

Product Information

VESTAPE® PA12-CF45 20641

HT CARBON FIBER REINFORCED UD-TAPE MADE FROM POLYAMIDE 12



VESTAPE® PA12-CF45 is an unidirectional carbon fiber reinforced tape made from PA12 with a fiber volume content of 45 %, that shows a high chemical resistance, low water absorption and steady mechanical properties over a wide temperature range.

VESTAPE® PA12-CF45 is supplied as a band-shaped semi-finished product showing a width of 160 mm and a thickness of 0,25 mm. Further information about the properties and the processing of VESTAPE® can be found in our brochure „[VESTAPE®](#)“.

Key Features

Industrial Sector

Automotive and Mobility, Aircraft and Aerospace, Industry and Engineering, Medical Devices, Energy, Oil and Gas, Sports and Lifestyle

Delivery form

Stock shape (rods and plates)

Optics

X-ray transparent, Laser transparent

Resistance to

Heat (thermal stability), Fatigue resistance, Oil / fuels

Electrical

Conductive

Additives

Carbon fibers

LCA-values

LCA-values	dry	Unit	Test Standard
LCA name of certificate	VESTAPE®	-	ISO 14040, 14044
LCA certifier	TÜV Rheinland	-	ISO 14040, 14044
Blue water consumption	60.0	kg	ISO 14040, 14044
Global Warming Potential incl. bio. C incl. LUC	15.9	kg CO ₂ eq./kg	ISO 14040, 14044
Global Warming Potential excl. bio. C incl. LUC	15.9	kg CO ₂ eq./kg	ISO 14040, 14044
Land use (ReCiPe 2016)	0.6	Annual crop eq. y	ISO 14040, 14044
GWP savings as compared to 2023 reference	-1.3	kg CO ₂ eq./kg	ISO 14040, 14044

Thermal properties	dry	Unit	Test Standard
Melting temperature	178	°C	ISO 11357-1/-3
Glass transition temperature, DSC	40	°C	ISO 11357-1/-2
Melting Temperature	178	°C	ASTM D 3418

Physical properties	dry	Unit	Test Standard
Density	1360	kg/m ³	ISO 1183
Humidity absorption	0.47	%	Sim. to ISO 62

Tape Properties	dry	Unit	Test Standard
Polymer	PA12	-	-
Fiber	HT carbon fiber	-	-
Fiber volume content	45	%	ISO 11667
Fiber weight fraction	59	Gew.-%	ISO 11667
Areal Weight	343	g/m ²	-
Ply thickness	0.25	mm	ISO 16012
Tape width	160	mm	-

Laminate Properties	dry	Unit	Test Standard
Tensile Modulus, parallel	100000	MPa	ISO 527
Tensile Modulus, normal	4500	MPa	ISO 527
Stress at break, parallel	1900	MPa	ISO 527
Stress at break, normal	35	MPa	ISO 527
Strain at break, parallel	1.8	%	ISO 527
Poisson's ratio	0.32	-	ISO 527
In plane shear modulus	1400	MPa	ISO 14129
Shear stress 12, 23°C	90	MPa	ISO 14129
Flexural modulus, parallel, 23°C	95000	MPa	ISO 14125
Flexural modulus, normal, 23°C	4500	MPa	ISO 14125

Flexural strength, parallel, 23°C	900	MPa	ISO 14125
Flexural strength, normal, 23°C	60	MPa	ISO 14125
Interlaminar shear strength, parallel, 23°C	45	MPa	ISO 14130
Compression modulus Ec, parallel, 23°C	92	MPa	ISO 14126
Compressive strength, parallel, 23°C	700	MPa	ISO 14126

Characteristics

Applications

Electrical and Electronical, Encapsulation, General purpose, Tube and hose

Processing

Thermoforming, Compression molding, RTM transfermolding

Special Characteristics

Halogen-free, Phosphorus-free, PTFE-free, High impact strength, Semi-crystalline, High heat resistant, Non-dripping, MRT compatible, Low warpage / Low shrinkage

Features

Creep resistance, Deep-drawing property, Lightweight, Weldable, Non-corrosive

Color

Black

Additives

Heat stabilizer

Delivery form

UD tape

Chemical Resistance

Acid resistance, Alkali resistance, Solvent resistance, Oil resistance, Fuel resistance, General chemical resistance

Processing Recommendation	dry	Unit	Test Standard
Compression molding			
Molding temperature	220	°C	-
Molding time	5	min	-
Cooling rate	20	K/min	-
Demolding temperature	40	°C	-
Molding pressure	1	MPa	-