

Mr Pól Ó Seasnáin,
Environmental Protection Agency,
Inniscarra,
Co. Cork,
Ireland

15th March 2024

IE Licence Reg. No. P0029-06

Dear Mr Ó Seasnáin,

In accordance with Licence P0029-06, Irish Cement would like to notify the agency of their intention to accept Meat and Bone Meal (MBM) material, LoW code 02 01 02, from Waterford Proteins in Ferrybank, Co. Waterford. As agreed with the Agency, Irish Cement will only accept material from suppliers where conformance with acceptance criteria has been demonstrated in advance. Ongoing independent analysis of MBM from Waterford proteins will be carried out and will include elemental analysis and trace metal analysis.

In accordance with Licence P0029-06, please find attached a copy of the analysis certificate for a sample of MBM taken from the Waterford Proteins facility in Ferrybank, Co. Waterford. The analysis was completed in an ISO 17025 accredited laboratory, Knights Energy Services. A full suite of analysis was completed on the sample, including heavy metals.

I trust that you find the attached agreeable. Please do not hesitate to contact me should you have any further queries.

Yours sincerely,



Eve Howard
Environmental Manager



ALFRED H KNIGHT



1765

EVE COLLINS
 IRISH CEMENT LIMITED
 LIMERICK WORKS
 CASTLEMUNGRET
 COUNTY LIMERICK
 IRELAND

Sampling Date: 30-Jan-2024
 Date Received: 15-Feb-2024

Test Date(s): 15-Feb-2024 to 29-Feb-2024
Date of Report: 29-Feb-2024

AHK Ref: DB/408109 Material Described As: MBM
Client Ref: MBM ICL LIMERICK - MUNSTER PROTEINS JAN 2024

Samples were received by Alfred H Knight Energy Services Ltd and analysis results relate only to the items tested.

Client Ref.	Test	Method	Unit	As Received	Dry Basis	Dry Ash-Free
<u>MBM</u>						
	Removed Ash Contributors *		%	0.00		
	Total Moisture *	SM031	%	2.8		
	Total Ash Content *	SM033	%	26.5	27.3	
	Volatile Matter *	SM032	%	64.9	66.8	91.9
	Fixed Carbon *	SM022	%	5.7	5.9	8.1
	Total Sulphur *	SM034	%	0.33	0.34	0.47
	Chlorine *	SM045	%	1.27	1.31	1.80
	Carbon *	SM035	%	40.4	41.6	57.2
	Hydrogen *	SM035	%	5.85	6.02	8.28
	Nitrogen *	SM035	%	8.06	8.29	11.40
	Oxygen By Difference		%	14.7	15.1	20.8
	Gross Calorific Value *	SM036	KCal/Kg	4496	4625	6362
	Gross Calorific Value *	SM036	MJ/Kg	18.820	19.362	26.633
	Net Calorific Value *	SM037	KCal/Kg	4178		
	Net Calorific Value *	SM037	MJ/Kg	17.493		
	Fluorine *	SM045	mg/Kg	15	15	21
	Bromine	SM045	mg/Kg	10	10	14
	Iodine	SM045	mg/Kg	< 5	< 5	< 5
	Total Organic Carbon	SM047	%	39.7	40.8	56.1

* - Accredited Test



Gibson Kabaso
 Technical Manager

For and on behalf of Alfred H Knight Energy Services Ltd



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<u>MBM</u>						
TRACE METAL ANALYSIS						
	Cadmium *	SM044	mg/Kg		0.13	
	Beryllium *	SM044	mg/Kg		0.19	
	Zinc *	SM044	mg/Kg		147.93	
	Vanadium *	SM044	mg/Kg		5.85	
	Lead *	SM044	mg/Kg		2.76	
	Copper *	SM044	mg/Kg		47.12	
	Chromium *	SM044	mg/Kg		39.60	
	Nickel *	SM044	mg/Kg		35.03	
	Antimony *	SM044	mg/Kg		2.03	
	Cobalt *	SM044	mg/Kg		2.04	
	Manganese *	SM044	mg/Kg		81.09	
	Thallium *	SM044	mg/Kg		< 0.10	
	Arsenic *	SM044	mg/Kg		1.79	
	Mercury *	SM044	mg/Kg		0.26	
	Tin *	SM044	mg/Kg		0.33	
	Tellurium *	SM044	mg/Kg		< 0.10	
	Selenium *	SM044	mg/Kg		0.92	
	Titanium *	SM044	mg/Kg		128.56	

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Client Ref.	Test	Method	Unit	Result
<u>MBM</u>				
ELEMENTAL ASH ANALYSIS				
	SiO ₂ *	SM040	%	13.24
	Al ₂ O ₃ *	SM040	%	1.67
	Fe ₂ O ₃ *	SM040	%	1.55
	TiO ₂ *	SM040	%	0.12
	Mn ₃ O ₄ *	SM040	%	0.05
	CaO *	SM040	%	43.18
	MgO *	SM040	%	1.53
	Na ₂ O *	SM040	%	5.09
	K ₂ O *	SM040	%	2.22
	P ₂ O ₅ *	SM040	%	30.34
	SO ₃ *	SM040	%	0.76
	BaO *	SM040	%	0.25

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 Technical Manager

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