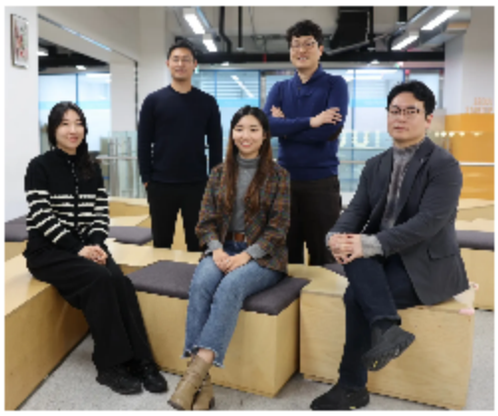
Redefining Ships, Enriching the Sea

ECO
MARINE

ECOMARINE



Ecomarine provides sustainable, eco-friendly marine materials.

Founded in 2023, Ecomarine is Korea's first company to produce eco-friendly HDPE composite materials for ships. We partner with shipyards to develop and supply marine equipment and manufacturing technology.

Dedicated to sustainable marine resource production, we are growing as a multi-dimensional, ocean-friendly company.

Protecting the sea, the source of all life, Ecomarine aims to lead the marine and fisheries industry.

MISSION

"We redefine today's ships
to enrich tomorrow's seas."

Core Values

Ecomarine's ship materials protect our marine environment from microplastics generated by non-recyclable FRP fishing boats and ship coatings.

We develop eco-friendly ship materials certified by the Korea Register of Shipping, a member of IACS, ensuring products that are safe and durable for long-term use.

By developing polymer-based marine materials that are 100% recyclable, we are opening a new era of carbon reduction in the ocean.

HISTORY

2021

- 4 Selected for Lotte Chemical's 1st in-house venture incubation
- 9 Developed eco-friendly HDPE composite resin EM001B for ships, including sheets and welding rods

2022

- 3 Developed Korea's first 16m-class HDPE powerboat, 'Possibility'
- 6 held 'Every Step for Green' exhibition at Lotte Chemical

2023

- 4 Lotte Chemical approves Ecomarine spin-off
- 8 Secured ESG fund investment (SEED) from Lotte Ventures
- 12 Secured SEED investment from Schmidt

2024

- 3 First to obtain HDPE ship material manufacturing approval
- 4 Selected for DIPS 1000+ (marine sector)
- 7 Signed MOU for global eco-friendly ship material standards
- 12 Appointed advisor for 'Jeonnam Eco-friendly HDPE Fishing Boat Regulatory-Free Zone'

2025

- 3 Secured Series A funding (round to close in H1)
- 5 Joint marketing MOU with 'Leister'
  MOU with 'Aekyung Specialty' for HDPE-compatible coating system development

ACHIEVEMENTS

KR(Korean Register) HDPE ship material manufacturing certificate

2023 Environmental Startup Competition - Grand Prize

2023 Daejeon BI Day - Grand Prize

Challenge! K-Startup 2023 - Excellence Award

Patent Certificate for "Eco-friendly ship hull and its manufacturing method"

Trademark Certificate

CSWIP 3.0 Certificate

DVS 2212 Certificate

PRODUCT

Sole Certified Manufacturer

World's Only IACS Organization Certified through 21-Point Testing

Weather-Optimized for Long-Term Use

UV-Optimized Solution, Verified through 2 Years (16,000 Hours) of Accelerated Weathering Tests

Enhanced Composite Materials for Vessels

High Molecular Design and Nanocarbon Dispersion Technology for Stronger Marine Composite Materials

The Beginning of HDPE Vessels,

BOARD

Specification			
Thickness (mmT)	Width (mm)	Length (mm)	Color
3~30	1,500	5,000	Black, Orange
30~150	1,200	3,000	

Weight: Approximately 220kg (30mm Thickness)

* For other specifications and colors, please contact us.

Perfect Bonding with Same Composition as Board

WELD

Specification	
Thickness	3~4mmø
Weight	5kg/EA
Color	Black, Orange

* For other specifications and colors, please contact us.

ABOUT HDPE

Made from **high-density polyethylene** (HDPE), Ecomarine's material is **certified** by the Korean Register and offers outstanding **cost-efficiency and safety**.

Advantages of HDPE Hull Vessels

Low maintenance costs

Reduced costs in operation, maintenance, repair, and replacement

High efficiency

20-30% lighter hull
Better fuel efficiency and more cargo capacity

Excellent durability and safety

No seawater corrosion, inherent buoyancy, and high impact resistance reduce risk of injury

Easy maintenance

No need for anti-fouling paint and easy hull repair when damaged

100% recyclable

Fully recyclable, unlike traditional FRP boats with high disposal costs

Reduced environmental pollutants

Emits 1/7 the carbon of aluminum and generates no microplastics

Material Property Comparison Table

	HDPE	Aluminum	FRP[1]	CFRP[2]
Durability	●●●	●●	●	●
Corrosion and Electrochemical Stability	●●●	●	●●	●
Maintenance Interval	●●●	●	●●	●●
Ease of Processing and Repair	●●●	●●	●	●
Whole of life costs	●●●	●	●●	●
Recyclability	●●●	●●●	●	●
Material Hardness	●	●●	●●	●●●
Hull Weight	●●	●●	●●	●●●
Ride Comfort (Noise & Vibration)	●●●	●	●●	●●
Density	0.96	2.70	2.4~2.76	1.90

1) FRP: Fiberglass Reinforced Plastic
2) CFRP: Carbon Fiber Reinforced Plastic

S P E C I F I C A T I O N

ECOMARINE BOARD (EM001B)		Test Standard	Unit	Guideline Value
Physical Properties	Melt Flow Index (190°C, 2.16kg)	ISO 1133-1	g/10min	0.08
	Melt Flow Index(190°C, 5kg)	ISO 1133-1	g/10min	0.33
	Density	ISO 1183	g/cm^3	0.956
	Flammability Rating	UL94	-	HB
Mechanical Properties	Tensile Yield Strength	ISO 527	MPa	30
	Elongation at Yield	ISO 527	%	> 10
	Flexural Strength	ISO 178	MPa	26
	Flexural Modulus	ISO 178	MPa	900
	Notched Impact Strength (0°C)	ISO 180	J/m	260
Thermal Properties	Melting Point	ISO 11357-3	°C	129
	Heat Deflection Temperature	ISO 75	°C	> 70
	Vicat Softening Temperature	ISO 306	°C	> 115
Long-Term Reliability Properties	Creep Test (1,000h)[1]	ISO 899-1	N/nm^2	> 580
	Accelerated Aging (5,000h), Notched Impact (0°C)[2]	ISO 180	-	N/B[3]

* The material data provided is for reference only and does not represent a guaranteed product specification.

1) Creep test measures deformation over time under a constant load.
2) Accelerated aging test (ASTM G155) is used to evaluate the weatherability and aging characteristics of plastics and other materials. According to ASTM (American Society for Testing and Materials) standards, samples are exposed to controlled UV light and temperature conditions to assess changes in impact strength.
3) Test results indicated "Non-Breakable" performance, meaning no brittle fracture occurred. The material meets the requirements specified by the classification society.

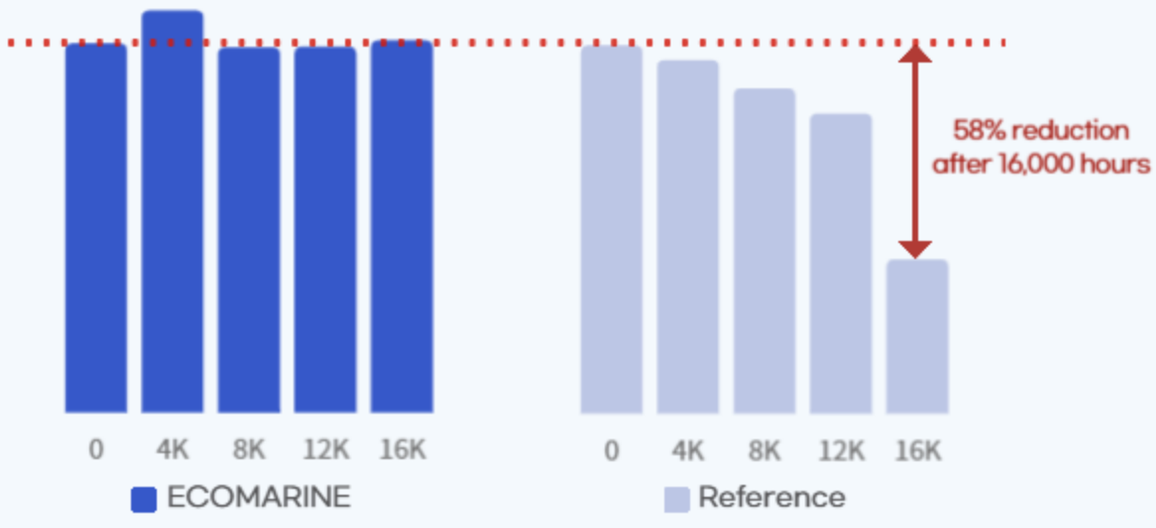
Ensures long-term **weather resistance** for **sustained use** in vessel hulls

“ Ecomarine's **proprietary material technology** incorporates carbon nanoparticles and a **UV-optimized solution** for superior marine durability. ”

No reduction in tensile strength after 16,000 hours of accelerated weathering testing (equivalent to ~16 years in U.S. conditions)

Weathering Test: Tensile Strength Retention Rate

ECOMARINE VS Standard Products



R & D

01 UV-optimized color formulation

UV-resistant colors developed to customer needs, with proven long-term weathering reliability.

02 Functional material development

We continuously develop marine-specific functional materials, such as anti-fouling and flame-retardant solutions.

03 Recycled-based HDPE development

Developing PCR-based HDPE for vessels and pursuing global recycling certification.

04 Development of global vessel standards

Participating in HDPE vessel standardization research (2024–2028) to help establish global standards.

05 Integrated marine solutions provider

Building an integrated marine solution system to manage the full lifecycle of HDPE vessels.

06 Quality improvement through client collaboration

Enhancing product quality through ongoing collaboration and field-based research.

EcoMarine pursues **harmony** between **people** and **nature**.

We improve quality through customer collaboration and **advance technology** through industry-academia partnerships.

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