

FINAL REPORT HTCN-1/1

Heavy metals and fluorine content of PMP-BIO 03

Author: Nike Mortier
Sponsor: Phú Mỹ Plastics Production Joint Stock Company
130 Ba Cu Street, Ward 3
Vung Tau City, Ba Ria – Vung
Tau Province
VIETNAM

1 Identification of the test

Project number

HTCN-1/1

Sponsor

Phú Mỹ Plastics Production Joint Stock Company
130 Ba Cu Street, Ward 3
Vung Tau City, Ba Ria – Vung
Tau Province
VIETNAM

Sponsor contact

Mr. Hà Thúc Chí Nhân
htcnhan@hcmus.edu.vn
nhan.htc@pmp.com.vn

Phone: +84 906 626 356

Testing facility

OWS nv
Dok Noord 5
9000 Gent
BELGIUM

Phone: +32 9 233 02 04
Fax: +32 9 233 26 25
bruno.dewilde@ows.be
nike.mortier@ows.be

Test item

A visual presentation of test item PMP-BIO 03 (Plastic bag) is given in Figure 1.



Figure 1. Visual presentation of a 10 cm x 10 cm piece of test item PMP-BIO 03

2 Introduction

The European norm EN 13432 *Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging* (2000), the American standard ASTM D6400 *Standard Specification for Labeling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities* (2012) and the Canadian standard CAN/BNQ 0017-088 *Specifications for compostable plastics* (2010) define limit levels for heavy metals and fluorine. The international standard ISO 17088 *Specifications for compostable plastics* (2012) prescribes that the concentrations of regulated metals and other toxic substances in the product shall not exceed the limits specific to the country where the final product will be placed on the market or disposed of. The analyses are executed by an external lab. The limit values and test procedures are given in Table 1.

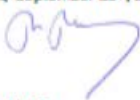
3 Results

The heavy metals content and the fluorine content of test item PMP-BIO 03 are given in Table 1, together with the limit values as prescribed by EN 13432 (2000), ASTM D6400 (2012) and CAN/BNQ 0017-088 (2010). All values lay well below the maximum levels as prescribed by the standards.

4 Conclusions

From the results it can be concluded that PMP-BIO 03 fulfills the requirements on heavy metals and fluorine as defined by EN 13432 (2000), ASTM D6400 (2012) and CAN/BNQ 0017-088 (2010).

Gent, September 29th, 2017



Nike Mortier
Study Director



Bruno De Wilde
Lab Manager

Table 1. Heavy metals and fluorine content (ppm on total solids)

Analysis	PMP-BIO 03	Limit values			Test procedure
		Europe EN 13432 (2000)	USA** ASTM D6400 (2012)	Canada CAN/BNQ 0017-088 (2010)	
Heavy metals*					
Zn	< 10	≤ 150	< 1400	< 463	DIN EN ISO 17294-2
Cu	1.1	≤ 50	< 750	< 189	DIN EN ISO 17294-2
Ni	< 1	≤ 25	< 210	< 45	DIN EN ISO 17294-2
Cd	< 0.1	≤ 0.5	< 19.5	< 5	DIN EN ISO 17294-2
Pb	< 1	≤ 50	< 150	< 125	DIN EN ISO 17294-2
Hg	< 0.1	≤ 0.5	< 8.5	< 1	DIN EN ISO 12846
Cr	< 1	≤ 50	-	< 265	DIN EN ISO 17294-2
Mo	< 1	≤ 1	-	< 5	DIN EN ISO 17294-2
Se	< 0.75	≤ 0.75	< 50	< 4	DIN EN ISO 17294-2
As	< 1	≤ 5	< 20.5	< 19	DIN EN ISO 17294-2
Co	< 1	-	-	< 38	DIN EN ISO 17294-2
Fluorine					
F	< 10	≤ 100	-	-	DIN 51723 mod.

* Microwave digestion was executed on the sample according to DIN EN 13057, before the analysis of the heavy metals

** Maximum levels for USA (according to ASTM D6400 (2012)) heavy metals content must be less than 50% of those prescribed for sludges or composts in the country where the product is sold