate and 2% Potash. Most compost tests will have a average nutrient level (N+P+K) of < 5%.

19-092-4016

REPORT DATE
Apr 02, 2019
 RECEIVED DATE
Mar 18, 2019

SEND TO
43761



13611 B Street • Omaha, Nebraska 68144-3693 • (402) 334-7770
 www.midwestlabs.com

ISSUE DATE
Apr 02, 2019

COMPOST TECHNOLOGIES LLC
COMPOST TECHNOLOGIES LLC
48414 COUNTY RD B
CENTER CO 81125

REPORT OF ANALYSIS
 For: (43761) COMPOST TECHNOLOGIES LLC
 Compost Technologies
 COMPOST

Sample ID: **All Lines Spring 2019** Lab Number: **8604386**

Analysis	Level Found	As Received	Dry Weight	Units	Reporting Limit	Method	Analyst-Date	Verified-Date
Cadmium (total)	< 2.5	< 2.50	mg/kg	2.5	EPA 6010	ery3-2019/03/22	bab2-2019/03/28	
Chromium (total)	15.0	19.4	mg/kg	1.00	EPA 6010	ery3-2019/03/21	bab2-2019/03/28	
Mercury (total)	< 0.05	< 0.05	mg/kg	0.05	EPA 7471	pid8-2019/03/22	bab2-2019/03/28	
Lead (total)	9.5	12.3	mg/kg	5.0	EPA 6010	ery3-2019/03/21	bab2-2019/03/28	
Molybdenum (total)	3.9	5.0	mg/kg	1.0	EPA 6010	ery3-2019/03/21	bab2-2019/03/28	
Nickel (total)	12.0	15.5	mg/kg	1.0	EPA 6010	ery3-2019/03/21	bab2-2019/03/28	
Selenium (total)	< 10.0	< 10.0	mg/kg	10.0	EPA 6010	ery3-2019/03/21	bab2-2019/03/28	
Zinc (total)	190.4	246.9	mg/kg	2.0	EPA 6010	ery3-2019/03/21	bab2-2019/03/28	
Copper (total)	44.9	58.2	mg/kg	1	EPA 6010	ery3-2019/03/21	bab2-2019/03/28	
Arsenic (total)	16.6	21.6	mg/kg	0.5	EPA 6020	ras7-2019/03/28	bab2-2019/03/28	

EPA 1681 holding time of < 24 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. Individual states enforce different holding times for compost or biosolids so please contact the regulatory body in your state for their requirements.

EPA 1682 holding time of < 6 hours from sampling to laboratory set up of samples for biosolids and compost has been exceeded. If a level of Salmonella was reported, the value would be considered an estimate. Individual states enforce different holding times for compost or biosolids so please contact the regulatory body in your state for their requirements. ppm = parts per million, mg/kg

For questions please contact:

[Signature]
 Rob Ferris
 Account Manager

The result(s) issued on this report only reflect the analysis of the sample(s) submitted. Our reports and letters are for the exclusive and confidential use of our clients and may not be used for any other purpose. Our reports and letters are for the exclusive and confidential use of our clients and may not be used for any other purpose. Our reports and letters are for the exclusive and confidential use of our clients and may not be used for any other purpose.

may any reference be made without the prior written authorization.