

Carbon Chopped Fiber & Milled Fiber (Short Fiber)

Carbon Chopped Fiber is a product made by chopping carbon fiber tow.

Carbon Milled Fiber is a product made by milling chopped fiber into a powder (milled) form. Chopped fiber is typically around 3 to 6 mm long, while milled fiber is typically less than 200 μm long. Both of these materials are used to enhance the physical properties of thermoplastic resins and rubbers, and to increase electrical and thermal conductivity.



PYROFIL™ Chopped Fiber

| Product name | Carbon fiber type | Sizing agent | Sizing content (%) | Fiber length (mm) | Material properties (reference) | | | | | | |
|--------------|-----------------------|-------------------------------|--------------------|-------------------|---------------------------------|-----------------------|----------------|-----------------------------|--|------------------------------------|----------------------------------|
| | | | | | Tensile strength (GPa) | Tensile modulus (GPa) | Elongation (%) | Thermal conductivity (W/mK) | Electrical resistivity [$\mu\Omega\text{m}$] | Density (g/cm^3) | Fiber diameter (μm) |
| TR06U | PAN 24t (regular tow) | Urethane-based | 2.5 | 6 | 3.73 | 224 | 2.1 | 7 | 16 | 1.81 | 7 |
| TR066A | PAN 24t (regular tow) | Epoxy-based | 3.0 | 6 | 3.73 | 224 | 2.1 | 7 | 16 | 1.81 | 7 |
| TR03CM | PAN 24t (regular tow) | Water | 12.0 | 3 | 3.73 | 224 | 2.1 | 7 | 16 | 1.81 | 7 |
| TR03M | PAN 24t (regular tow) | Water-soluble polyamide-based | 1.5 | 3 | 3.73 | 224 | 2.1 | 7 | 16 | 1.81 | 7 |
| TR06UL | PAN 24t (large tow) | Urethane-based | 2.5 | 6 | 3.30 | 225 | 1.7 | 7 | 16 | 1.82 | 7 |
| TR06NL | PAN 24t (large tow) | Polyamide-based | 3.0 | 6 | 3.30 | 225 | 1.7 | 7 | 16 | 1.82 | 7 |
| TR06YL | PAN 24t (large tow) | Special epoxy-based | 4.2 | 6 | 3.30 | 225 | 1.7 | 7 | 16 | 1.82 | 7 |
| TR03ML | PAN 24t (large tow) | Water-soluble polyamide-based | 2.5 | 3 | 3.30 | 225 | 1.7 | 7 | 16 | 1.82 | 7 |
| TR03CL | PAN 24t (large tow) | Water | 1.2 | 3 | 3.30 | 225 | 1.7 | 7 | 16 | 1.82 | 7 |
| MR03NE | PAN 30t | Polyamide-based | 3.0 | 3 | 4.40 | 265 | 2.0 | 16 | 13 | 1.82 | 5 |

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Carbon Chopped Fiber & Milled Fiber (Short Fiber)

DIALEAD™ Chopped Fiber

| Product name | Carbon fiber type | Sizing agent | Sizing content (%) | Fiber length (mm) | Material properties (reference) | | | | | | |
|--------------|-------------------|-----------------|--------------------|-------------------|---------------------------------|-----------------------|----------------|-----------------------------|--|-----------------------------|----------------------------------|
| | | | | | Tensile strength (GPa) | Tensile modulus (GPa) | Elongation (%) | Thermal conductivity (W/mK) | Electrical resistivity [$\mu\Omega\text{m}$] | Density (g/cm^3) | Fiber diameter (μm) |
| K223SE | PITCH 20t | Polyamide-based | 3.0-5.0 | 6 | 2.40 | 185 | 1.1 | 20 | 15.0 | 2.0 | 11 |
| K237SE | PITCH 65t | Polyamide-based | 1.0-3.0 | 6 | 2.60 | 640 | 0.4 | 140 | 6.6 | 2.1 | 11 |
| K223HE | PITCH 90t | nil | nil | 6 | 3.80 | 900 | 0.3 | 550 | 2.3 | 2.2 | 11 |
| K6371T | PITCH 65t | Epoxy-based | 1.0-3.0 | 6 | 2.60 | 640 | 0.4 | 140 | 6.6 | 2.1 | 11 |

DIALEAD™ Milled fiber (High rigidity and high thermal conductivity grade)

| Product name | Carbon fiber type | Sizing agent | Sizing content (%) | Fiber length (mm) | Material properties (reference) | | | | | | |
|--------------|-------------------|--------------|--------------------|-------------------|---------------------------------|-----------------------|----------------|-----------------------------|--|-----------------------------|----------------------------------|
| | | | | | Tensile strength (GPa) | Tensile modulus (GPa) | Elongation (%) | Thermal conductivity (W/mK) | Electrical resistivity [$\mu\Omega\text{m}$] | Density (g/cm^3) | Fiber diameter (μm) |
| K223HM | PITCH 90t | nil | nil | 0.05/0.2 | 3.80 | 900 | 0.3 | 550 | 2.3 | 2.2 | 11 |

DIALEAD™ Milled fiber (Antistatic grade)

| Product name | Carbon fiber type | Sizing agent | Sizing content (%) | Cut length (mm) | Surface resistivity* (Ω/sq) |
|--------------|-------------------|--------------|--------------------|-----------------|---|
| K223EM | PITCH | nil | nil | 0.2 | $10^{7.5}$ |

* Surface resistivity: Measurement of milled product aggregate. The figures in this table are typical values and not imply any kind of guarantee.

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<https://www.m-chemical.co.jp/carbon-fiber/en/product/mid/>

