



CERTIFICATE NUMBER	21-2112089-PDA
EFFECTIVE DATE	21-Apr-2021
EXPIRY DATE	20-Apr-2026
ABS TECHNICAL OFFICE	Houston ESD - Piping

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

SCIENCO/FAST, A SUBSIDIARY OF BIO- MICROBICS, INC.

located at

**12977 MAURER INDUSTRIAL DRIVE, SUNSET HILLS, MO, United
States, 63127**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Sewage Treatment Plant
Model: D-VM, D-VMS, MX-M, MX-MS, LX-M and M-M series
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 20/Apr/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Yongjin Lee, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

SCIENCO/FAST

12977 MAURER INDUSTRIAL DRIVE
SUNSET HILLS MO
United States 63127
Telephone: 1-314-756-9300
Fax:
Email: cmillerbaugh@sciencofast.com
Web: www.sciencofast.com

Tier: 2 - PDA Issued

Product: Sewage Treatment Plant
Model: D-VM, D-VMS, MX-M, MX-MS, LX-M and M-M series
Endorsements:

Intended Service:
Shipboard Sewage Treatment Units, complying with IMO Resolution MEPC. 227(64) for ships other than passenger ships in all areas and passenger ships operating outside MARPOL Annex IV special areas.

Description:
Sewage Treatment Unit

Rating:

D-VM Series:

Model No.	Hydraulic Loading (liter/day)	Organic Loading (kg/day)
D-1VM	1895	1.38
D-2VM	3409	2.49
D-3VM	5107	3.73
D-4VM	6356	4.64
D-5VM	7656	5.59
D-6VM	12414	9.06
D-7VM	18304	13.35
D-8VM	24662	17.99

D-VMS Series:

Model No.	Hydraulic Loading (liter/day)	Organic Loading (kg/day)
D-1VMS	1895	1.38
D-2VMS	3409	2.49
D-3VMS	5107	3.73
D-4VMS	6356	4.64
D-5VMS	7656	5.59
D-6VMS	12414	9.06
D-7VMS	18304	13.35
D-8VMS	24662	17.99

MX-M Series:

Model No.	Hydraulic Loading (liter/day)	Organic Loading (kg/day)
MX-1M	654	0.48
MX-2M	981	0.72
MX-3M	1401	1.02
MX-4M	2102	1.53
MX-5M	3154	2.30

MX-MS Series:

Model No.	Hydraulic Loading (liter/day)	Organic Loading (kg/day)
MX-1MS	654	0.48

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MX-2MS	981	0.72
MX-3MS	1401	1.02
MX-4MS	2102	1.53
MX-5MS	3154	2.30

L-XM Series:

Model No.	Hydraulic Loading (liter/day)	Organic Loading (kg/day)
L-1XM	237	0.17
L-2XM	348	0.25
L-3XM	473	0.35
L-4XM	697	0.51
L-5XM	773	0.56
L-6XM	1547	1.13

M-M Series:

Model No.	Hydraulic Loading (liter/day)	Organic Loading (kg/day)
M-1M	658	0.47
M-2M	988	0.70
M-3M	1484	1.05
M-4M	1915	1.36
M-5M	2927	2.08

Service Restriction:

Unit Certification is not required for this product.

If the manufacturer or purchaser's request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes/Drawing/Documentation:

- 159.015/10125/0 USCG Certificates
- 159.015/10126/0 USCG Certificates
- 159.015/10128/0 USCG Certificates
- 159.015/10129/0 USCG Certificates
- 159.015/10123/0 USCG Certificates
- 159.015/10127/0 USCG Certificates
- 159.015/10122/0 USCG Certificates
- 159.015/10124/0 USCG Certificates

Terms of Validity:

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STANDARDS

ABS Rules:

2021 Rules for Building and Classing Marine Vessels: 1-1-4/7.7, 1-1-A3, 1-1-A4

2021 Rules for Building and Classing Mobile Offshore Units: 1-1-4/9.7, 1-1-A2 and A3

National:

33 CFR 159 - Type II Marine Sanitation Device

International:

Regulation 9.1.1, Annex IV of MARPOL 73/78 as amended; (2017 Consolidated Edition).

IMO Resolution MEPC. 159(55) (Adopted on 13 October 2006) - Revised Guidelines on Implementation of Effluent Standards and Performance Tests for Sewage Treatment Plants.

1.2.2 of IMO Resolution MEPC. 227(64) (Adopted on 5 October 2012) - Guidelines on Implementation of Effluent Standards and Performance Tests for Sewage Treatment Plants.

Government:

USCG Certificate of Approval Numbers: 159.015/10125/0; 159.015/10126/0; 159.015/10128/0; 159.015/10129/0; 159.015/10123/0; 159.015/10127/0; 159.015/10122/0; 159.015/10124/0

EUMED:

NA

OTHERS:

NA