

Agromat Compost CP-1, Matrix Reference Material

SUMMARY

The application note summarizes the digestion of AgroMAT Compost CP-1, a Matrix Reference Material using ColdBlock™ Digestion CB15S Technology..

Instrument: ColdBlock CB15S sample digester, chiller, ICP-OES, ICP-MS

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Digestion Time: 30 Minutes

Acid Used: HNO₃ & HCl

Average ColdBlock Recovery vs. CRM:

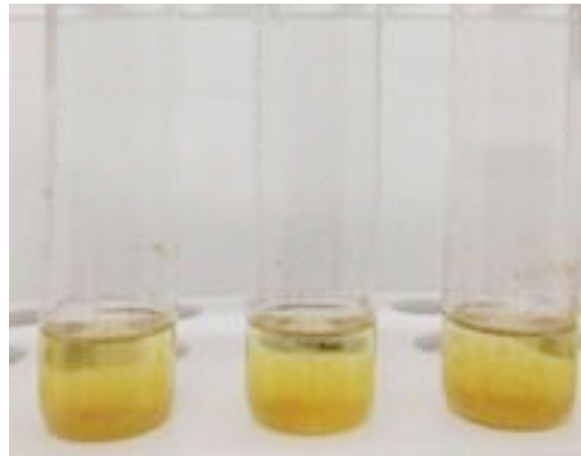
- 104% Cadmium
- 96% Mercury
- 104% Arsenic
- 107% Lead

METHODOLOGY

1. Chiller temperature was set to -5° C
2. 0.25g of AgroMAT Compost CP-1 was weighed and placed into a ColdBlock™ Digestion vessel
3. 7ml HNO₃ was added, and mixed with sample
4. Sample was digested at 70% power for 10 minutes
5. 7mL HCl was added, and sample was digested again at 70% power for 20 minutes
6. Sample was cooled and bulked to 50mL using 2%HNO₃ +0.5% HCl v/v

DISCUSSION

- Upon addition of HNO₃, the evolution of reddish brown (NO₂) fumes might occur
- The NO₂ subsided and turned white prior to the addition of HCl
- After 30 minutes the samples are slightly yellow, and a minor amount of solid material remains
- Longer digestion times can be used to improve the recoveries of certain elements



CP-1 after digestion completed

AgroMAT Compost CP-1 is a Matrix Reference Material used for QC verification and/or method development purposes.

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Results

AgroMAT – Compost (CP-1) Results						
Method:	0.25g	7mL HNO3 Digest 600 seconds at 70%, add 7mL HCl and digest again at 70% for 1200 seconds				
Element	Consensus Value (mg/kg)	Confidence Interval (mg/kg)	ColdBlock Average (mg/kg)	Stdev	% RSD	% Recovery
Al	4579	4262-4896	4300	347.5	8.10%	94%
As	2.24	2.12-2.36	2.41	0.03	1.20%	108%
Ca	18530	18100-18960	18256	184.5	1.00%	99%
Cd	0.719	0.663-0.774	0.75	0.023	3.10%	104%
Co	3	2.84-3.17	3	0.3	9.70%	103%
Cr	16.1	15.0-17.1	16	0.35	2.20%	99%
Cu	76.2	73.5-78.9	76.2	3.965	5.20%	100%
Fe	25547	24526-26568	26496	24.5	0.10%	104%
Hg	0.142	0.126-0.158	0.136	0.001	0.70%	96%
K	2373	2252-2495	2131	3.805	0.20%	90%
Mg	1720	1656-1785	1722	46.535	2.70%	100%
Mn	710	696-725	741	3.65	0.50%	104%
Na	908	-	990	70.15	7.10%	109%
Ni	11.1	10.6-11.7	10.4	1.3	12.50%	94%
Pb	15.6	14.9-16.2	16.7	0.495	3.00%	107%
Se	0.899	0.813-0.984	0.924	0.086	9.30%	103%
Zn	248	242-254	273	0.08	0.03%	110%