

Aramid Fibers

Aramid has the excellent tensile strength, the flame retardancy and the excellent modulus.

Strength for
Protection



ALKEX

HYOSUNG ADVANCED
MATERIALS

HYOSUNG ADVANCED MATERIALS

Hyosung Advanced Materials began as a business unit dealing with industrial yarn as part of Dongyang Nylon and Dongyang Polyester, the founding fathers of Hyosung Group, and has continued to grow to become a leading global material vendor offering some of the world's finest products based on proprietary technologies and non-stop innovation.

Our products including high strength industrial yarn and fabric and materials for steel wire are widely used in a variety of industry sectors including automotive, civil engineering and architecture, agriculture and military logistics. We maintain our competitive edge by developing high caliber global products including tire cord, yarn for automobile seat belts and fabric for airbags, and developing and commercializing new materials that will help us grow sustainably.

Our goal is to transform ourselves from a vendor of products featuring world-class quality and performance to a solution provider that prioritizes user safety and comfort.

We truly appreciate your encouragement and support for us and pledge to channel our resources to R&D efforts and innovation to repay our thanks with solutions that can help improve your quality of life. Please keep watching us grow into a more reputable company not only among our partners and customers but also throughout the global community by fulfilling our social responsibility based on moral integrity.



Business Results

Since its establishment, Hyosung had to overcome many difficulties but grew steadily. Gaining the capacity to raise its quality, technology, cost competitiveness, and marketing levels to global standards and exploring global markets, it is growing as one of the world's best corporations. Moreover, we continue our growth through innovation and triumphs in new challenges.

Total Sales



Total Assets



Operating Profit



Hyosung Advanced Materials Corporation



Tire Cord



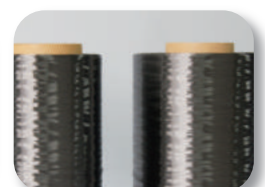
Technical Yarn



Interior



Aramid Biz. Division



Carbon Biz. Division

p-Aramid Filament Yarn

Poly para-phenylene terephthalamide / PPTA

Characteristics

- 5 times stronger tensile strength than Steel
- High heat resistance
- Excellent chemical resistance
- Excellent fatigue resistance
- Low elongation and creep
- Self extinguishable



Protection

- Safety & Resistances in soft & hard ballistic armor, cuts, vehicle armor



Mechanical Rubber Goods

- Reinforcement material, Mechanical Rubber goods in tire, belt, hose



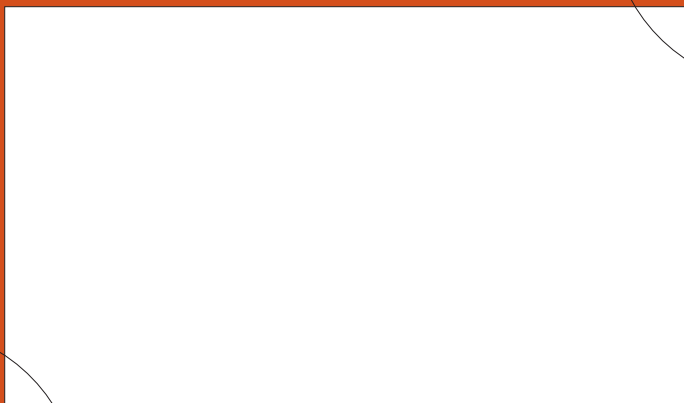
Fiber Optics

- Strength Member • Ripcord



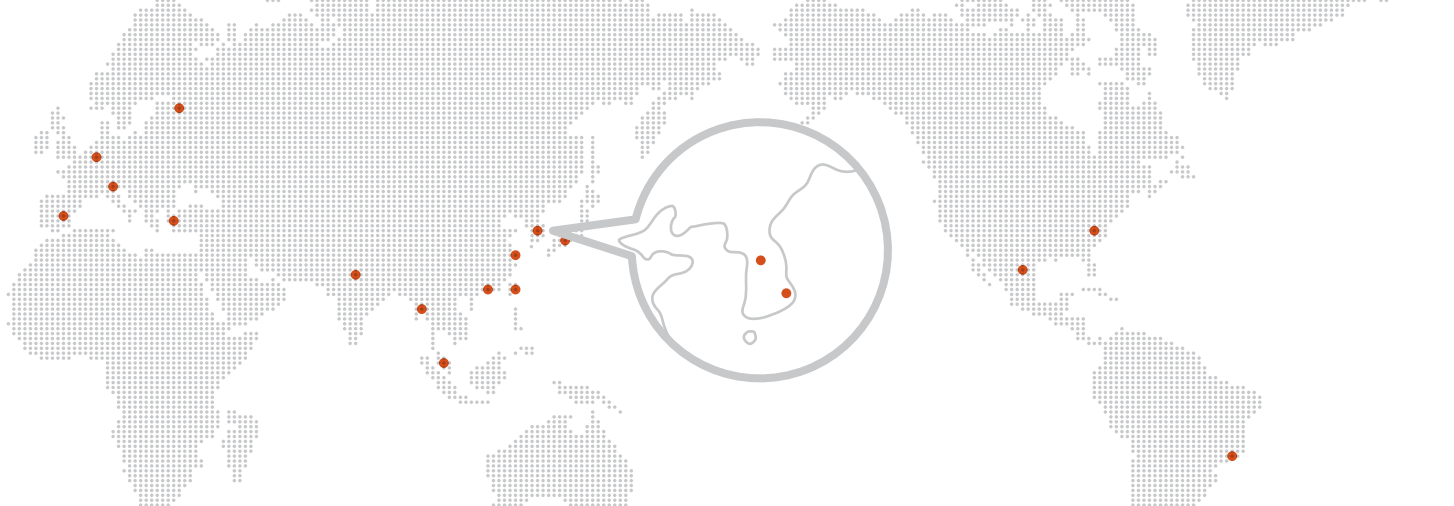
Composites & Others

- Composites • Friction & sealing • Rope & Cordage
- Oil & Gas



Global Network

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Yarn Specification

| Yarn Type | LOT | Linear density | Fila. No. | O.P.U | Elongation at break | Breaking tenacity | | Breaking strength | | Modulus | | |
|-----------|-------|----------------|-----------|-------|---------------------|-------------------|----------|-------------------|----------|----------|--------|---------|
| | | Denier | Fila | % | % | MPa | g/d | N | kgf | GPa | g/d | |
| AF 1000 | 200D | A021 | 203±10 | 134 | 2.0 | 2.8±0.5 | 2923±254 | 23.0±2.0 | 45±3.9 | 4.6±0.4 | 102±19 | 800±150 |
| | 300D | A031 | 304±15 | 134 | 1.0 | 3.0±0.5 | 2923±254 | 23.0±2.0 | 69±5.9 | 7.0±0.6 | 97±9 | 760±70 |
| | 400D | A041 | 405±20 | 267 | 1.0 | 3.2±0.5 | 2923±254 | 23.0±2.0 | 91±7.8 | 9.3±0.8 | 93±9 | 730±70 |
| | 840D | A081 | 850±40 | 665 | 1.0 | 3.4±0.5 | 2923±254 | 23.0±2.0 | 196±20 | 19.6±1.7 | 86±9 | 680±70 |
| | 1000D | A101 | 1010±50 | 665 | 1.0 | 3.5±0.5 | 2923±254 | 23.0±2.0 | 226±20 | 23.2±2.0 | 86±10 | 680±80 |
| | 1500D | A151 | 1520±60 | 1000 | 1.0 | 3.7±0.5 | 2923±254 | 23.0±2.0 | 333±29 | 35.0±3.0 | 70±7 | 550±50 |
| | 2250D | A221 | 2280±80 | 1000 | 1.0 | 3.8±0.5 | 2923±254 | 23.0±2.0 | 510±49 | 52.4±4.6 | 71±10 | 560±80 |
| | 3000D | A301 | 3040±100 | 2000 | 1.0 | 3.9±0.5 | 2923±254 | 23.0±2.0 | 686±59 | 70.0±6.0 | 74±11 | 580±90 |
| AF 2000 | 400D | H041 | 405±20 | 267 | 1.0 | 3.5±0.5 | 3432±254 | 27.0±2.0 | 108±10 | 10.9±0.8 | 92±9 | 720±70 |
| | 840D | H081 | 850±40 | 665 | 1.0 | 3.5±0.5 | 3432±254 | 27.0±2.0 | 226±20 | 23.0±1.7 | 89±9 | 700±70 |
| | 1000D | H101 | 1010±50 | 665 | 1.0 | 3.6±0.5 | 3432±254 | 27.0±2.0 | 265±20 | 27.3±2.0 | 89±9 | 700±70 |
| | 1500D | H151 | 1520±60 | 1000 | 1.0 | 3.7±0.5 | 3432±254 | 27.0±2.0 | 402±20 | 41.0±3.0 | 89±9 | 700±70 |
| AF 3000 | 1420D | M141 | 1440±60 | 1000 | 0.9 | 2.7±0.5 | 2796±254 | 22.0±2.0 | 314±29 | 32±3 | 114±10 | 900±80 |
| | 2840D | M281 | 2880±90 | 2000 | 0.9 | 2.7±0.5 | 2796±254 | 22.0±2.0 | 627±59 | 64±6 | 108±10 | 850±80 |
| | 5680D | M561 | 5760±170 | 4000 | 0.9 | 2.8±0.5 | 2733±254 | 21.5±2.0 | 1196±128 | 122±13 | 104±10 | 820±80 |

O.P.U : Oil Pick Up

| Property | Unit | |
|---|----------------------|-------|
| Flammability (LOI) | % | 29 |
| Hot air shrinkage (15 min. at 190°C) | % | 0.1 |
| Heat resistance (residual strength after 48 h at 200°C) | % | 90 |
| Decomposition temperature | °C | > 450 |
| Coefficient of thermal expansion (linear) | %10 ⁻⁶ /K | -3.5 |
| Density | g/cm ³ | 1.44 |

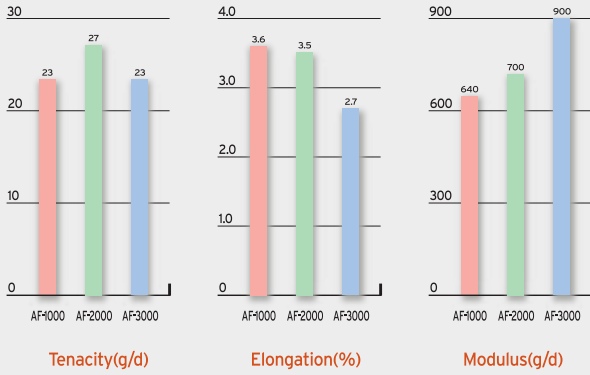
> ISO 9001:2015, IATF 16949:2016, ISO 14001:2015 Certified.

> ALKEX® is a Hyosung registered trademark.

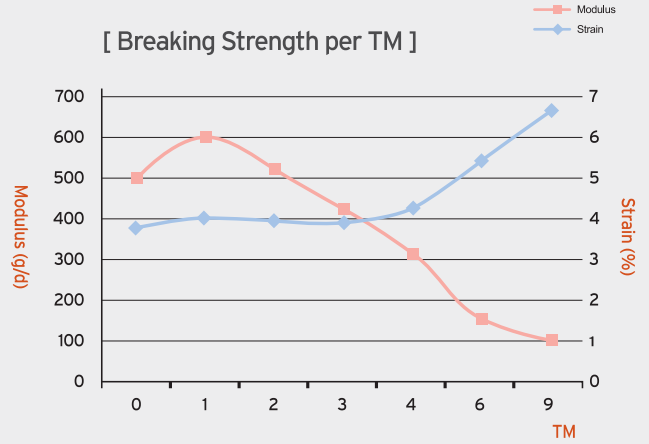


Physical Properties

[Yarn Performance]



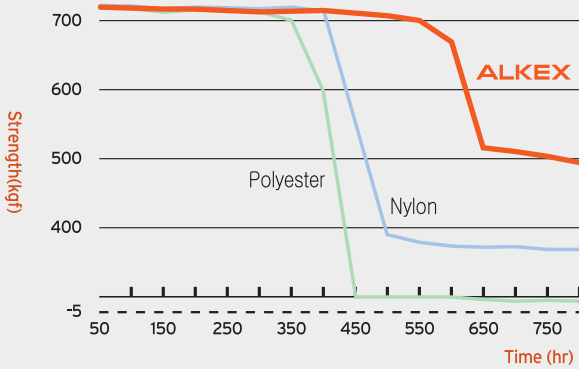
[Breaking Strength per TM]



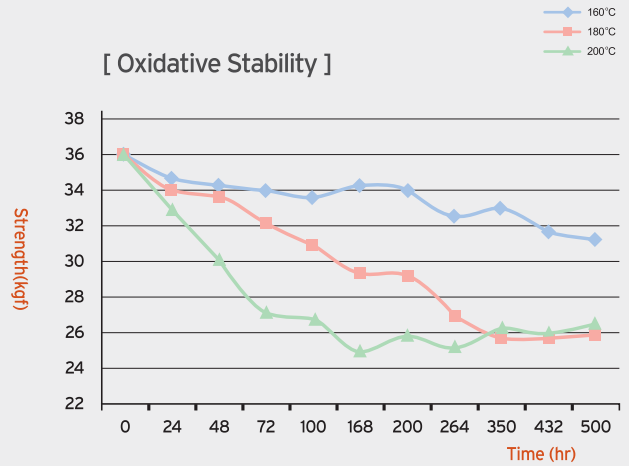
* TM = Twist Multiplier $TM = \frac{tpm \times \sqrt{De}}{2874}$

Thermal Properties

[TGA (Thermogravimetric Analysis)]



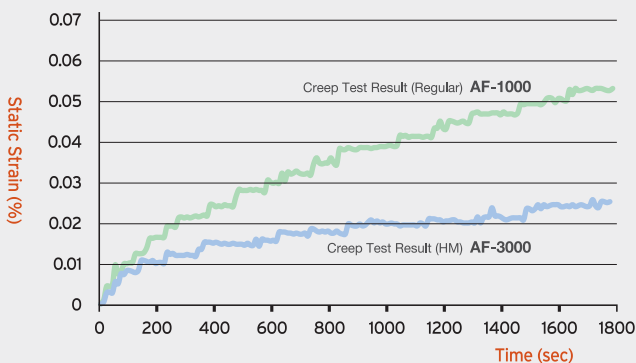
[Oxidative Stability]



* Standard Denier = AF-1000, 1500d

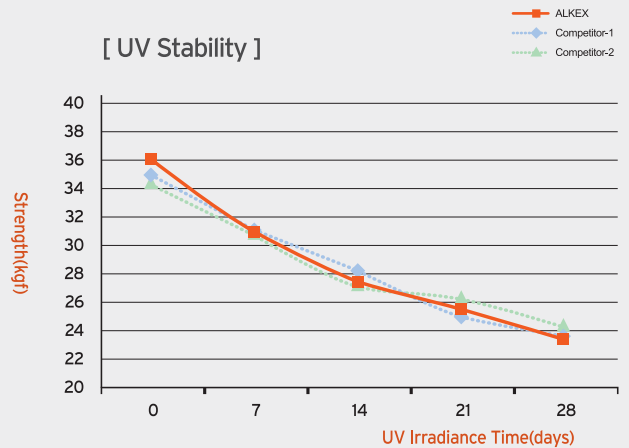
Others

[Creep Test Result]



* 1 gpd (8.83cN/tex) load at 75F(24°C). Growth measured at 30 seconds. Creep is the length change between 30 seconds and 30 minutes.

[UV Stability]



* UV stability of each yarns were obtained with a "Weather-O-meter" equipped with a xenon arc. (Standard Test Method : ISO 105 B02) Chamber Temperature : 42°C / Humidity : 30% / Irradiance : 1.10 W/m²