MI/PG2025

Performance guarantee
Marsh Natural Solutions

www.marshindustries.co.uk

Contents

1 Declaration of Performance: Marsh Nutra-Lite SBR

1 Product identification and type specification (Product code) Sequential Batch Reactor (SBR) waste water treatment plant in a GRP shell with two chambers, sediment reduction valve and air-lift operation.	Nutra-Lite 4PE (NL4) Nutra-Lite 10PE (NL10) Nutra-Lite 16PE (NL16) Nutra-Lite 25PE (NL25)
2 Features for identification of product type, specification and manufacture.	Manufacturer's serial number and control panel registration, MAC portal reference.
3 Intended use of the product and applicable standard / harmonised specification.	Pre-fabricated and/or site assembled waste water treatment plant - EN12566-3:2005+A2:2013.
4 Manufacturer	Marsh Industries, Addington Park Industrial Estate Little Addington, Northamptonshire NN14 4AS
5 Assessment and verification of constancy of performance (AVCP) annex V.	System 3
6 Notified body, name and ID	PIA – Prüfinstitut für Abwassertechnik GmbH – Hergenrather WEG 30, 52074 Aachen, Germany Notified Body ID - 1739

7 Declared Performance to harmonised standard - EN 12566-3:2005+A2:2013
Organic nominal daily load (BOD) 0.05kg person/day.
Flow daily nominal load 150l person/day.

8 Treatment efficiency			Test report PIA2024-420B06
	COD	95.8%	33 mg/l
	BOD	98.7%	4 mg/l
	TNb	83.9%	11.1 mg/l
	NH_4-N	99.1%	0.5 mg/l
	Ptot	34.3%	6.0 mg /l
	SS	97.1%	11 mg/l
9 Applicable standards			Fire resistance – EN ISO 11925-2:2010 Structural integrity – EN ISO179-1/1eA Watertightness, structural behaviour, durability – EN 12566-3.2005+A1:2009 - Notified Body 1017

10 The performance of the products listed in section 1 and identified in section 2 are declared to achieve performance and treatment efficiency in section 7. This declaration is issued under the responsibility of the manufacturer listed in section 4.

Signed by: _____ Full Name: _____ Date: _____

On behalf of the manufacturer.

2 Declaration of Performance: Marsh Phos-Lite

1 Product identification and type specification (Product code) Tertiary waste water treatment plant in a GRP shell with two chambers, filters, pump and phosphate reduction media.	Phos-Lite 4PE (PL4) Phos-Lite 6PE (PL6) Phos-Lite 8PE (PL8) Phos-Lite 10PE (PL10) Phos-Lite 12PE (PL12) Phos-Lite 16PE (PL16) Phos-Lite 20PE (PL20) Phos-Lite 25PE (PL25)
2 Features for identification of product type, specification and manufacture.	Manufacturer's serial number.
3 Intended use of the product and applicable standard / harmonised specification.	Pre-fabricated tertiary treatment units - EN12566-7 Annex A
4 Manufacturer	Marsh Industries, Addington Park Industrial Estate Little Addington, Northamptonshire NN14 4AS
5 Assessment and verification of constancy of performance (AVCP) annex V.	System 3
6 Notified body, name and ID	PIA – Prüfinstitut für Abwassertechnik GmbH – Hergenrather WEG 30, 52074 Aachen, Germany Notified Body ID - 1739

7 Declared Performance to harmonised standard - EN12566-7 Annex A
Organic nominal daily load (BOD) 0.01kg person/day.
Flow daily nominal load 150l person/day.

8 Treatment efficiency test report - PIA2024-T7-469S14 - EN12566 – 7 Annex A (Tertiary treatment efficiency test)

	Marsh Phos-Lite PIA 2024-T7-469S14	**Ensign-EL PIA 2022-408B25**	**Nutra-Lite SBR PIA 2024-420B06**
	Treatment Efficiency	**Phos-Lite effluent quality when used as tertiary treatment for Ensign-EL**	**Phos-Lite effluent quality when used as tertiary treatment for Nutra-Lite SBR**
COD	56.1%	23 mg/l	14.5 mg/l
BOD	59.5%	4 mg/l	1.62 mg/l
TNb	5.5%	29.6 mg/l	10.5 mg/l
NH_4-N	24.0%	0.4 mg/l	0.38 mg/l
Ptot	95.9%	0.2 mg/l	0.2 mg/l
SS	61.1%	4 mg/l	4.3 mg/l

9 Applicable standards	Fire resistance – EN ISO 11925-2:2010 Structural integrity – EN ISO179-1/1eA Watertightness, structural behaviour, durability – EN 12566-3.2005+A1:2009 - Notified Body 1017

10 The performance of the products listed in section 1 and identified in section 2 are declared to achieve performance and treatment efficiency in section 7. This declaration is issued under the responsibility of the manufacturer listed in section 4.

Signed by: _____ Full Name: _____ Date: _____
On behalf of the manufacturer.

3 Certification

Marsh Industries' ongoing product research and development has always been underpinned by its desire to complete full testing to achieve legitimate certification. Utilising the services of PIA (Prüfinstitut für Abwassertechnik GmbH) in Germany to achieve this position across 25 European Standards.

Certificate

Nr. 420.01C03

MI Nutra-Lite

Plant with active sludge in Sequencing Batch Reactor (SBR) and primary settlement

Marsh Industries Limited
Units 3-13 Addington Park Industrial Est., NN14 4AS Northants, UK

EN 12566-3:2005+A2:2013, Annex B: Treatment efficiency test
Small wastewater treatment systems for up to 50 PT – Part 3: Packaged and/or site assembled domestic wastewater treatment plants

Detailed results and information on the test are provided in test report PIA2024-420B06.

Extract of performance details (EN 12566-3, Annex B: Treatment efficiency test)

Organic daily load (influent, nominal)	0.20 kg BOD_5/d		
Hydraulic daily load (nominal)	0.6 m^3/d		
Treatment efficiency (nominal)		Efficiency	Effluent
	COD	95.8 %	33 mg/l
	BOD_5	98.7 %	4 mg/l
	TN_b*	83.9 %	11.1 mg/l
	NH_4-N*	99.1 %	0.5 mg/l
	P_{tot}	34.3 %	6.0 mg/l
	SS	97.1 %	11 mg/l
Electrical consumption (nominal)			0.7 kWh/d
Number of desludging (30 weeks testing EN 12566-3 without desludging)			2 after 30 week test cycle
Number of maintenance operations during the test (without start-up phase)			0

* determined for temperatures ≥ 12° C in the bioreactor

Tested by:
PIA – Prüfinstitut für Abwassertechnik GmbH
Hergenrather Weg 30
52074 Aachen, Germany

This certificate is for information purposes only and replaces neither the related test report nor the declaration of performance or the CE marking. The results relate only to the tested object.

PIA – Sustainable Certification
Geprüft – tested – testé

September 2024, Dipl.-Ing. Gabriel Schatzki
Head of department "Wastewater Treatment"

Notified Body No.: 1739
Certified according to ISO 9001:2015

Marsh Nutra-Lite certificate

Certificate

Nr. 469.01C1

MI Phos-Lite

Module for chemical-physical after-treatment of sewage, tested in combination by use of a gravity operated plant

Marsh Industries Limited
Units 3-13 Addington Park Industrial Est., NN14 4AS Northants, UK

EN 12566-7:2013, Annex A: Tertiary treatment efficiency test
Small wastewater treatment systems for up to 50 PT – Part 7: Prefabricated tertiary treatment units, chemical / electrical

Detailed results and information on the test are provided in test report PIA2024-T7-469S14.

Extract of performance details (EN 12566-7, Annex A: Tertiary treatment efficiency test)

Organic daily load (influent, nominal)	0.01 kg BOD_5/d		
Hydraulic daily load (nominal)	0.9 m^3/d		
Treatment efficiency (nominal)		Efficiency	Effluent
	COD	56.1 %	23 mg/l
	BOD_5	59.5 %	4 mg/l
	TN_b*	5.5 %	29.6 mg/l
	NH_4-N*	24.0 %	0.4 mg/l
	P_{tot}	95.9 %	0.2 mg/l
	SS	61.1 %	4 mg/l
Electrical consumption (nominal)			0.03 kWh/d
Number of desludging (complete test – 7 weeks)			0

* determined for temperatures ≥ 12 ° C in the bioreactor

Tested by:
PIA – Prüfinstitut für Abwassertechnik GmbH
Hergenrather Weg 30
52074 Aachen, Germany

This certificate is for information purposes only and replaces neither the related test report nor the declaration of performance or the CE marking. The results relate only to the tested object.

PIA – Sustainable Certification
Geprüft – tested – testé

September 2024, Dipl.-Ing. Gabriel Schatzki
Head of department "Wastewater Testing"

Notified Body No.: 1739
Certified according to ISO 9001:2015

Marsh Phos-Lite certificate

Certificate

408.01C01

Marsh Industries Limited
Head Office Addington Park Industrial Park. Little Addington NN14 4AS UK

EN 12566-3, Annex B
Small wastewater treatment systems for up to 50 PT

Small wastewater treatment system Ensign Range E L
Fluidised bed reactor system in a GRP tank

Test report PIA2022-408B25

Evaluation of the nominal sequences of the 38-week testing

Nominal organic daily load (influent)	0.30 kg BOD_5/d		
Nominal hydraulic daily load	0.9 m^3/d		
Material	GRP		
Treatment efficiency		Efficiency	Effluent
	COD	92.2 %	63 mg/l
	BOD_5	95.6 %	14 mg/l
	TN_b	53.5 %	28 mg/l
	NH_4-N	97.8 %	1.0 mg/l
	P_{tot}	28.7 %	5.4 mg/l
	SS	94.5 %	21 mg/l

Evaluation of the complete 38-week testing

Electrical consumption	1.9 kWh/d
Number of desludging	0

Tested by:
PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

This document replaces neither the declaration of performance nor the CE marking.

PIA – Sustainable Certification
Geprüft – tested – testé

Martina Wermter August 2022

Notified Body No.: 1739

Marsh Ensign-EL certificate

4 About PIA

The PIA (Prüfinstitut für Abwassertechnik GmbH) Notified Test Centre in Aachen, Germany, is an officially recognised testing facility that is primarily involved in the certification and testing of various products, systems, and technologies, ensuring that they meet regulatory and safety standards.

The PIA Notified Test Centre plays a key role in offering testing services that comply with various European Union regulations. Notified bodies in Europe are authorised to assess the conformity of products before they are placed on the market. These tests are critical for industries such as energy and water.

The standard, EN12566-3, is used to test small wastewater treatment plants with biological purification for the UK and European market. The test of the treatment efficiency is carried out in PIA's test field over a period of 38 weeks.

To enable testing at PIA, Marsh sewage treatment plants are placed in the test field and charged with domestic wastewater to the UK Forward. After the necessary start-up phase, in which the biological process begins running, the actual testing of cleaning performance begins.

For EN12566 part 7 testing, the focus is on prefabricated tertiary treatment units for small wastewater treatment systems. The procedures described in the standard enable a further purification to improve the quality, which cannot be achieved by the first treatment stage (primary treatment) and the second treatment stage (biological treatment) alone. The third purification stage and its plant modules are usually not independent treatment systems. They are only used in combination with a primary clarification and a biological treatment and concentrate on a specific treatment objective, such as the additional reduction of phosphorus or nitrogen.

5 Guarantee – Servicing

A comprehensive engineering service will support the ongoing annual maintenance of the Nutra-Lite and Phos-Lite units, with a particular focus on sludge removal, compressor efficiency, and pellet performance. The SBR controller includes a test mode feature that allows the engineer to cycle through each valve, facilitating a visual inspection of every process.

On a day-to-day basis, the telemetry and alarm systems enable both the maintainer and Marsh to effectively monitor the plant's performance.

At the end of their lifecycle, the pellets can be safely removed, recycled, and repurposed for agricultural use.

6 Telemetry and alarms

As highlighted in the servicing details, Marsh can offer complete management for the Natural Solutions range.

The Nutra-Lite SBR Controller is enabled for GSM or WiFi connectivity, providing remote configuration and monitoring. This allows e-mail alerts for the following:

- ✓ Loss of Power
- ✓ Loss of Pressure
- ✓ High Level
- ✓ Blockages (including where they occur)

The same controller is managing the four biological processes:

- ✓ Fill
- ✓ Aeration
- ✓ De-nitrification
- ✓ Clearwater

Pressure sensors enable Marsh to track water levels in the tank, also enabling to track operating hours for each process.

Auto calibration is achieved after two weeks of full use.

The Sludge return mechanism is set to allow for biology and bio-mass build up in the second chamber. After 90 days, the normal sludge return process then commences.

Eco mode is automatic. If the homeowner is away, then the Eco process will run to prevent the plant from performing unnecessary cycles.

The in-built WiFi host enables telemetry from anywhere in the world, or local checks through a webpage, with secure connection controlled by Marsh Industries.

Each controller is defined on our portal – listing performance, and contacts of those responsible for the plant, along with email details.

Maintainers can be provided with daily or 4/6/8/12 Hourly updates on functionality.

7 Material testing

Marsh Industries places a significant emphasis on the durability and reliability of its products, as evidenced by the meticulous assessment of structural integrity. In line with the testing protocol outlined in ENISO 179-1/1eA: 2010-11, comprehensive evaluations were conducted to gauge the robustness of Marsh Industries' glass reinforced plastic (GRP) materials in comparison to similar materials used by competing manufacturers.

To establish a comprehensive benchmark, three distinct material samples were subjected to rigorous impact testing. These samples included Marsh GRP material in its original form (consisting of virgin unfilled resin), a variant incorporating calcium fillers, and another variant enriched with sand filler. The testing process involved analysing 12 samples of each material, all measuring 80x10x5mm. The pendulum energy utilised for impact assessment was set at 15J, with an accompanying impact velocity of 3.8m/s.

The findings were resoundingly in favour of Marsh Industries' GRP material, showcasing an impressive 40% increase in strength when compared to the other materials under scrutiny. This outcome underscores the superior quality and structural resilience inherent in Marsh's GRP material.

PIA
Prüfinstitut für Abwassertechnik GmbH

PERFORMANCE RESULTS

Marsh Industries Ltd.
Irthlingborough Road, Little Addington
Northants NN14 4AS, Great Britain

EN ISO 179-1/1eA: 2010-11
"Plastics – Determination of Charpy impact properties;
Part 1: Non-instrumented impact test"

"Marsh Material Specification"

Test report PIA2018-DH-1806-1035.01

Material	Glass reinforced plastic
Charpy notched impact strength	
- Resin	131 kJ/m²
- Filler	93 kJ/m²
- Sand	116 kJ/m²

Performance tested by:
PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

This document replaces neither the declaration of performance nor the CE marking.

Notified Body No.: 1739
Certified according to ISO 9001:2008
DAkkS Deutsche Akkreditierungsstelle D-PL-17712-01-00

Daniel Vanschitz August 2018

Material testing certificate

8 Fire testing

Marsh Industries upholds the highest standards in product safety and adherence to regulations, as demonstrated by its material fire resistance testing. The focus of this evaluation was to ascertain the ignitability of products when exposed to direct flame impingement. Rigorous testing procedures were carried out to ensure compliance with EN ISO 11925-2:2010 standard.

The testing regimen encompassed practical scenarios designed to gauge the material's response to flame exposure. Marsh Industries' GRP material successfully passed all aspects of the fire resistance tests, achieving EN ISO 11925-2:2010 standard.

PIA Prüfinstitut für Abwassertechnik GmbH

PERFORMANCE RESULTS

Marsh Industries Ltd.
Irthlingborough Road, Little Addington
Northants NN14 4AS, Great Britain

EN ISO 11925-2:2010
"Reaction to fire tests – Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test"

"MIMMS"

Test report PIA2018-RF-1806-1034.01

Material	Glass reinforced plastic
Period of flame impingement	15 seconds
Number of tests	12
Height of flame	< 150 mm
Classification (EN 13501-1)	Class E

Performance tested by:
PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

This document replaces neither the declaration of performance nor the CE marking.

Notified Body No.: 1739 · Certified according to ISO 9001:2008 · DAkkS Deutsche Akkreditierungsstelle D-PL-17712-01-00

Daniel Verschitz · August 2018

Fire testing certificate

9 BIM materials

BIM Images in ifc and rfa format are available through the Marsh Industries BIM Library:

https://marshindustries.co.uk/bim-cad-library/

10 Background documentation

Marsh Industries have a certified track record of operating to the following key standards:

✓ ISO9001 Quality Management
https://marshindustries.co.uk/wp-content/uploads/technical-library/generic/marsh-iso-9001-certificate.pdf

✓ ISO140001 Environmental ISO
https://marshindustries.co.uk/wp-content/uploads/technical-library/generic/marsh-iso-140001-certificate.pdf

✓ ISO45001 Health & Safety Management
https://marshindustries.co.uk/wp-content/uploads/2025/01/45001-Health-Safety-Management.pdf

Further to this certification, Marsh also has the following policies in place, with a history of paying above the National Living Wage.

✓ Equality Policy
https://marshindustries.co.uk/wp-content/uploads/2018/05/Marsh-Industries-Equality-Policy.pdf

✓ Conservation Policy
https://marshindustries.co.uk/wp-content/uploads/2018/05/Marsh-Industries-Conservation-Policy.pdf

✓ Sustainability Policy
https://marshindustries.co.uk/wp-content/uploads/2018/05/Marsh-Industries-Sustainability-Policy.pdf

✓ Social Responsibility
https://marshindustries.co.uk/wp-content/uploads/2018/05/Marsh-Industries-Social-Responsibility.pdf

✓ Health & Safety Policy
https://marshindustries.co.uk/wp-content/uploads/2018/05/Marsh-Industries-Health-and-Safety-Policy.pdf

✓ Ethical Code for the Supply of Goods and Services
https://marshindustries.co.uk/wp-content/uploads/2018/05/Marsh-Industries-Ethical-Code-for-the-Supply-of-Goods-or-Services.pdf

11 Carbon footprint

Marsh Industries Natural Solutions products are manufactured in Britain, offering a reduction in carbon footprint for transportation versus the utilisation of products imported from abroad, whilst the company has also engaged with VOSA to optimise transportation efficiency through safe vehicle loading.

Notes

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