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Olus Winterpick Business Park Hurstpierpoint Road Wineham, nr Henfield West Sussex BN5 9BJ

ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information Laboratory information

Winterpick Business Site 23 Sep 2010 Composting site Received at lab 0 - 10mm Grade (particle size range) Lab sample ref. 101806 16308 Principal Grade type Lab batch number CA's code 0216 Lab report code Date sampled Report by S. Johnson Batch age when sampled 12 weeks Report date 29 Oct 2010 Producer's sample code 01-28-10 PRIN Report number ATLL16308#1

Plant growth results reported 23 Nov 2010

SUMMARY ~ PAS 100 "PASS" OR "FAIL"

Parameter	Result	PAS	Unit	Pass or	Method Reference
		100		Fail	
		upper			
E. coli	400	1000	CFU/g	Pass	BS ISO 11866-3
Salmonella spp	0	0	MPN in 25 g	Pass	BS EN ISO 6579
Cadmium as Cd	0.4	1.50	mg/kg	Pass	BS EN 13652
Chromium as Cr	14	100.00	mg/kg	Pass	BS EN 13652
Copper as Cu	37	200.00	mg/kg	Pass	BS EN 13652
Lead as Pb	75	200.00	mg/kg	Pass	BS EN 13652
Mercury as Hg	0.2	1.00	mg/kg	Pass	BS ISO 16772
Nickel as Ni	9	50.00	mg/kg	Pass	BS EN 13652
Zinc as Zn	133	400.00	mg/kg	Pass	BS EN 13652
CO ₂ (stability)	10.4	16.0	mg /g OM / d	Pass	WRAP ORG0020
Weed plants	0.00	0	number growing	Pass	PAS100:2010
Glass, metal, plastic, other	0.20		% of 'air-dry' sample > 2	Pass	PAS100:2005, Annex E
Plastic	0.00	0.25	mm	Pass	
Stones in "mulch"	4.05	_	% of 'air-dry' sample > 4	Pass	
Stones in other than "mulch"	4.05	8	mm	Pass	

Parameter	Result	PAS 100		Fail	Method Reference
Plants germinated	96.5	80	no. of plants, tests as % of controls	Pass	PAS100:2010
Plant top growth	138.9	80	average g / plant, tests as % of controls	Pass	FA3100.2010

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Detailed analysis: refer to spreadsheet sub-sections

Fertiliser nutrient comparisons: refer to sub-section 'TotalNs'.

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ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information	Laboratory information				
Composting site	Winterpick Business Site	Received at lab	23 Sep 2010		
Grade (particle size range)	0 - 10mm	Lab sample number	101806		
Grade type	Principal	Lab batch number	16308		
CA's code	0216	Lab report code			
Date sampled		Report by	S. Johnson		
Batch age when sampled	12 weeks	Report date & time	29 Oct 2010		
Producer's sample code	01-28-10 PRIN	Report number	ATLL16308#1		

WATER EXTRACTABLE NUTRIENTS¹

	As received	(fresh)	In dry matter		Method	Plant
Parameter	Result	Units	Result	Units	Reference	significance
NH ₄ -N (ammonium-N)		mg/l		mg/kg	BS EN 13652	Primary
NO ₃ -N (nitrate-N)		mg/l		mg/kg	BS EN 13652	nutrients
NH ₄ -N plus NO ₃ -N		mg/l		mg/kg	Calculated	
Phosphorus as P		mg/l		mg/kg	BS EN 13652	
Potassium as K		mg/l		mg/kg	BS EN 13652	
Calcium as Ca		mg/l		mg/kg	BS EN 13652	Secondary
Magnesium as Mg		mg/l		mg/kg	BS EN 13652	nutrients
Sulphur as S		mg/l		mg/kg	BS EN 13652	
Boron as B		mg/l		mg/kg	BS EN 13652	Trace
Copper as Cu		mg/l		mg/kg	BS EN 13652	nutrients
Iron as Fe		mg/l		mg/kg	BS EN 13652	
Manganese as Mn		mg/l		mg/kg	BS EN 13652	
Molybdenum as Mo		mg/l		mg/kg	BS EN 13652	
Zinc as Zn		mg/l		mg/kg	BS EN 13652	
Chloride as Cl		mg/l		mg/kg	BS EN 13652	See
Sodium as Na 2		mg/l		mg/kg	BS EN 13652	footnote

¹ Water extractable values are a measure of nutrient concentrations immediately available to plants.

² Sodium together with chloride, influences nutrient uptake by plants and can inhibit this at high concentrations.

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ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information Laboratory information Winterpick Business Site 23 Sep 2010 Composting site Received at lab Grade (particle size rang 0 - 10mm 101806 Lab sample number Grade type Principal Lab batch number 16308 CA's code 0216 Lab report code Date sampled S. Johnson Report by Batch age when sampled 12 weeks Report date & time 29 Oct 2010 Producer's sample code 01-28-10 PRIN Report number ATLL16308#1

CAT-EXTRACTABLE NUTRIENTS^{1,2}

	As receiv	ed (fresh)	In dry matter		Method	Plant	
Parameter	Result	Units	Result	Units	Reference	significance	
NH ₄ -N (ammonium-N)		mg/l		mg/kg	BS EN 13651	Primary	
NO ₃ -N (nitrate-N)		mg/l		mg/kg	BS EN 13651	nutrients	
NH ₄ -N plus NO ₃ -N		mg/l		mg/kg	BS EN 13651		
		% m/m		% m/m	Calculated		
Phosphorus as P		mg/l		mg/kg	BS EN 13651		
Potassium as K		mg/l		mg/kg	BS EN 13651		
Magnesium as Mg		mg/l		mg/kg	BS EN 13651	Secondary	
Sulphur S		mg/l		mg/kg	BS EN 13651	nutrients	
Boron as B		mg/l		mg/kg	BS EN 13651	Trace	
Copper as Cu		mg/l		mg/kg	BS EN 13651	nutrients	
Iron as Fe		mg/l		mg/kg	BS EN 13651		
Manganese as Mn		mg/l		mg/kg	BS EN 13651		
Molybdenum as Mo		mg/l		mg/kg	BS EN 13651		
Zinc as Zn		mg/l		mg/kg	BS EN 13651		
Sodium as Na 3		mg/l		mg/kg	BS EN 13651	See footnote	

- 1 See note k to Table C.1 in Annex C of PAS100:2005, for information about CAT-extractable nutrients results.
- 2 Calcium and chloride are not determined as these are in the extractant and would affect corresponding results.
- 3 Sodium, together with chloride, influences nutrient uptake by plants and can inhibit this at high concentrations.

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Report number

ATLL16308#1

ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information Laboratory information Composting site Winterpick Business Site Received at lab 23 Sep 2010 Grade (particle size range) 0 - 10mm Lab sample number 101806 Grade type Principal Lab batch number 16308 CA's code 0216 Lab report code Date sampled Report by S. Johnson Batch age when sampled 12 weeks Report date & time 29 Oct 2010

TOTAL NUTRIENTS¹

Producer's sample code 01-28-10 PRIN

	As received (fresh)		In dry m	atter	Method	Plant
Parameter	Result	Units	Result	Units	Reference	significance
		mg/litre		mg/kg	Modified Kjeldahl,	Primary
Nitrogen as N		% m/m		% m/m	BS EN 13654-1	nutrients
INILIOGEII as IN	ND	mg/litre	ND	mg/kg	Dumas, BS EN	
	ND	% m/m	ND	% m/m	13654-2 ²	
Phosphorus as P		mg/litre		mg/kg	BS EN 13650	
Filospilorus as F		% m/m		% m/m	BS EN 13650	
Potassium as K		mg/litre		mg/kg	BS EN 13650	
Foldsslulli as K		% m/m		% m/m	BS EN 13650	
Calcium as Ca		mg/litre		mg/kg	BS EN 13650	Secondary
Calcium as Ca		% m/m		% m/m	BS EN 13650	nutrients
Magnosium as Mg		mg/litre		mg/kg	BS EN 13650	
Magnesium as Mg		% m/m		% m/m	BS EN 13650	
Sulphur as S		mg/litre		mg/kg	BS EN 13650	
Sulpriul as S		% m/m		% m/m	BS EN 13650	
Boron as B		mg/litre		mg/kg	BS EN 13650	Trace
Copper as Cu		mg/litre		mg/kg	BS EN 13650	nutrients
Iron as Fe		mg/litre		mg/kg	BS EN 13650	
Manganese as Mn		mg/litre		mg/kg	BS EN 13650	
Molybdenum as Mo		mg/litre		mg/kg	BS EN 13650	
Zinc as Zn		mg/litre		mg/kg	BS EN 13650	
Sodium as Na		mg/litre		mg/kg	BS EN 13650	See footnote 3

- 1 This method uses a hydrochloric- and nitric-acid extractant ("aqua regia") and approximates "total" rather than "bioavailable" concentrations of the above elements.
- 2 Unsuitable for materials containing free ammonia because this may be lost when samples are flushed with oxygen during the procedure, e.g. if compost sample contains > 500 mg/l ammonium.
- 3 Together with chloride, influences nutrient uptake by plants and can inhibit this at high concentrations. ND not determined.

For comparison with fertilisers (sample as received basis):

Total Nitrogen as N, % m/m

Total P2O5, % m/m

Total K2O, % m/m

as K

Total CaO, % m/m

as Ca

Total MgO, % m/m

Total SO3, % m/m

as S

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ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information Laboratory information

Winterpick Business Site Composting site Received at lab 23 Sep 2010 0 - 10mm 101806 Grade (particle size range) Lab sample number Grade type Principal Lab batch number 16308 CA's code 0216 Lab report code Date sampled S. Johnson Report by Batch age when sampled 12 weeks Report date & time 29 Oct 2010 Producer's sample code 01-28-10 PRIN Report number ATLL16308#1

POTENTIALLY TOXIC ELEMENTS¹

	As received	d (fresh)	In dry matter				
				100			
				upper		Pass	Method
Parameter	Result	Unit	Result	limit	Unit	or Fail	reference
Arsenic as As	ND	mg/l	ND	N/A	mg/kg	N/A	
Cadmium as Cd	0.1	mg/l	0.4	1.50	mg/kg	Pass	BS EN 13650
Chromium as Cr	3.1	mg/l	14	100.00	mg/kg	Pass	BS EN 13650
Copper as Cu	8.3	mg/l	37	200.00	mg/kg	Pass	BS EN 13650
Fluoride as F	ND	mg/l	ND	N/A	mg/kg	N/A	
Lead as Pb	17	mg/l	75	200.00	mg/kg	Pass	BS EN 13650
Mercury as Hg	0.04	mg/l	0.2	1.00	mg/kg	Pass	BS ISO 16772
Molybdenum as Mo	0.2	mg/l	1.1	N/A	mg/kg	N/A	BS EN 13650
Nickel as Ni	2.0	mg/l	9.0	50.00	mg/kg	Pass	BS EN 13650
Selenium as Se	ND	mg/l	ND	N/A	mg/kg	N/A	
Zinc as Zn	30	mg/l	133	400.00	mg/kg	Pass	BS EN 13650

¹ Zinc and copper are required by plants but, similarly as with other PTEs, can be toxic to some plant species at high concentrations. Such effects are influenced by other factors, so may not necessarily occur if corresponding PTE upper limits are exceeded. Check plant response test results for any toxic effects.

ND - not determined, N/A - not applicable.

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ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information
Composting site
Winterpick Business Site
Grade (particle size range)

0 - 10mm
Laboratory information
Received at lab
23 Sep 2010
Lab sample number
101806

Grade (particle size range) 0 - 10mm Lab sample number 101806 Grade type Principal Lab batch number 16308

CA's code 0216 Lab report code

Date sampled Report by S. Johnson
Batch age when sampled 12 weeks Report date & time 29 Oct 2010
Producer's sample code 01-28-10 PRIN Report number ATLL16308#1

PHYSICO-CHEMICAL PROPERTIES

	As received (fresh)		In dry matter		Method
Parameter	Result	Unit	Result	Unit	Reference
Bulk Density ¹	412	g/l	223	g/l	BS EN 12580
Dry Matter	N/A		54.2	% m/m	BS EN 13040
Moisture	189	g/l	N/A		BS EN 13040
	45.8	% m/m	N/A		
Loss on ignition ²	71.3	% m/m	47.0	% m/m	BS EN 13039
Organic Carbon (LOI ÷ 1.72)	N/A		27.4	% m/m	Calculated
рН	7.4	pH units	N/A		BS EN 13037
Electrical Conductivity	605	μS/cm @ 20 °C	N/A		BS EN 13038
	60.5	mS/m @ 20 °C	N/A		
Liming potential ³	ND	% m/m CaO	N/A		

- 1 Bulk density in dry matter is termed 'Dry Weight Density' and expressed in (g/l). DWD = fresh bulk density (g/l) volumetric moisture content (g/l)
- 2 Loss on ignition as received is a measure of organic matter plus moisture. Loss on ignition in dry matter is a measure of organic matter.
- 3 'The Fertilisers (Sampling and Analysis) Regulations 1996' Schedule 2, Part II Section 6 'Determination of the neutralising value of liming materials.' Method adaptation: the stage of passing the sample through a 1 mm sieve is omitted and results are expressed as % by weight of CaO on the undried sample, as received.

ND - not determined, N/A - not applicable.

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ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information Laboratory information Composting site Winterpick Business Site Received at lab 23 Sep 2010 Grade (particle size range) 0 - 10mm Lab sample number 101806 Grade type Principal Lab batch number 16308 CA's code 0216 Lab report code S. Johnson Date sampled Report by Batch age when sampled 12 weeks Report date & time 29 Oct 2010 01-28-10 PRIN ATLL16308#1 Producer's sample code Report number

PATHOGENS

As received (fresh)					Method Reference
Parameter	Result	PAS 100 upper limit		Pass or Fail	
E. coli at 44 °C.	400	1000	CFU/g	Pass	BS ISO 11866-3
Salmonella spp at 37 °C	0	0	MPN in 25 g	Pass	BS EN ISO 6579

STABILITY / MATURITY

	As recei	ved (fresh)	Method Reference		
Parameter	Result	PAS 100 upper	Unit	Pass or Fail	
Carbon dioxide (evolution rate)	10.4	16.0	mg CO ₂ / g organic matter / day	Pass	WRAP ORG0020
Proportion of particles < 20 mm	N/D	N/A	% g/g	N/A	

Parameter	As received (fresh)		In dry matte	er	Method Reference
	Result	Units	Result	Units	
NH ₄ -N: NO ₃ -N (ratio)		:1		:1	Calculated
Carbon : Nitrogen (ratio)	N/A			:1	Calculated
Colf heating (Downs fleek)		Max °C			
Self-heating (Dewar flask)	ND	increase	N/A		See footnote 1
Nitrogen Drawdown Index	ND	None	N/A		AS 3743-2003 ²

- 1 Methods book for the analysis of compost, Bundesgűtegemeinschaft Kompost e.
- V., 2002. ISBN 3-928179-33-0 (English translation, 2003).
- 2 Australian standard potting mixes, appendix E. Indicates likelihood of nitrogen lock-up.

ND - not determined, N/A - not applicable.

Parameter

Quantity 'Selected before sieving'

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Compost unamended

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Unit

g

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Grade type	Principal	Lab batch number	16308	
CA's code	0216	Lab report code		
Date sampled		Report by	S. Johnson	
Batch age when sampled	12 weeks	Report date & time	29 Oct 2010	
Producer's sample code	01-28-10 PRIN	Report number	ATLL16308#1	

PLANT RESPONSE ~ GERMINATION AND GROWTH OF TOMATO PLANTS AND WEEDS Method as per PAS 100:2010

Peat unamended

Quantity 'Sieved, particles < 10 mm'								g
Proportion of particles < 10 mm	100			99.6				% g/g
Electrical conductivity	50			660				μS cm ⁻¹
Parameter	Peat control		Compost-peat test				Unit	
	For 3 tr	ays		For 3 trays				
Quantity of sieved peat							litres prepared	
Quantity of sieved compost								litres prepared
Substrate(s) ratio (vol : vol)			2.0:1.0			peat:compost		
Parameter	Peat control		Compost-peat test			Overall	Unit	
	Tray 1	Tray 2	Tray 3	Tray 1	ray 1 Tray 2 Tray 3			
Weed plants	0	0	0	0	0	0	0.0	per litre
PAS 100 upper limit								compost as
Pass or Fail							Pass	received
Germinated tomato plants								
10 days after sowing	9	9	9	7	10	9	96.3	tests as % of
14 days after sowing	10	9	10	9	10	9	96.6	controls
28 days after sowing	10	9	10	9	10	9	96.6	
PAS 100 minimum performance							80.0	
Pass or Fail							Pass	96.5
Tomato plant top growth 28 day	s after							
Total mass per tray (g)	40.04	24.98	37.15	43.77	51.54	41.04	133.5	tests as % of
Average mass per plant (g)	4.00	2.78	3.72	4.86	5.15	4.56	138.9	controls
PAS 100 minimum performance							80.0	
Pass or Fail							Pass	138.9
Observations at any time during test								
Abnormalities / disease symptoms								
Additional factors								

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Grade type	Principal	Lab batch number	16308
CA's code	0216	Lab report code	
Date sampled		Report by	S. Johnson
Batch age when sampled	12 weeks	Report date & time	29 Oct 2010
Producer's sample code	01-28-10 PRIN	Report number	ATLL16308#1

PHYSICAL CONTAMINANTS (air-dry sample)

Sieve apertures	Glass	Metal	Plastic	Other ²	Descriptio	Total ³	of	Stones	Method
					n		which	5	Reference
mm	g	g	g	g		g	g	g	
31.5						0.00			PAS 100:2005,
16.0						0.00			Annex E ¹
8.0						0.00			
4.0						0.00		4.97	
2.0	0.24					0.24		2.40	
1.0	ND	ND	ND	ND	N/A	ND	ND	ND	
Pan	ND	ND	ND	ND	N/A	ND	ND	ND	
% of total sample									
> 2 mm	0.20	0.00	0.00	0.00		0.20	0.00	N/A	
% of total sample									
> 4 mm	N/A	N/A	N/A	N/A		N/A	N/A	4.05	
PAS 100 upper									
limit for "mulch"			0.25			0.50		16.0	
Pass or Fail			Pass			Pass		Pass	
limit for other than									
"mulch"			0.25			0.50		8.0	
Pass or Fail			Pass			Pass		Pass	

- 1 State whether with modification, i.e. sieves added or omitted
- 2 Any different physical contaminant type; name in 'Description'
- 3 'Total' is for glass, metal, plastic and 'other'. N.B.: excludes stones
- 4 Sharps > 2 mm, of any inorganic physical contaminant type (excludes woody fragments)
- 5 Stones and other consolidated mineral contaminants

ND = Not Determined, N/A = Not Applicable

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PARTICLE SIZE DISTRIBUTION (air-dry sample)

Sieve apertures	Sample	of which Compos	Cumi	Cumulative	
	Retained	Retained	Retained	Passing	Reference
mm	g	g	%	%	
31.5	0.0	0.0	0.0	100.0	
16.0	0.0	0.0	0.0	100.0	100:2005,
12.0					Annex E ¹
8.0	0.0	0.0	0.0	100.0	
4.0	13.6	8.6	7.5	92.5	
2.0	24.0	21.4	26.1	73.9	
1.0	28.2	28.2	50.6	49.4	
Pan	56.9	56.9	100.0	0.0	
Total	122.7	115.1			

¹ State whether with modification, i.e. which sieves added or omitted Sieve 12.0 omitted