



2025

Quality | Integrity | Innovation | Diligent



SWANCOR
EzCiclo/CleaVER

Recyclable Radical-Cured Resin RH Series



Green energy



Safety



Environmental protection

SWANCOR HOLDING CO., LTD. (Corporate Headquarters)

No. 588, Dongmin Road, Nantou City, Nantou County 540006, Taiwan
TEL: +886 49 225 5420
FAX: +886 49 225 1534
swancor@swancor.com

S-WANLAI CO., LTD.

No. 588, Dongmin Road, Nantou City, Nantou County 540006, Taiwan
TEL: +886 49 225 5420
FAX: +886 49 225 1534
Regener@swancor.com

SWANCOR RECYCLING TECHNOLOGY (JIANGSU) LTD.

No.26, Xiexin Road, Funing Economic Development Zone,
Yancheng, Jiangsu, 224400 China
TEL: +86-515-68695998-581
FAX: +86-515-68695998-581
Regener@swancor.com

SWANCOR NETHERLANDS B.V.

p/a Plant one Rotterdam B.V., Merseyweg 10, 3197 KG Botlek
Rotterdam, Netherlands
TEL: +31-616040087
Regener@swancor.com



Website



Youtube



LinkedIn





ABOUT SWANCOR

Swancor was established in 1992 by Mr. Robert Tsai as a professional manufacturer of specialty chemicals, Swancor has been continuously developing its self-own technology and network to provide quality products with in-time service to support our partners' growth to excellence.

Swancor launches EzCiclo and CleaVER technology in 2021 and expands a new business unit to specialize in innovative products and aiming to become a leading green materials and technology ability company.

In 2022, we committed our goal "Devoted to Carbon Neutrality And New Materials Innovation" as our enterprise transformation and we do occupy a leading position in the world.



Global Operations

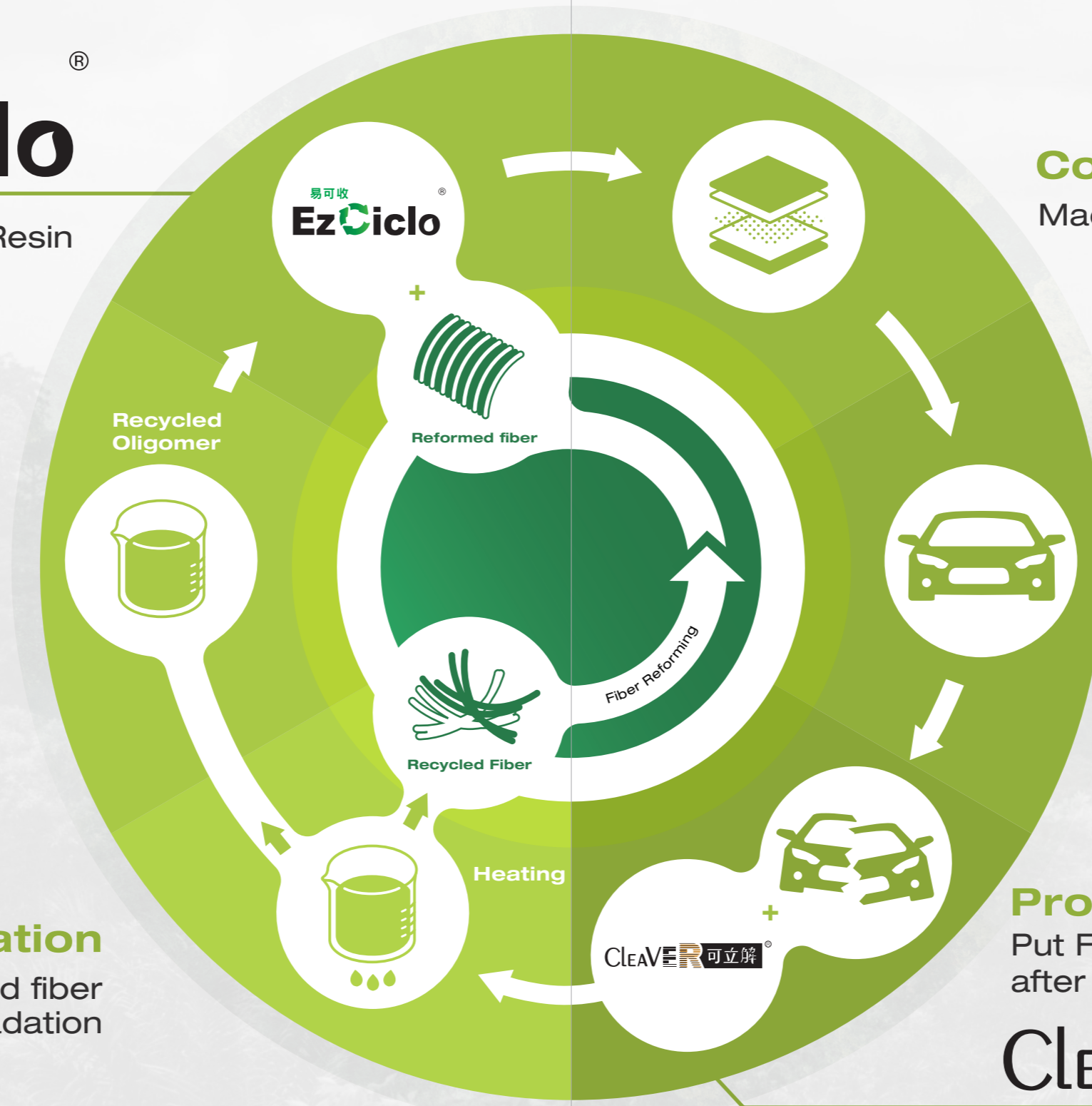




EzCiclo / CleaVER

易可收 EzCiclo®

Recyclable Thermosetting Resin



Composite

Made from EzCiclo and fibers

Product



Product end-of-life

Put FRP & **CleaVER** into the reactor after the product is disposed

CleaVER 可立解®

Degradation

The resin and fiber are separated after degradation



FEATURES

Features

≥95%

The recovery rate of the FRP made from EzCiclo can reach ≥95%

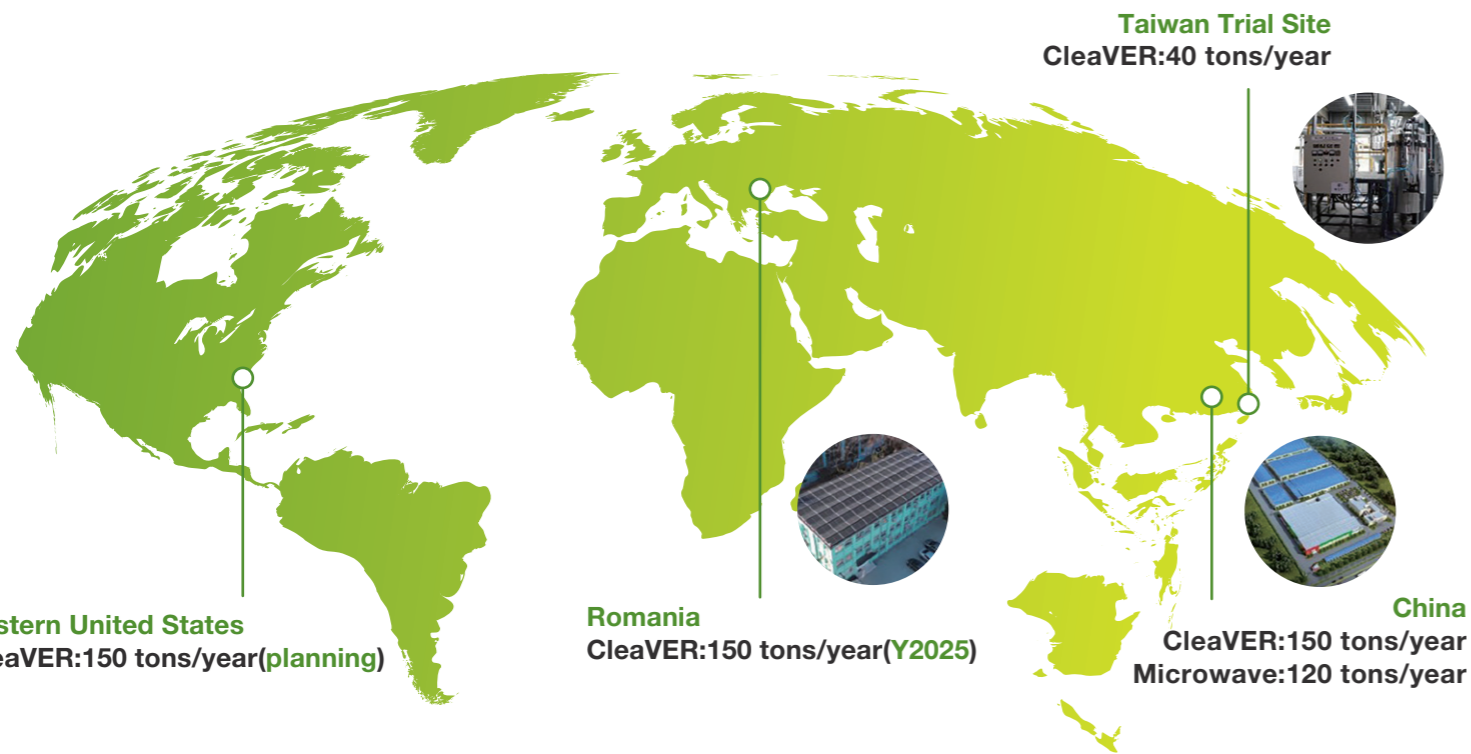


Bio_Grade available, low carbon emission



Global FRP recycling site and turnkey support

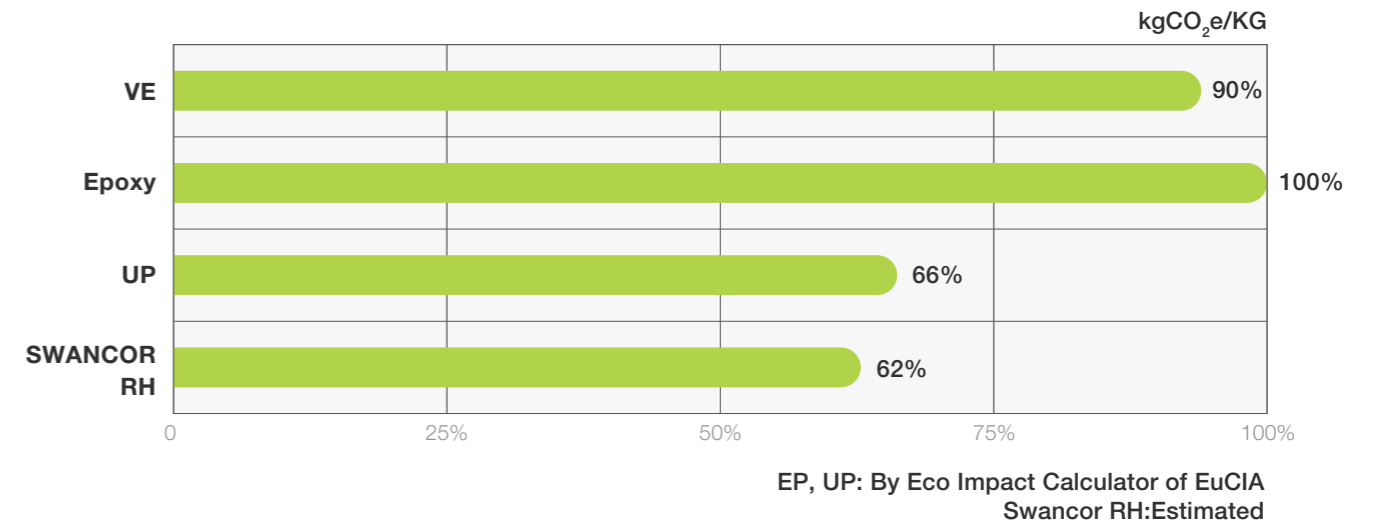
FRP Recycling Operations



Mechanical Properties Comparison

Property	EzCiclo	SWANCOR 2711	SWANCOR 901-3	SWANCOR 963
Tensile Strength (MPa)	89	81	87	50
Tensile Modulus (GPa)	3.8	3.1	3.4	3.1
Elongation (%)	6	6.5	5.5	2.5
Flexural Strength (MPa)	157.5	140	145	100
Flexural Modulus (GPa)	3.6	3.2	3.4	3.5

CO2 Emission Comparison





CERTIFICATION

DNV

DNV
TYPE APPROVAL CERTIFICATE

Certificate no.: TAK0002B5

This is to certify that the Vinyl Ester Resins with type designation(s) SWANCOR RH512 Radical-cured resin issued to **S-Wanlai Co., LTD.** Nantou County, Taiwan Region is found to comply with DNV class programme DNV-CP-0053 - Type approval - Polyester resin, vinyl ester resin, gelcoat and topcoat DNV rules for classification - High speed and light craft DNV standard DNV-ST-0342 - Craft

Application: Grade 1 resin for use in marine vessels according to stated Rules/Standards. Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at Hamburg on 2024-01-12 for DNV. This Certificate is valid until 2029-01-11. DNV local unit: Kaohsiung. Approval Engineer: Gisle Hervik.

Digitally Signed By: Stefan Röhr, Location: DNV Hamburg, Germany.

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DNV
TYPE APPROVAL CERTIFICATE

Certificate no.: TAK0002B6

This is to certify that the Vinyl Ester Resins with type designation(s) SWANCOR RH513 Radical-cured resin issued to **S-Wanlai Co., LTD.** Nantou County, Taiwan Region is found to comply with DNV class programme DNV-CP-0053 - Type approval - Polyester resin, vinyl ester resin, gelcoat and topcoat DNV rules for classification - High speed and light craft DNV standard DNV-ST-0342 - Craft

Application: Grade 1 resin for use in marine vessels according to stated Rules/Standards. Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at Hamburg on 2024-01-12 for DNV. This Certificate is valid until 2029-01-11. DNV local unit: Kaohsiung. Approval Engineer: Gisle Hervik.

Digitally Signed By: Stefan Röhr, Location: DNV Hamburg, Germany.

Formcode: TA-201, Revision: 2023-09, www.dnv.com, Page 1 of 2

- Grade 1 resin for use in marine vessels according to stated Rules/Standards. Products approved by this certificate are accepted for installation on all vessels classed by DNV.

EN45545-2 R1 HL2

Test Report

Report No. TC.25.01.000018
Date of Issue 01/10/2025
Applicant: S-Wanlai Co., Ltd.
Applicant address: No.11, Gongye S.6th Rd., Nantou City, Nantou County 540028, Taiwan
Description of the test subject:

Sample	Description	Photo
001	Sample Description: flame retardant specimens Style No.: RH510-ATH Manufacturer: S-Wanlai Co., Ltd. End use: Flame retardant component	

Receipt Date of Sample: 01/02/2025
Date of Testing: From 01/02/2025 to 01/07/2025
Sample Submitted: The sample(s) was (were) submitted by applicant and identified.

Parameter	Record	HL1	HL2	HL3
CFE, kW/m ²	36.631	Pass	Pass	Pass
MARHE, kW/m ²	62.42	*	Pass	Fail
Ds4, dimensionless	169.5	Pass	Pass	Fail
VOF4, min	237.5	Pass	Pass	Pass
CIT ₀ , dimensionless	0.10	Pass	Pass	Pass

Statement: The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential smoke and toxicity hazard of the product in use.

TÜV SÜD SW Rail Transportation Technology (Jiangsu) Co., Ltd.
Prepared by: Feng Han, Approved by: Wayne Wang

Formcode: TA-201, Revision: 2023-09, www.tuv-sud.com, Page 3 of 9

Test Report

Report No. TC.25.01.000019
Date of Issue 01/10/2025
Applicant: S-Wanlai Co., Ltd.
Applicant address: No.11, Gongye S.6th Rd., Nantou City, Nantou County 540028, Taiwan
Description of the test subject:

Sample	Description	Photo
001	Sample Description: flame retardant specimens Style No.: RH511-ATH Manufacturer: S-Wanlai Co., Ltd. End use: Flame retardant component	

Receipt Date of Sample: 01/02/2025
Date of Testing: From 01/03/2025 to 01/07/2025
Sample Submitted: The sample(s) was (were) submitted by applicant and identified.

Parameter	Record	HL1	HL2	HL3
CFE, kW/m ²	43.353	Pass	Pass	Pass
MARHE, kW/m ²	74.4	*	Pass	Fail
Ds4, dimensionless	93.9	Pass	Pass	Pass
VOF4, min	191.6	Pass	Pass	Pass
CIT ₀ , dimensionless	0.038	Pass	Pass	Pass

Statement: The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential smoke and toxicity hazard of the product in use.

TÜV SÜD SW Rail Transportation Technology (Jiangsu) Co., Ltd.
Prepared by: Kai Wang, Approved by: Wayne Wang

Formcode: TA-201, Revision: 2023-09, www.tuv-sud.com, Page 3 of 9

- Meet EN4554502 R1 HL2 Standard

RESIN SYSTEM

Bio_Grade available, containing bio material $\geq 10\%$

Process	SWANCOR No.	Fire Retardant	SM Free	Certificate
Infusion / RTM	RH511	●	●	EN45545-2 R1 HL2
	RH512		●	DNV
Hand Lay-Up	RH510	●	●	EN45545-2 R1 HL2
	RH513			DNV
SMC	RH517		●	-
Hot Press	RH512-HP		●	-
Filament Winding	RH512-WD		●	-
Gelcoat	RH513-GC		●	-

Infusion/RTM

Property	RH511	RH512
Tensile Strength (MPa)	72-90	75-95
Tensile Modulus (GPa)	3.0-3.8	3.3-4.0
Tensile Elongation (%)	5.0-8.0	3.0-8.0
Flexural Strength (MPa)	130-160	135-165
Flexural Modulus (GPa)	3.1-3.8	3.3-4.0
Barcol Hardness	40-50	35-45
HDT (°C)	-	100-105

Hand Lay-Up

Property	RH510	RH513
Tensile Strength (MPa)	65-85	70-90
Tensile Modulus (GPa)	3.3-3.8	3.2-3.8
Tensile Elongation (%)	2.0-4.0	3.0-8.0
Flexural Strength (MPa)	138-160	130-160
Flexural Modulus (GPa)	3.4-4.0	3.2-4.0
Barcol Hardness	45-55	-
HDT (°C)	-	95-105

SMC/Hot Press/Filament Winding/Gelcoat

Property	RH517	RH512-HP	RH512-WD	RH513-GC
Tensile Strength (MPa)	75-85	70	87.6	79
Tensile Modulus (GPa)	3.2-3.8	3.2	3.2	3
Tensile Elongation (%)	4.0-8.0	>8.0	6.2	7.6
Flexural Strength (MPa)	140-165	120	145.5	137
Flexural Modulus (GPa)	3.2-3.8	3.3	3.5	3.6
HDT (°C)	75-83	60	99	77

APPLICATION



Electric Vehicle

Process	RTM
Resin	RH512



Fishing Boat

Process	Hand Lay-Up
Resin	RH513



Construction

Process	Infusion
Resin	RH511



Shoe Material

Process	SMC
Resin	RH517