



October 12, 2011

Toyobo Co., Ltd.

Windbreaker Using Toyobo's High-Strength, Ultra-Light Silfine®-N Nylon Fabric Wins Gold Award at Outdoor Retailer Show

The "Mountain Hardwear" windbreaker*, which makes use of Toyobo's high-strength, ultra-light Silfine®-N nylon fabric, was launched for the 2012 spring-summer season and is marketed by subsidiary Toyobo Specialities Trading Co., Ltd. ("TSTC"), a development-oriented trading company. This windbreaker product won the GOLD award at the Outdoor Retailer Show (OR Show) held in August 2011.

*"Mountain Hardwear" is the core brand of Mountain Hardwear, Inc. (based in Richmond, California).

1. Receipt of the GOLD Award at the Outdoor Retailer Trade Show

The reasons given for presenting the award to Mountain Hardwear windbreakers were both the functionality of this light, compact, and highly tear-resistant material and its attractive design that makes use of the unique transparent feel of Silfine®-N.

The OR Show is one of the world's principal exhibitions of outdoor products, and it is held Salt Lake City, Utah, in the United States, twice a year under the following two names: the Summer Market and the Winter Market.

The product that receives the GOLD Award at the OR Show is selected after screening several thousand types of outdoor products presented at the exhibition, including tents, sleeping bags, backpacks, jackets, wind shirts, mountain bikes, and sunglasses. The



GOLD Award then goes to the one gear product that is judged to exceed all the others in excellence.

2. Features of High-Strength, Ultra-Light Silfine[®]-N (for Windbreakers)

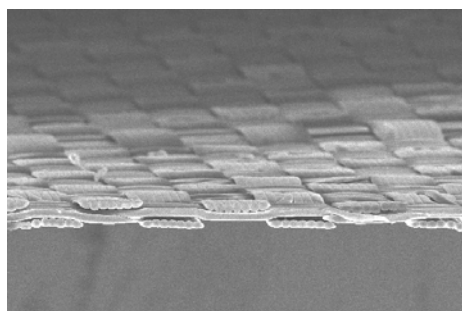
(1) Light (60% lighter than previous fabrics), compact (65% more compact), but highly tear-resistant

- Silfine[®]-N is a high-density fabric, woven with 11 decitex fibers on the warp and 8 decitex fibers on the weft, and it succeeds in offering high tear resistance and transparency while also being very light and compact.
- Fabrics that are made of previously available 56 decitex fibers are generally heavy, with a rated density of 60g/m². They are, therefore, not sufficiently compact for making windbreakers and, because of the thickness of the fabric, it is difficult to give them a transparent feeling.
- Fabrics woven from Silfine[®]-N fibers are light (with a rated unit weight of 24g/m², which is 60% lighter than previous fibers) and compact (with a thickness of 40 μm, which is 65% thinner than previous fibers) but have a high windbreaking capability resistance.

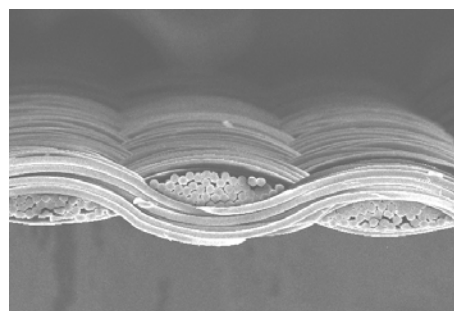
(2) Technological Characteristics

- 8 decitex, high-strength multi-nylon-filament spinning technology: The yarn in light-weight Silfine[®]-N textiles uses nylon resin materials produced using special polymerization technologies. Also, the molecular chains are made uniform during the spinning process to minimize variations in strength among filaments.
- Ultra-fine yarn production technologies: While yarns are spun fine to produce high-density, high-multi-nylon fabric, during the weaving process, this results in the generation of fluff and a tendency toward variations in strength. To restrain the generation of fluff by twisting of the warp at the time of weaving, Toyobo has newly developed a process that applies glue to the warp yarns. In addition, since the yarn may suffer damage if an ultra-fine weft is thrown under a steady pressure, improvements have been made in the weaving process. Overall, Toyobo has established a technology for minimizing declines in strength of both warp and weft during the weaving process.

- Processing technology to ensure low air permeability: In the dyeing process, using a processing method that presses the fabric to a thickness of 40 μm while keeping the multi-filaments uniform, it is possible to manufacture fabrics that have low air permeability and high tear resistance without using a coating process.



Silifine®-N high-strength, ultra-light nylon fabric



Conventional nylon fabric

3. Future Development

The outdoor wear industry has shifted toward lighter-weight products since the year 2000, and, in recent years, this trend has become even more pronounced.

In 2006, TSTC won the “2006 ISPO VOLVO Sports Design Award” for down jackets that made use of Silifine®-N and were adopted for Patagonia women’s down sweaters. In 2009 and 2010, TSTC also received the “2009 Outdoor Industry Award” and the “2010 Outside Gear of the Year Award” for Marmot rainwear.

Looking ahead, TSTC will continue to make use of high-functional materials, proceed with the development of new uses, and aggressively expand its sales.

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