AsahiKASEI

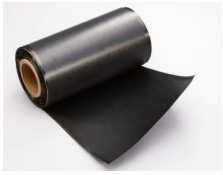
UD-Tape
Continuous Carbon-fiber-reinforced Polyamide Resin

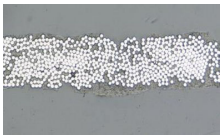
Proposal as an Alternative to Metal Parts
(under development)

Product Overview

Asahi Kasei's Uni-directional Tape (UD-Tape) is a material with a polyamide resin reinforced by continuous carbon fibers in a single direction. UD-Tape can be welded to other thermoplastics and can produce multi-material component structures with excellent strength and rigidity to serve as lightweight replacement for complex metal components.
Also, high-strength pipes and ring-shaped reinforcement parts can be produced by winding process of UD-Tape.
Additionally, complex-shaped parts with thick walls and ribs can be formed by hot pressing of chopped material from UD tape.

Mechanical Properties



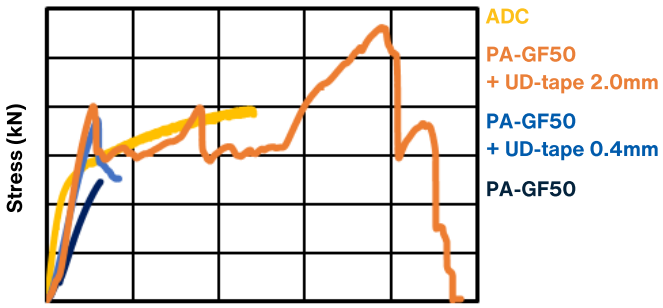


Cross-section image of UD tape

	Unit	Standard	Properties
Fiber Content	vol%	-	50
Density	g/cm^3	ISO 1183	1.52
0° Tensile Strength	MPa	EN2561	2550
0° Tensile Modulus	GPa	EN2561	143
0° Flexural Strength	MPa	EN2562	1800
0° Flexural Modulus	GPa	EN2562	144
0° Compression Strength	MPa	EN2850	1050
0° Compression Modulus	GPa	EN2850	126
Inter Laminar Shear Strength	MPa	EN2563	86
In-plane Shear Strength	MPa	EN6031	92

Example of Application Development : Car Suspension Arms

- Achieved double tensile strength by reinforcing with UD-Tape
- Potential to reduce CO_2 emissions by 50-70% during the suspension arm production process
- Easier recycling by using thermoplastic resin



Strain (mm)
FIG. SS curves at 90deg.-C

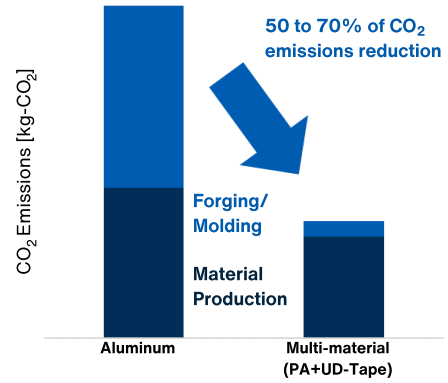


FIG. CO_2 emissions during suspension arm production process

This material is a development product and the CO_2 emissions reduction range is an estimation. CO_2 emissions are calculated based on different databases (IDEA, ecoinvent, internal data, etc.)

Further Information

Visit: https://www.asahi-kasei-plastics.com/en/topics/udtape-01/

Creating for Tomorrow

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