"Vecrus™" is a special nonwoven fabric consists of a liquid crystal polymer and manufactured by meltblown technology.

We installed commercial production equipment in 2003, and have been set about the efforts which aimed to develop high value added products for new fields.

Recently, we have succeeded in reducing average fiber diameter from 7 to 3 microns.

In this study, we would like to describe the new technology for obtaining ultrafine fibers to realize advanced characteristics.
Raw material of Vecrus™

LCP (Polyarylate)  
(Wholly Aromatic Polyester)

- Good Mechanical and Thermal Properties
- Low-hygroscopicity
- Low Dielectric Constant, Low Dissipation Factor (1 – 40 GHz)
Process of Vecrus™

[ Meltblown method ]

- Simple Process
  Fine Fibers

- High strength
- High heat resistance
- Non-woven fabric
Thermal property of Vecrus™

DSC-Curve

Heat Flow Endo up /W/g

Melting Point
300°<

Temp °C

Heat shrinkage

Shrinkage (%)

0 0.5 1 1.5 2 2.5

Time (day)

0 5 10 15

- m-Aramid-260degC
- m-Aramid-220degC
- Vecrus -260degC
- Vecrus -220degC
Low-hygroscopicity of Vecrus™

Water Absorption of Nonwoven (25°C, 65%RH)

- m-Aramid
- Vecrus

Water Absorption (%)

Time (Hrs)

0.002%
Electric properties of Vecrus™

Tan δ (Vecrus vs E-Glass)

There is no increase of tan δ in the high frequency

*The larger the tan δ, signal loss becomes larger. (Cavity Perturbation Method)
**Target of New Vecrus™**

- FRP [PWB (Laptop, mobile phone), sport gear]
- Insulating material [Li-ion battery separator]
- Electromagnetic shielding [mobile phone, electric wire]

Request of smaller size and lighter weight become increasing.

- Special Equipment (Nozzles, Net, etc.)
- Optimization of spinning conditions

- Very thin fibers
- Fine structure
- Good tensile strength
- Better production efficiency
Fiber diameter of New Vecrus™

Conventional type

New type

Ave=7.0um, δ =2.3

Ave=2.6um, δ =1.0
Dence structure of New Vecrus™

**Basis weight vs Pore size**
- **Conventional Vecrus**
- **New Vecrus**

**Basis weight vs Air permeability**
- **Conventional Vecrus**
- **New Vecrus**
Dense structure of New Vecrus™

**Conventional type**

New type

basis weight: 22g/m²

More uniform structure!
Basis weight and Thickness of New Vecrus™

- Conventional Vecrus
- New Vecrus
- New Vecrus with calender

Thickness (um) vs. Basis weight (g/m²)

- Ultralight/Ultrathin 3.5g/m²

Calender condition: 160deg C*4kN/cm
**Strength of New Vecrus™**

- **MD**
  - New Vecrus (MD)
  - Conventional Vecrus (MD)

- **CD**
  - New Vecrus (CD)
  - Conventional Vecrus (CD)

- **Breaking length**
  - 20 km
  - 13 km
  - 10 km
  - 5 km

- **Basis weight (g/m²)**
- **Tensile stress (N/15mm)**

- 3.5 g/m²
- 7N/15mm

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# Lineup of Vecrus™

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<thead>
<tr>
<th></th>
<th>Weight g/m²</th>
<th>Thickness um</th>
<th>Tensile stress N/1.5cm</th>
<th>Tensile elongation %</th>
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*MBBK3.5: Under development
Applications of Vecrus™

Base material for reinforcement
( for FRP, Tension member )

- Printed Wiring Board
- Grinding Carrier
- Insulating material of Motor

Vecrus™

- High strength
- Lightweight
- Thinness
- Denseness
- Fine fiber

- Electromagnetic shielding
- Heat-resistant filter
- Heat-resistant wiper

Printed Wiring Board

Applications of vector...