

TECHNICAL DATA SHEET

Chopped Carbon Fiber - Standard Modulus (AS4C Type)

1. Product Description

This product is a high-strength, high-strain, polyacrylonitrile (PAN)-based chopped carbon fiber. The continuous precursor fiber is surface-treated and sized to improve interlaminar shear properties, handling characteristics and structural performance. The continuous tow is precision-chopped into lengths ranging from 3 mm to 100 mm (customer specified) and is suitable for compounding, molding compounds, injection molding and other discontinuous fiber processes.

The chopped form consists of small rectangular flakes in which individual filaments are lightly held together by the sizing; the filaments readily disperse during subsequent processing. Addition of this chopped carbon fiber to thermoplastic or thermoset matrices yields composites with high strength and stiffness, excellent fatigue and creep resistance, low thermal expansion, good electrical and thermal conductivity, and improved wear resistance.

2. Typical Applications

- Reinforcement of thermoplastic compounds (PA, PP, PC, PBT, PPS, PEEK, etc.)
- Bulk Molding Compounds (BMC) and Sheet Molding Compounds (SMC)
- Injection molding of structural and semi-structural parts
- Electrically conductive compounds and EMI/RFI shielding
- Friction and wear-resistant components (brakes, bearings, seals)
- Automotive, industrial, sports equipment and consumer goods
- Concrete and infrastructure repair additives

3. Typical Fiber Mechanical Properties (Continuous Tow Basis)

The values below are representative of the underlying continuous standard-modulus carbon fiber (AS4C-type) from which the chopped product is produced. Values are typical and not guaranteed.

Property	Unit (SI)	Typical Value	Unit (US)	Typical Value
Tensile Strength	MPa	4 450 - 4 650	ksi	645 - 675
Tensile Modulus (Chord 1000-6000 ue)	GPa	231	Msi	33.5
Ultimate Elongation at Failure	%	1.7 - 1.8	%	1.7 - 1.8
Density	g/cm3	1.78	lb/in3	0.0643
Filament Diameter	um	6.9	mil	0.272
Carbon Content	%	>= 94	%	>= 94
Twist	-	Never twisted	-	Never twisted

Note: Tensile modulus is calculated as chord modulus between 1000 and 6000 microstrain. Values may vary slightly depending on filament count of the parent tow (3K / 6K / 12K).

4. Chopped Product Characteristics

Property	Unit	Typical / Available Values
Nominal Fiber Length	mm (inch)	3 - 100 mm (0.12 - 3.94 inch) - customer specified
Form	-	Rectangular flake; filaments lightly bonded by sizing
Bulk Density (unpacked, approx.)	g/L	300 - 450 (depends on length & sizing)
Sizing Content	wt %	1.0 - 5.0 (typical 2-4 %)
Moisture Content	wt %	<= 0.2 (as packed)
Sizing Compatibility	-	Epoxy, polyurethane, polyamide, polycarbonate, vinyl ester, polyester (grade-dependent)
Resin Compatibility	-	Multi Compatible

5. Additional Physical & Thermal Properties (Fiber)

Property	Typical Value	Unit
Coefficient of Thermal Expansion (axial)	-0.6 to -0.8	$\times 10^{-6}$ /degC
Thermal Conductivity (axial, approx.)	5 - 10	W/(m.K)
Electrical Resistivity (volume, approx.)	1.5 - 2.0 $\times 10^{-3}$	Ohm.cm
Specific Heat	~0.71	J/(g.K)

Thermal and electrical values are indicative for standard-modulus PAN-based carbon fiber and may vary with sizing and processing.

6. Processing Guidance

Chopped carbon fiber can be dry-blended or melt-compounded with thermoplastic resins. For thermoset systems (BMC/SMC, putties, adhesives) it is typically added after the resin and hardener are mixed. Higher loadings increase stiffness, strength and conductivity but may reduce impact toughness and flow. Recommended starting loadings: 5-20 wt% for conductivity applications; 10-40 wt% for structural reinforcement (process-dependent).

Ensure adequate dispersion; excessive shear can shorten fiber length and reduce reinforcement efficiency. Drying of hygroscopic resins prior to compounding is recommended. Compatibility of the applied sizing with the matrix resin should be verified for optimal interfacial adhesion.

7. Packaging & Storage

Standard packaging: polyethylene bags inside cardboard boxes (typical net weight 15-20 kg per box) or bulk bags / supersacks (up to ~500 kg). Boxes are palletized and stretch-wrapped for transport.

Store indoors in original sealed packaging at temperatures below 35 degC and relative humidity below 50 %. Avoid direct sunlight and moisture. Under these conditions the product retains its processing characteristics for at least 12 months from date of manufacture. After prolonged storage, evaluate dispersibility and wet-out before use.

8. Safety Information

Carbon fiber is electrically conductive. Avoid contact with electrical circuits and equipment. Fine airborne filaments may cause mechanical irritation to skin, eyes and respiratory tract. Use appropriate personal protective equipment (gloves, safety glasses, dust mask / local extraction) during handling. Obtain, read and understand the Safety Data Sheet (SDS) before use. Dispose of waste in accordance with local regulations.

Disclaimer: The information contained in this Technical Data Sheet is believed to be accurate as of the date of publication and is provided for guidance only. Typical values are representative of the material and do not constitute a specification or guarantee of performance. The user is solely responsible for determining the suitability of the product for any particular purpose and for ensuring compliance with all applicable regulations. No warranty of merchantability or fitness for a particular purpose is expressed or implied. The manufacturer reserves the right to modify product properties and this document without prior notice.

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