



DOWAKSA

HIGH QUALITY, RELIABLY SUPPLIED,
COMPETITIVELY PRICED
CARBON FIBER





DowAksa Advanced Composites

Established in 2012, DowAksa is an international 50:50 joint venture between The Dow Chemical Company and Aksa Akrilik Kimya Sanayii A.Ş. combining the strengths of both partners, the joint venture will manufacture and commercialize carbon fibers and derivatives with a specific focus on the energy, infrastructure and transportation markets.

As one of the largest chemistry and science-based companies, Dow, based in Midland, Michigan, offers world-class capabilities and global reach along with proven technologies in the area of composites as well as formulation and technical service capabilities.

Aksa, based in Yalova, Turkey, is the world's largest producer of acrylic fibers, a key raw material in the production of carbon fibers, and is one of the newest entrants in the manufacture of carbon fiber. Akса has the infrastructure and capacity to expand the supply of carbon fiber precursor to meet the demand for high-quality, reliably supplied and competitively priced carbon fiber composites.

Together, Dow and Akса will deliver a strong focus on bringing solutions to market that reduce overall costs, thereby enhancing economics and driving adoption in a broader array of markets.

Powerful Partnership: Dow and Akса

Dow

Dow (NYSE: Dow) connects chemistry and innovation with the principles of sustainability to help address many of the world's most challenging problems such as the need for clean water, renewable energy generation and conservation and increasing agricultural productivity. Dow's diversified industry-leading portfolio of specialty chemical, advanced materials, agrosiences and plastics businesses delivers a broad range of technology-based products and solutions to customers in approximately 160 countries and in high growth sectors such as electronics, water, energy, coatings and agriculture. In 2012, Dow had annual sales of approximately \$57 billion and employed approximately 54,000 people worldwide. The Company's more than 5,000 products are manufactured at 188 sites in 36 countries across the globe.

Akса

Akса Akrilik Kimya Sanayii A.Ş. (Istanbul Stock Exchange: Akса) is the world's largest producer of acrylic fiber with 308,000 tons per year capacity and 14 percent share of the worldwide market. Products include acrylic textile fibers and technical fibers. Akса's mission is to be the first choice for acrylic-based textiles and technical fibers, to work efficiently and in harmony with the environment, to be innovative and customer focused. Akса has around 800 employees working at its production site in Yalova Turkey, and offices in Istanbul. Akса's turnover was \$907 million in 2012. Akса is a member of the Akkök Group of Companies, which is comprised of 17 companies operating in Turkey's chemical, energy, real estate and textile sectors. The Group has more than 3,200 employees.



Products



Continuous Carbon Fiber Properties

| | | Tensile Strength | | Tensile Modulus | | Strain (%) | Density | | Yield Tex (g/1000m) |
|-------------|-----|------------------|------|-----------------|-----|------------|---------------------|-------------------|---------------------|
| | | Ksi | MPa | Msi | GPa | | lbs/in ³ | g/cm ³ | |
| A-38 | 3K | 552 | 3800 | 34.8 | 240 | 1.6 | 0.064 | 1.78 | 200 |
| | 6K | | | | | | | | 400 |
| A-42 | 12K | 610 | 4200 | 34.8 | 240 | 1.8 | 0.064 | 1.78 | 800 |
| | 24K | | | | | | | | 1600 |
| A-49 | 12K | 711 | 4900 | 34.8 | 240 | 2.0 | 0.065 | 1.79 | 800 |
| | 24K | | | | | | | | 1600 |
| Test Method | | ISO 10618 | | ISO 10618 | | ISO 10618 | ISO 10119 | | ISO 1889 |

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Chopped Carbon Fiber Properties

| Product Code | Application | Fiber Lengths, mm | Typical Bulk Density (For 6 mm cut lengths) (g/l) | Sizing Emulsion | Sizing content (%) |
|--------------|---|-------------------|---|-------------------------|--------------------|
| AC 0101 | Thermoplastics - ABS, LCP, PA, PC, PBT, PET, POM, PPO | 3, 6 or 12 | 600 | Polyurethane based | 1,5 - 3,0 |
| AC 1101 | Thermosets - Epoxy, Vinylester, Polyester Unsaturated Polyester, PC, PPS, Amide, SAN, ABS | 3, 6 or 12 | 550 | Epoxy and Phenoxy based | 1,5 - 3,0 |
| AC 2101 | Thermoplastics (High Temperature) - PEEK, Amide, Imide | 3, 6 or 12 | 550 | Hydrocarbon based | 1,5 - 3,0 |
| AC 3101 | Thermosets - Epoxy, Vinylester, Polyester Unsaturated Polyester, PC, PPS, Amide, SAN, ABS | 3, 6 or 12 | 550 | Phenoxy based | 1,5 - 3,0 |
| AC 4101 | Thermoplastics - Special for PA and PBT | 3, 6 or 12 | 500 | Polyamide based | 1,5 - 3,0 |



DOWAKSA

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