



CNF & recycled plastics compliant with ELV regulations for new vehicles

By 2032, the proposed ELV regulation will require 15% of the plastics used in new vehicles to contain recycled content. We address challenges such as “reduced strength” and “performance variability” of recycled plastics by using CNF. Here, we introduce solutions in which CNF dramatically improves the performance of recycled plastics, enabling both compliance with environmental regulations and high product performance.

Challenges of recycled plastics

The ELV regulation, which mandates the use of 15% recycled materials in plastics for new vehicles by 2032, is a major challenge for automobile manufacturers. However, recycled plastics face issues such as reduced strength and increased performance variability with each recycling cycle. We solve these problems and present a pathway to meet strict regulations.



EU
regulations

15% Recycled
Plastics Mandated
for New Vehicles
by 2032

Environmental
considerations

If you are interested in CNF, please feel free to contact us.



Solutions to comply with ELV regulations

Recycled plastics + CNF = Significant improvement in recycled plastic performance

Adding just a small amount of CNF can dramatically improve the performance of recycled plastics. With a 10% addition of CNF, stiffness and strength can be increased by 1.5 times. This enables manufacturers to meet environmental regulations while maintaining stable quality and product performance. We have demonstrated that CNF-reinforced plastics can be repeatedly recycled, supporting more sustainable manufacturing.

With 10% CNF addition: 1.5× stiffness, 1.5× strength

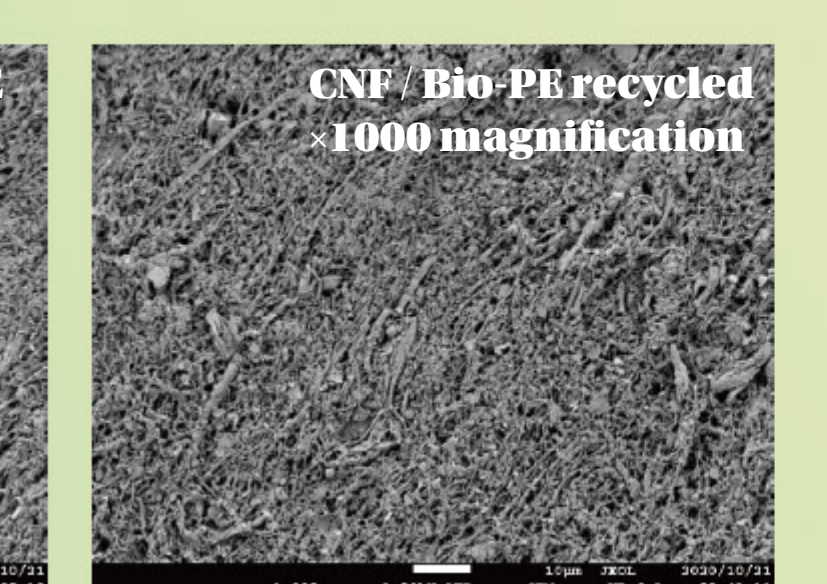
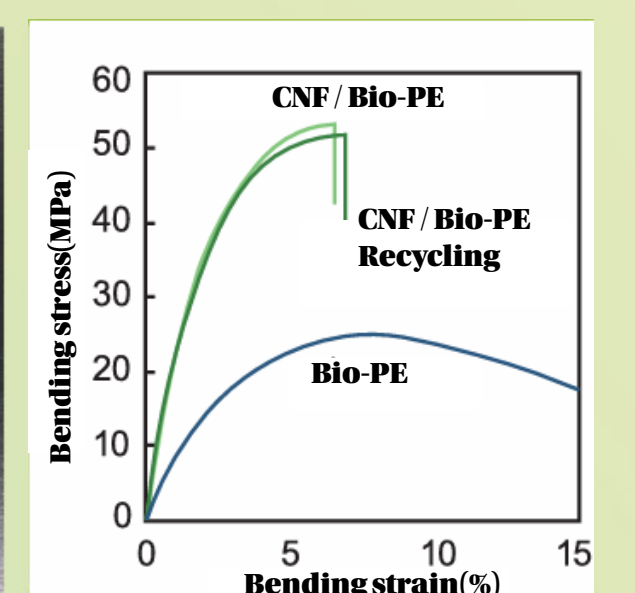
Pallet material	Flexural modulus (MPa)	Flexural strength (MPa)	Fracture strain (%)	Charpy impact strength (kJ/m ²)	MFR (g/10min)
Recycled PP	913 (9)	25.6 (0.1)	-	59 (0.9)	-
CNF2%/RePP	1040 (12)	28.7 (0.1)	-	12 (0.5)	3.8
CNF5%/RePP	1378 (11)	35.2 (0.2)	-	8.4 (0.3)	-
CNF10%/RePP	1500 (17)	37.9 (0.1)	-	5.3 (0.4)	7.3

Automotive interior material	Flexural modulus (MPa)	Flexural strength (MPa)	Fracture strain (%)	Charpy impact strength (kJ/m ²)	MFR (g/10min)
Recycled PP	1220 (35)	35.3 (0.30)	-	5.97 (0.29)	35
CNF2%/RePP	1518 (26)	39.8 (0.54)	-	4.28 (0.06)	24
CNF5%/RePP	1882 (37)	45.5 (0.25)	-	3.18 (0.42)	13
CNF10%/RePP	2687 (7)	58.6 (0.04)	6.90 (0.07)	2.40 (0.06)	4.6

NEDO / CNF Human Resource Development Program - Related Research 2022

Molding → pulverization → remolding

Recyclable



Ministry of the Environment, Environmental Research and Technology Development Fund
Acetylated CNF-reinforced Bio-PE Project 2019-2020