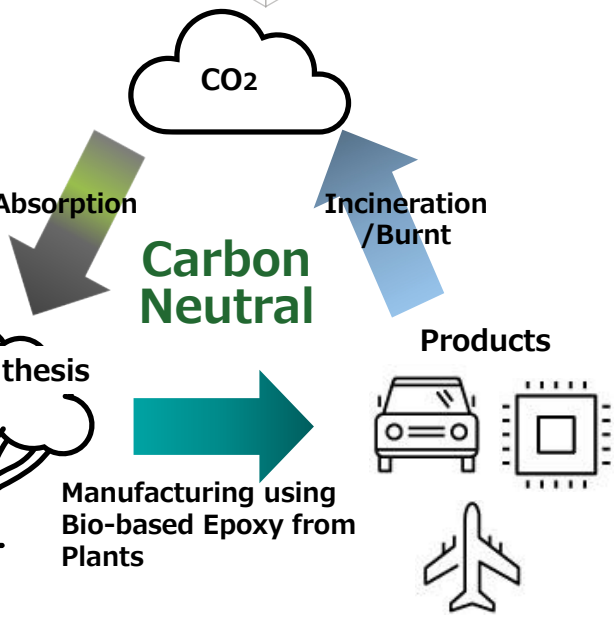
Material for FRP Matrix

Bio-based Epoxy Resin Green DENATITE

NAGASE | Delivering next.

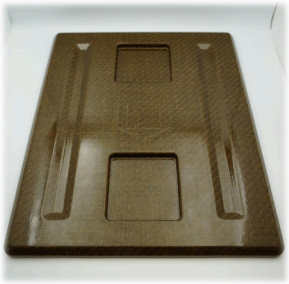
Bio-based Epoxy Resin

- Sustainable
- Plant-based Resin
- Reduced Carbon Footprint



NAGASE Sustainable Activities

- Up to 100 % Bio-based Epoxy Resins
- Up to 95 % Bio-based FRP matrix resins and adhesive



Natural-FRP
Natural Fiber
&
Bio-based Epoxy Resin

バイオマス
No.220319
Certification mark
by JORA

ASA-8102
Bio content : 95%

Product Information of FRP Matrix Resins

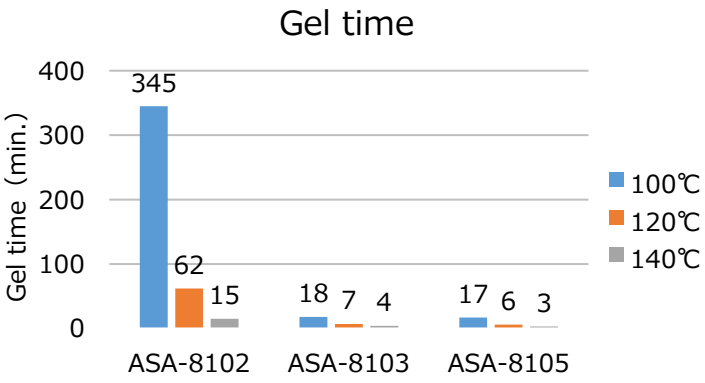
High Bio Content & High Performance

Product Name	ASA-8102	ASA-8103	ASA-8105
Bio Content	95 %	78 %	40 %
Features	High stability	High Tg	Low viscosity High Tg
Hardener	Amine catalyst	Amine	Acid anhydride
Package	One component	Two components	Two components
Mixing Ratio (weight)	-	100 : 27	100 : 100
Applicable Process	VaRTM Pressure-RTM Filament Winding Pultrusion	VaRTM Pressure-RTM Filament Winding Pultrusion	VaRTM Pressure-RTM Filament Winding Pultrusion
Viscosity (25 °C)	15,000 mPa*s	10,000 mPa*s	1,600 mPa*s
Gel Time	15 min. (140 °C)	4 min. (140 °C)	1 min. (160 °C)
Cure Condition	140 °C x 3 h	140 °C x 3 h	140 °C x 1 h + 160 °C x 1 h
Tg	90 °C	145 °C	170 °C
Tensile Strength (25 °C)	62 MPa	47 MPa	77 MPa
Tensile Modulus (25 °C)	3,500 MPa	4,000 MPa	3,300 MPa
Elongation (25 °C)	3.0 %	1.5 %	3.5 %

Reactivity (Gel Time)

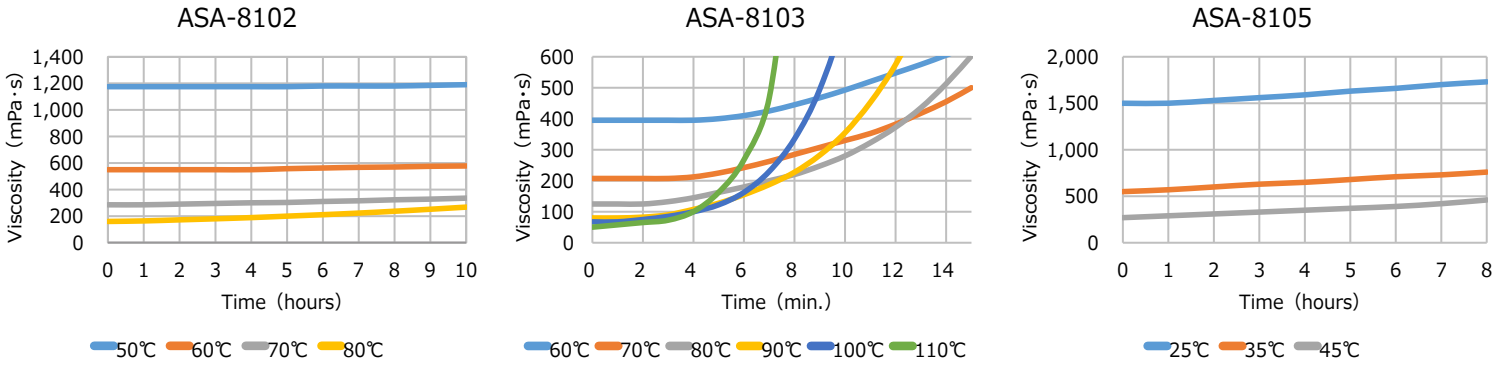
Gel time by temperature

Temp.	ASA-8102	ASA-8103	ASA-8105
100 °C	345 min	18 min	17 min
120 °C	62 min	7 min	6 min
140 °C	15 min	4 min	3 min



Impregnation (Viscosity Curve)

Viscosity curve by temperature



Bio-Epoxy Adhesive for FRP Bonding

High adhesive strength at room temperature curing.

Product Name	ASA-8101
Bio Content	73 %
Features	**High adhesion R.T. curable High elongation**
Hardener	Amine
Package	Two components
Mixing Ratio (weight)	100 : 35
Viscosity (25 °C)	4,000 mPa*s
Gel Time	1 h (25 °C)
Cure Condition	25 °C x 24 h
Tg	40 °C
Tensile Strength (25 °C)	46 MPa
Tensile Modulus (25 °C)	2,700 MPa
Elongation (25 °C)	30 %

Multi-Material Bonding

- Lap shear strength, 25 °C
- Unit: MPa

	Al	Steel	CFRP	Cu	Ni
Al	22	21	19	14	7
Steel		23	18	17	8
CFRP			17	14	7
Cu				14	7
Ni					8

Bonding Al and CFRP

バイオマス
No.220318
Certification mark
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For more information please reach out to service@nagase.eu

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