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# Introduction

"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.

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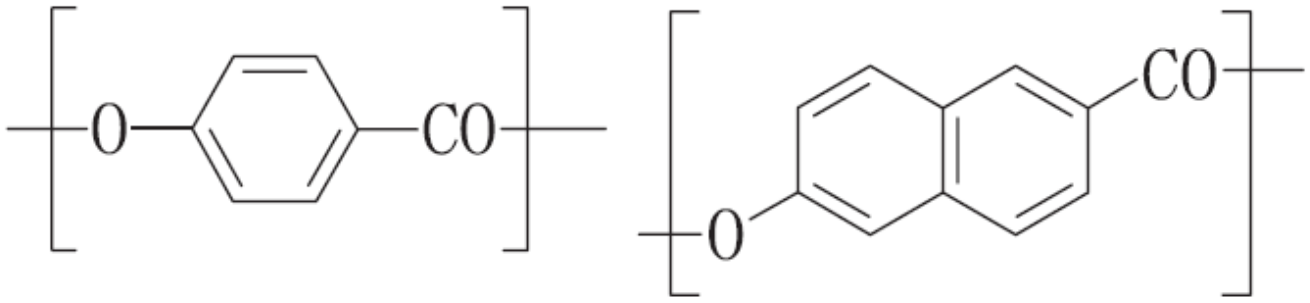
# Raw material of Vecrus™

## LCP ( Polyarylate )
## (Wholly Aromatic Polyester)




HBA
4-Hydroxybenzoic Acid

HNA
2-Hydroxy-6-naphthoic Acid

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

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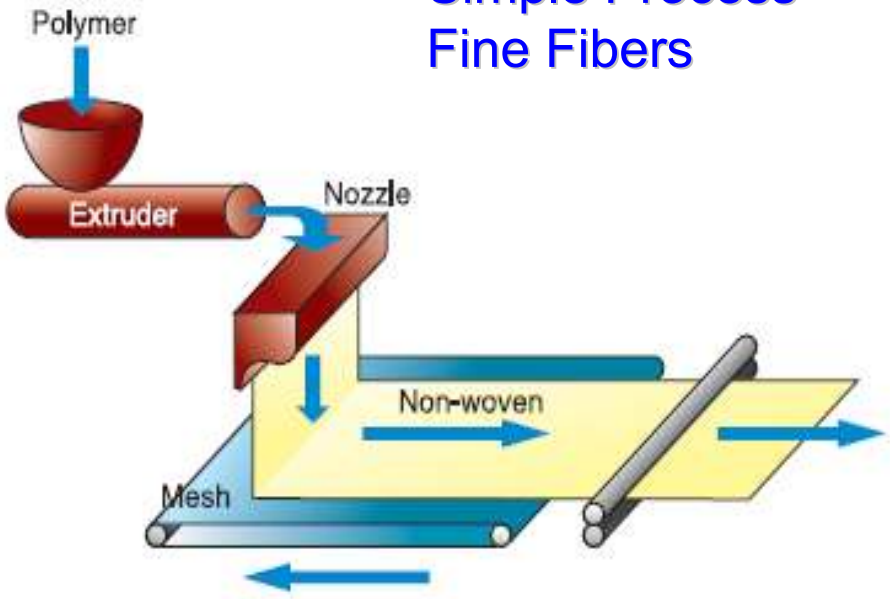
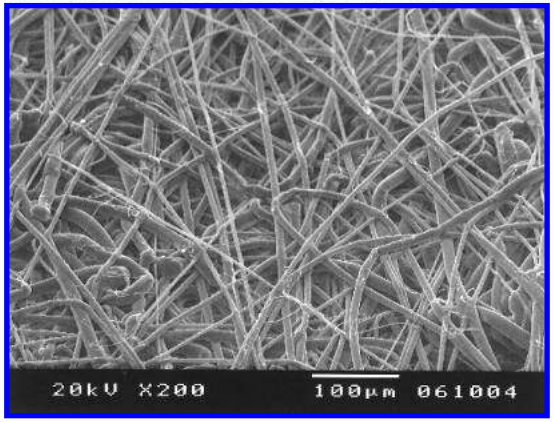
# Process of Vecrus™

## [ Meltblown method ]




Simple Process
Fine Fibers




High strength
High heat resistance
Non-woven fabric

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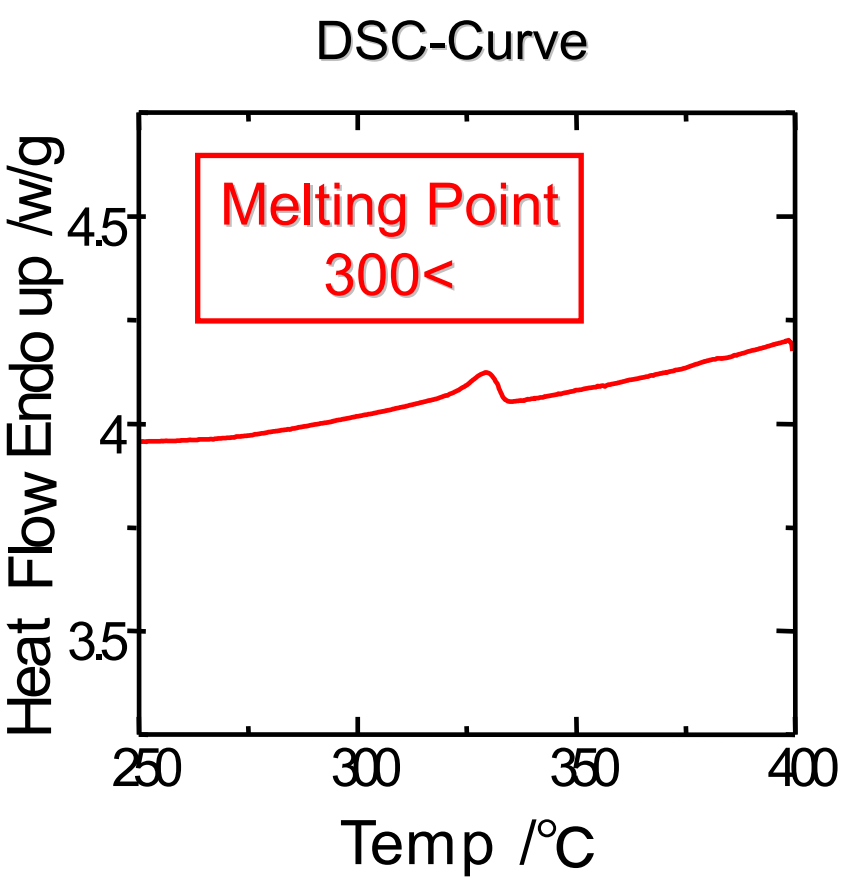
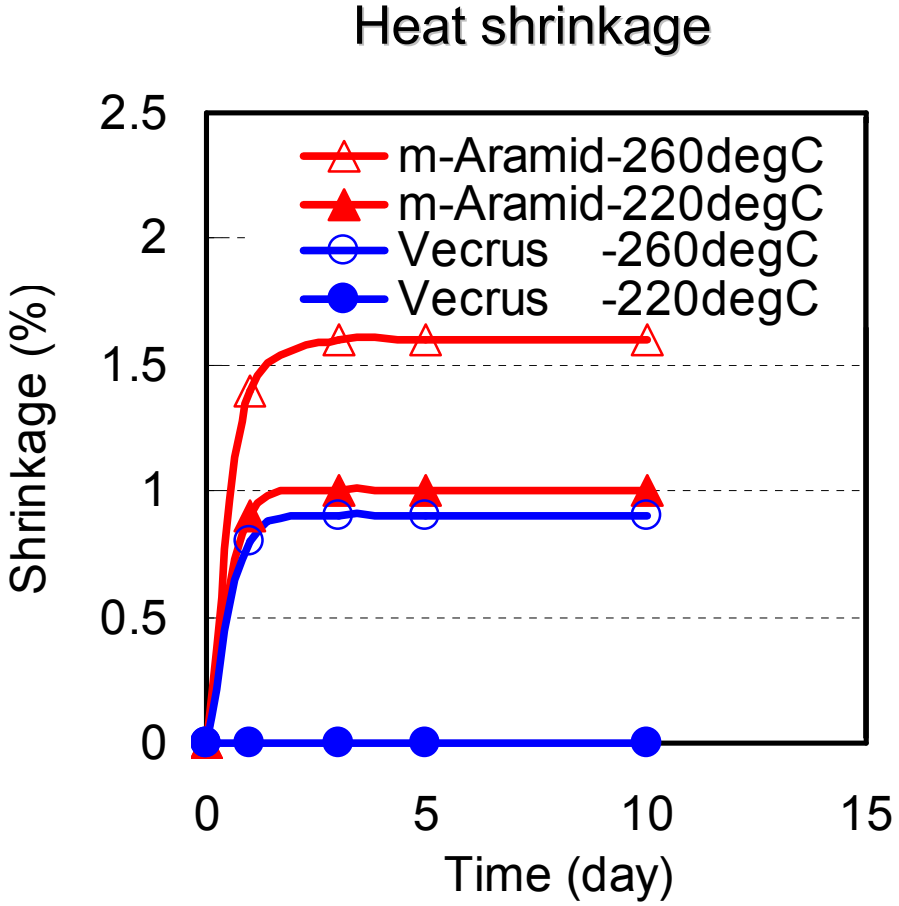
# Thermal property of Vecrus™



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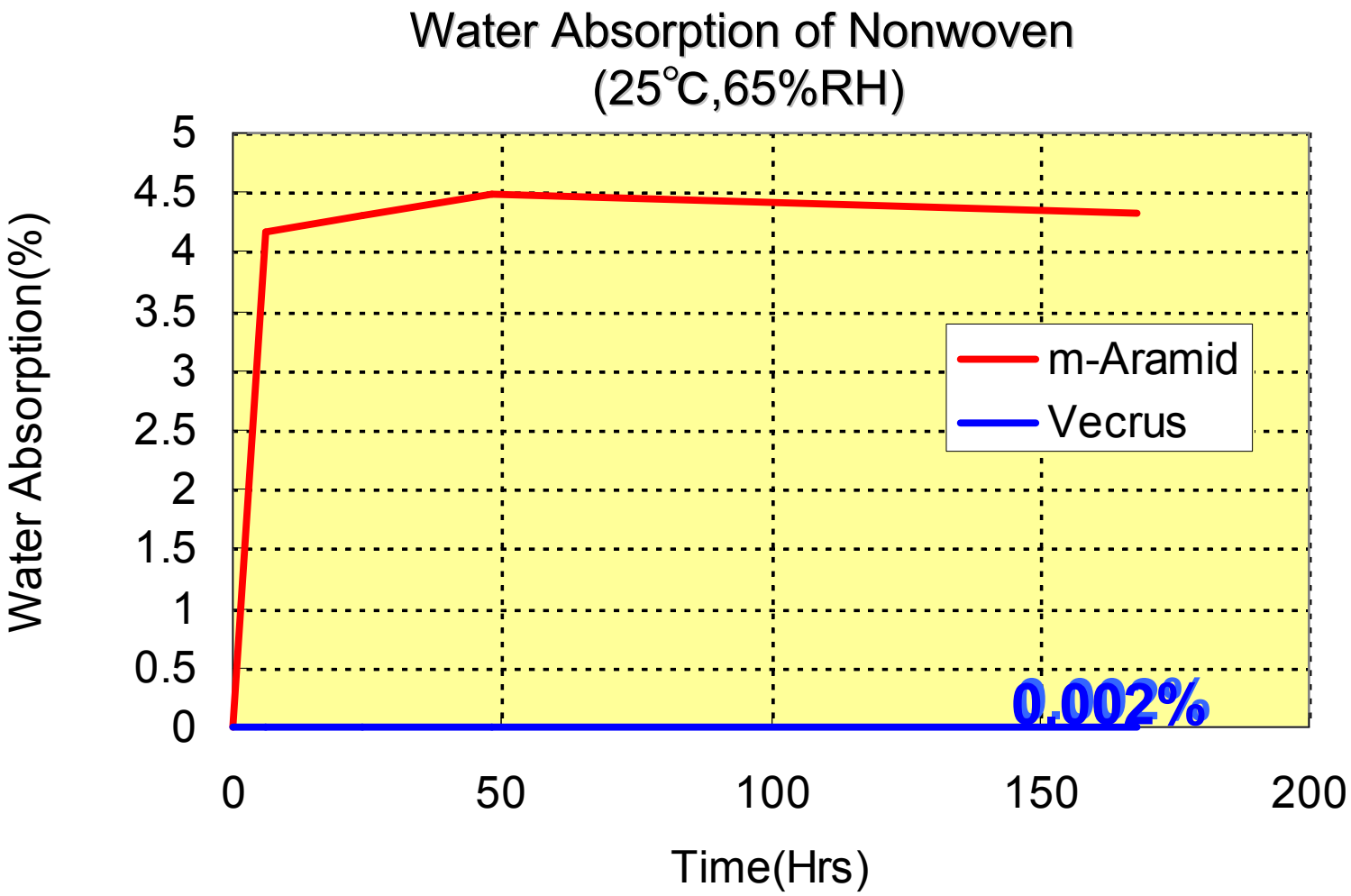
# Low-hygroscopicity of Vecrus™



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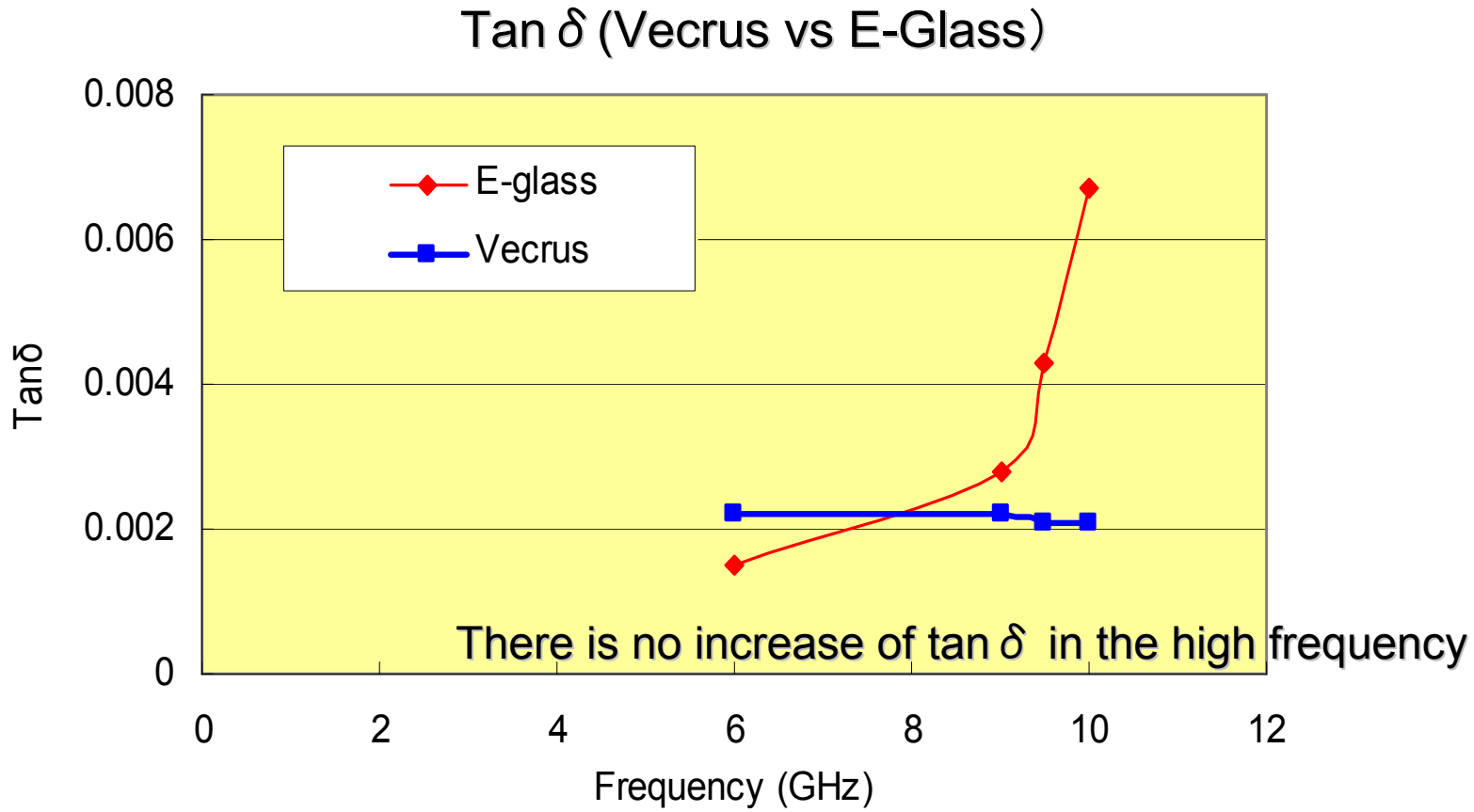
# Electric properties of Vecrus™




*The larger the tan δ , signal loss becomes larger.

(Cavity Perturbation Method)

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# 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.

New Vecrus™

More.....

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

➢Very thin fibers
➢Fine structure
➢Good tensile strength
➢Better production efficiency

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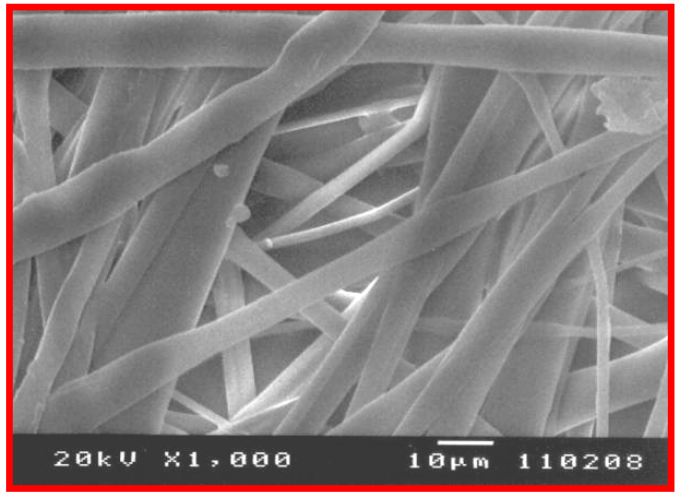
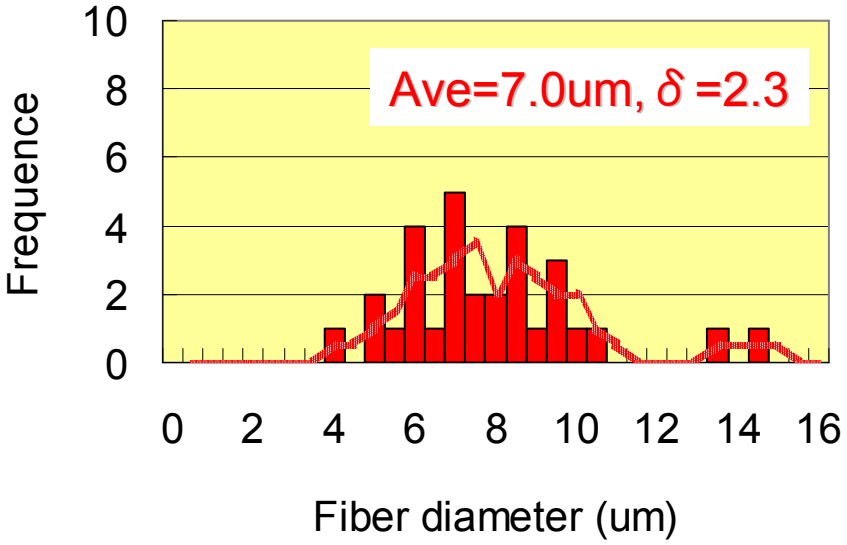
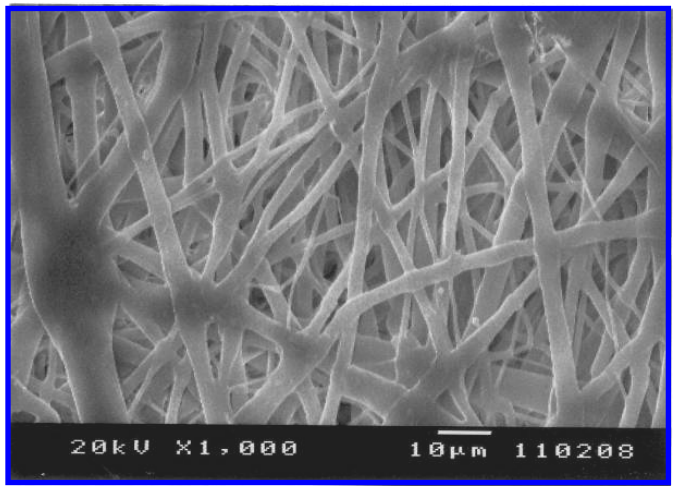
# Fiber diameter of New Vecrus™

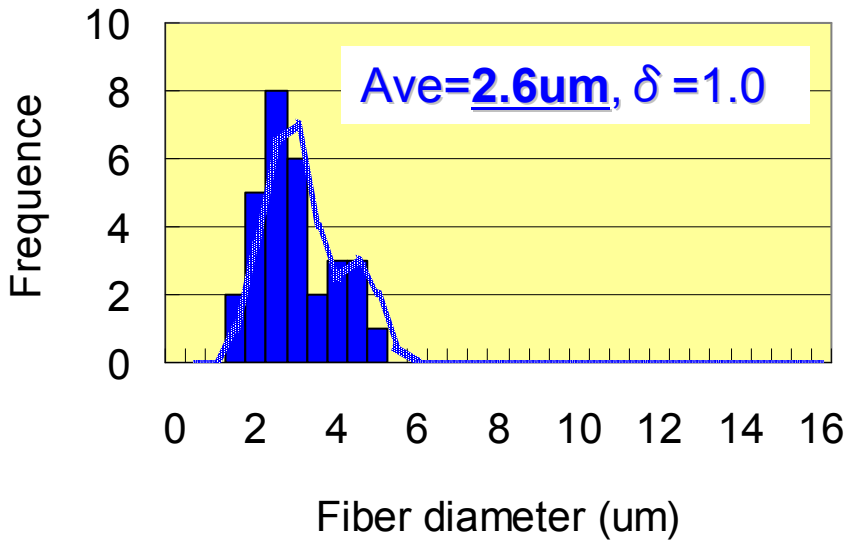
Conventional type




**New type**



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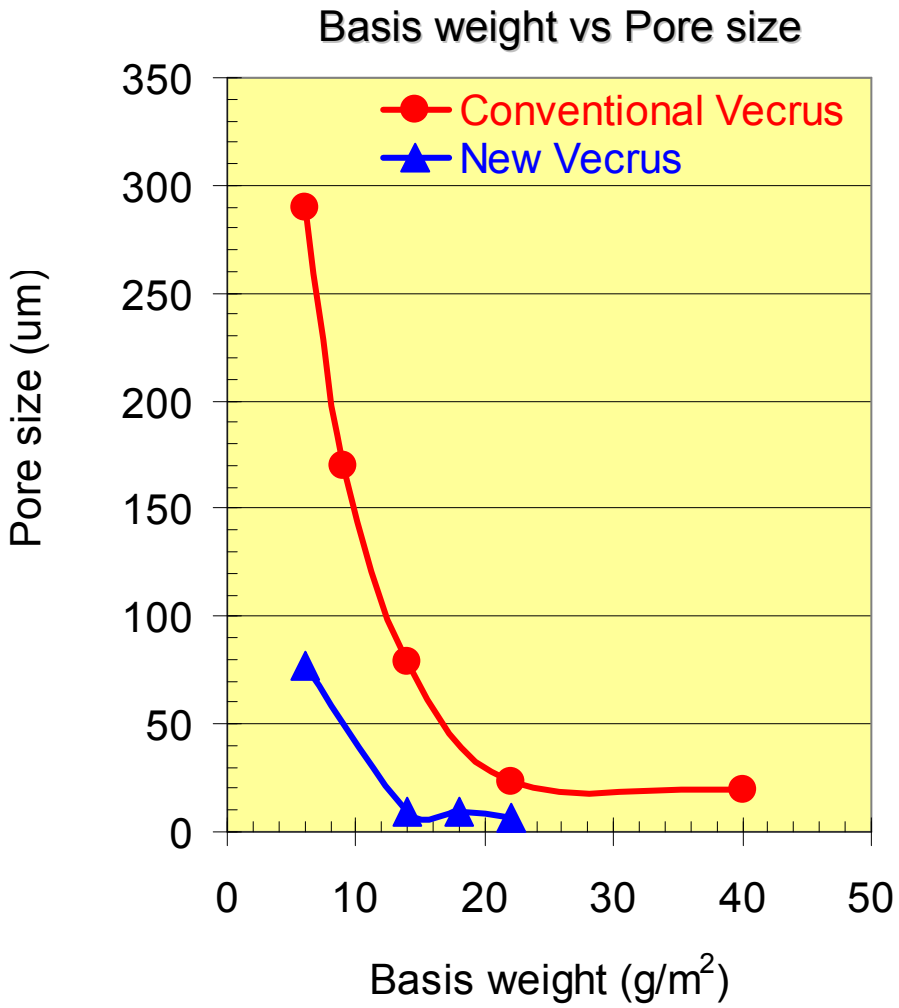
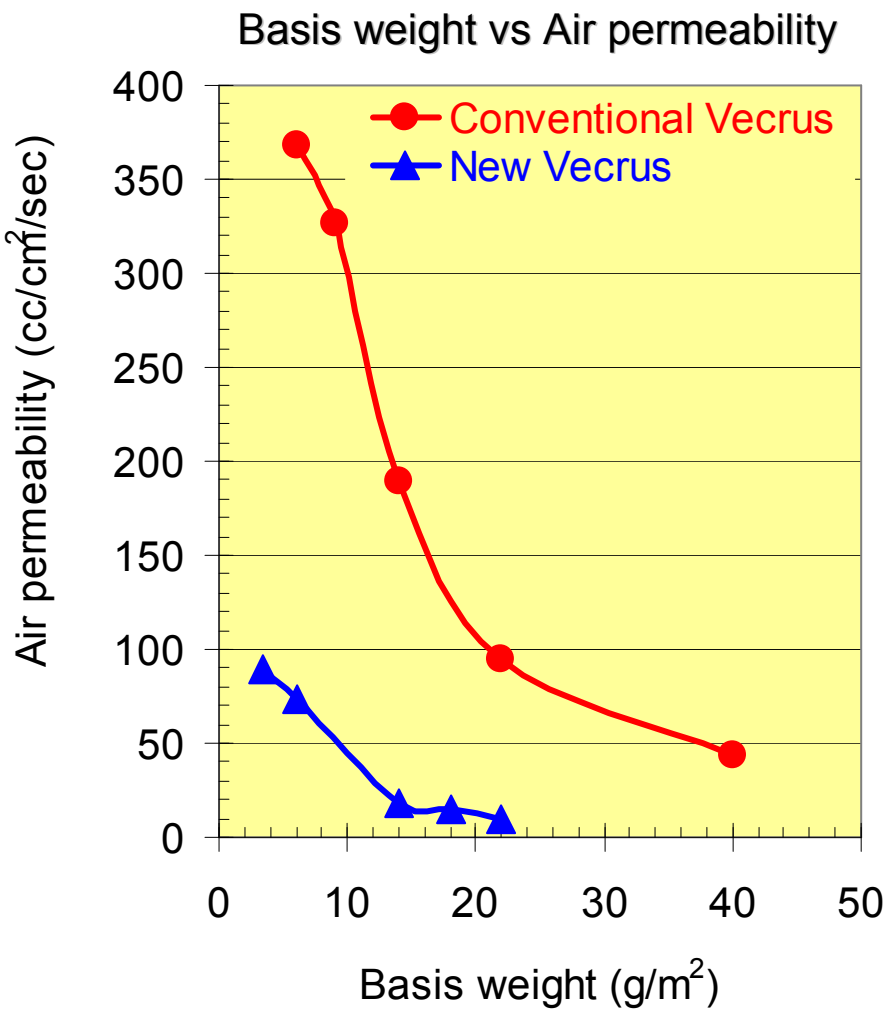
# Dence structure of New Vecrus™



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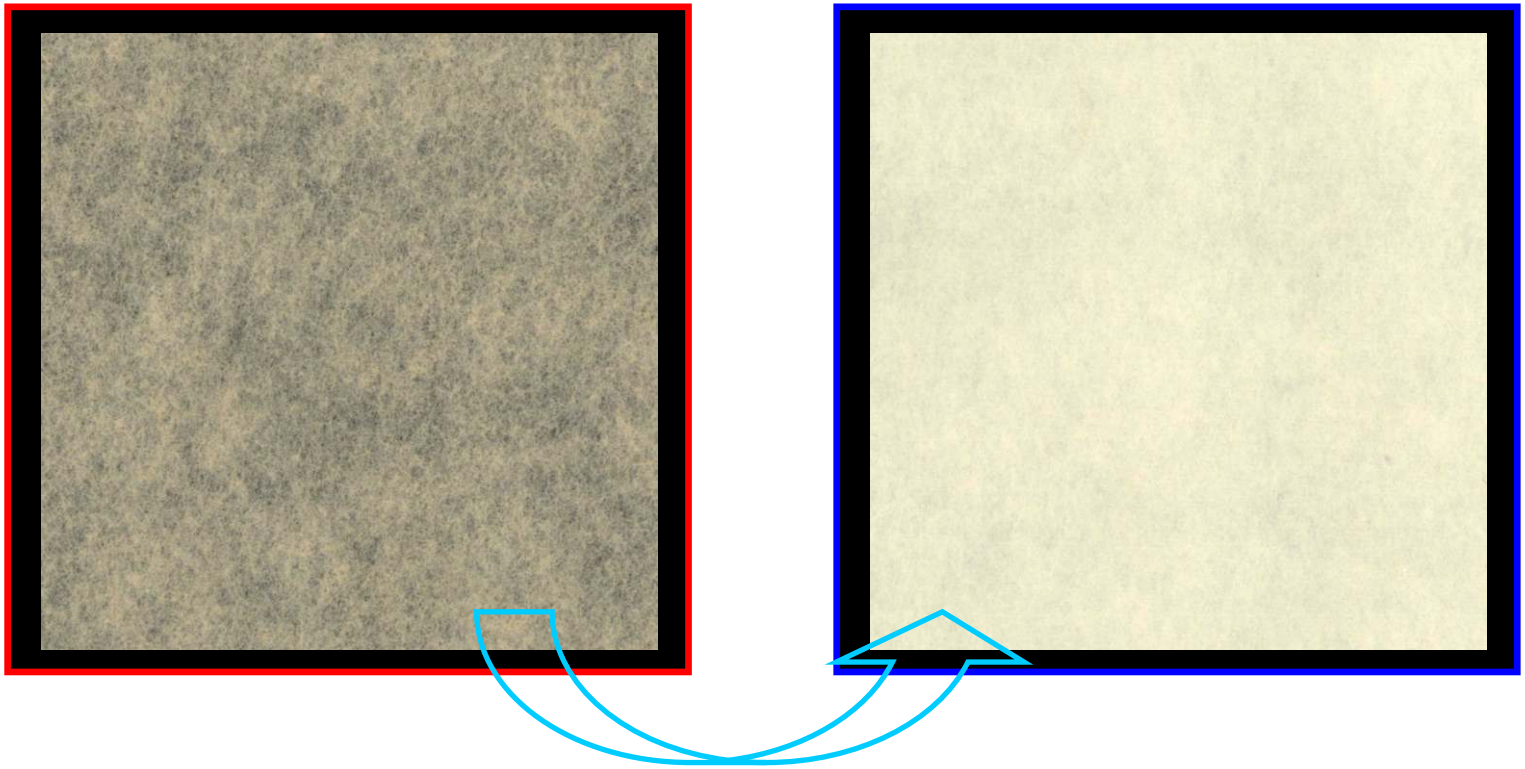
# Dence structure of New Vecrus™

basis weight : 22g/m²

Conventional type

**New type**



More uniform structure!

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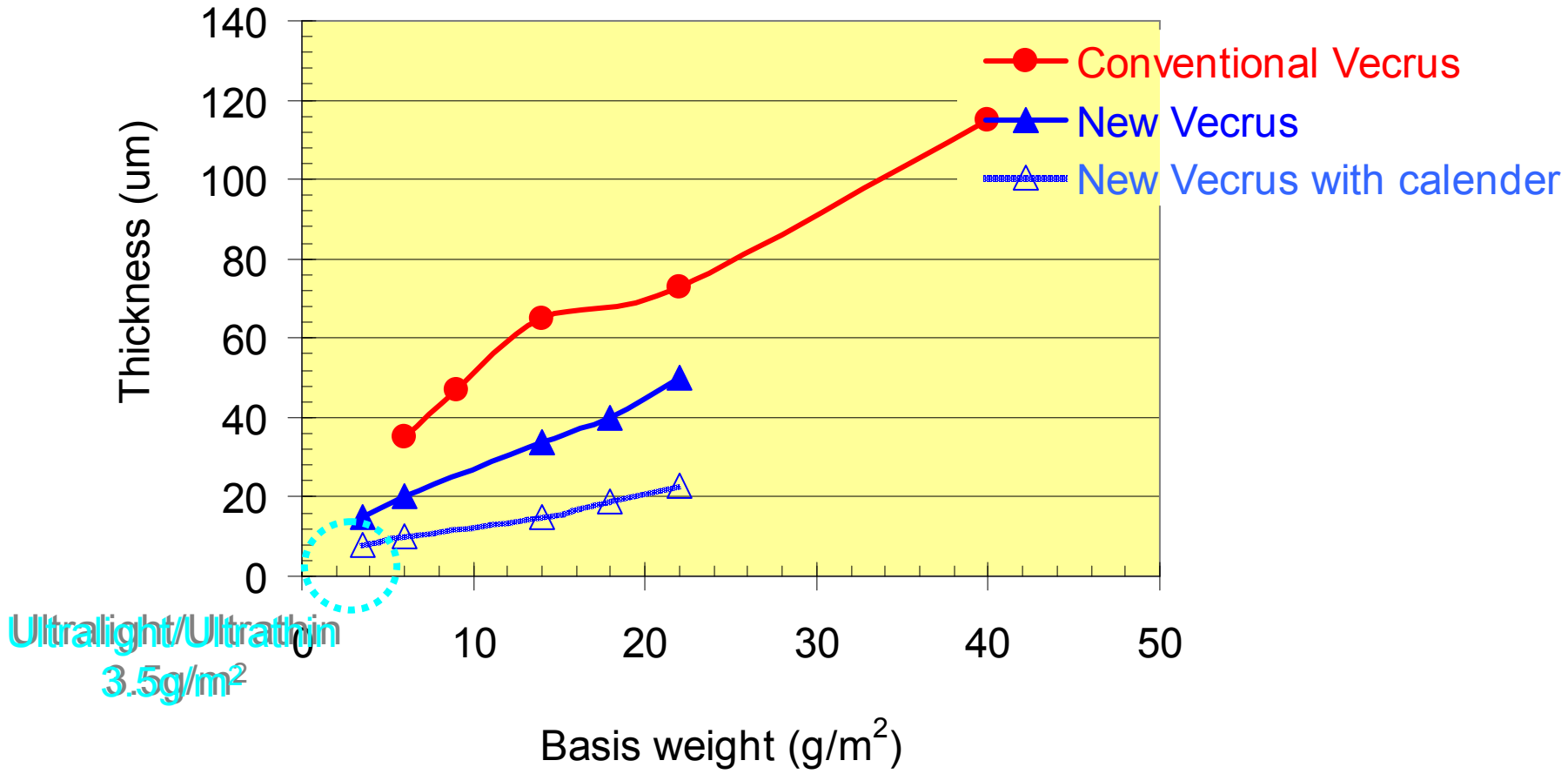
# Basis weight and Thickness of New Vecrus™




•Calender condition : 160deg C*4kN/cm

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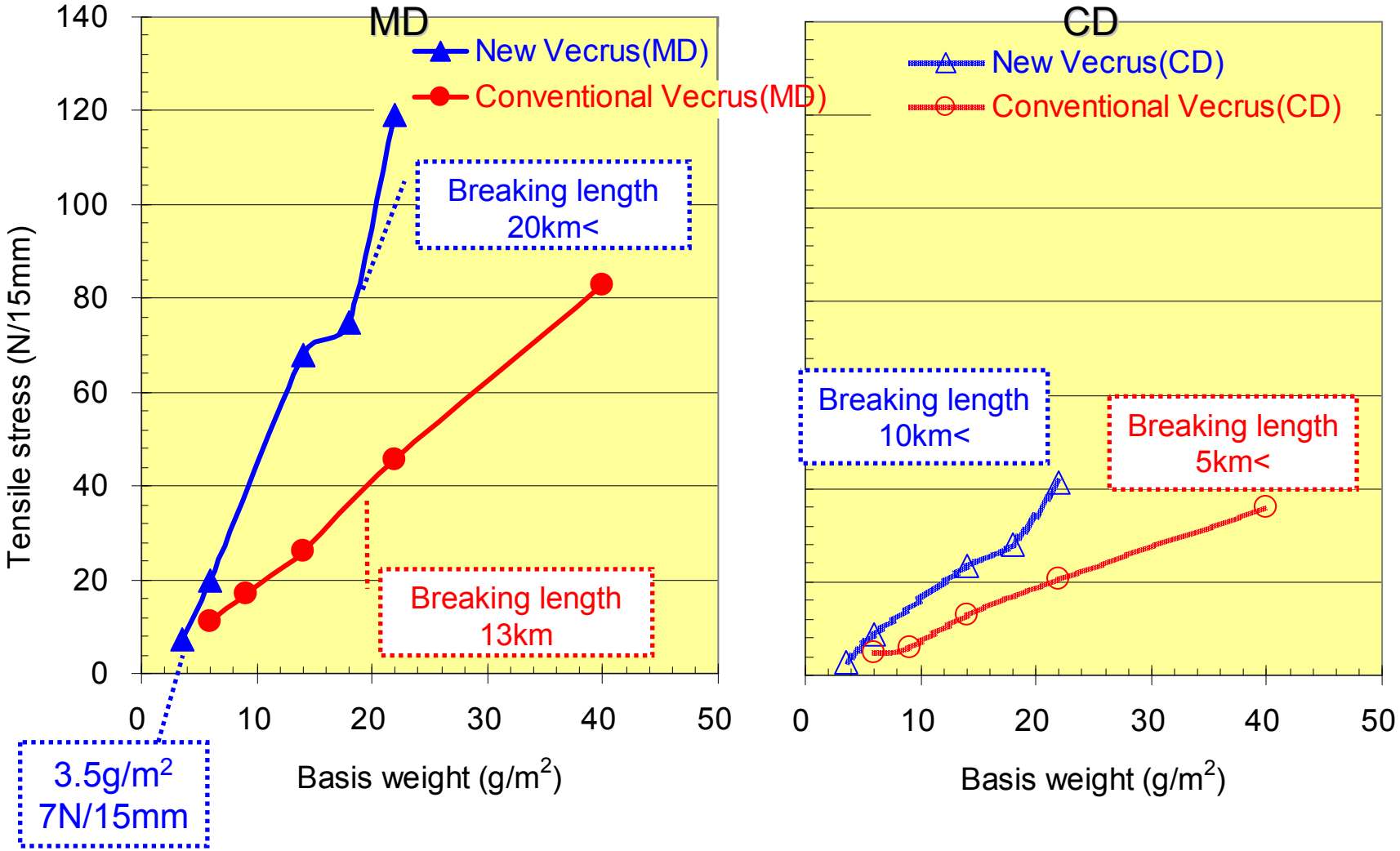
# Strength of New Vecrus™



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# Lineup of Vecrus™

| | | weight $g/m^2$ | Thick-ness um | Tensile stress N/1.5cm | | Tensile elongation % | | Air permeability $cc/cm^2/sec$ |
|---|---|---|---|---|---|---|---|---|
| | | | | MD | CD | MD | CD | |
| MBBK3.5* | New | 3.5 | 15 | 7 | 3 | 4 | 7 | 89 |
| MBBK6 | Conventional | 6.0 | 35 | 11 | 5 | 2 | 2 | 368 |
| | New | 6.0 | 20 | 20 | 9 | 2 | 4 | 73 |
| MBBK14 | Conventional | 14.0 | 65 | 26 | 13 | 2 | 4 | 189 |
| | New | 14.0 | 34 | 68 | 24 | 4 | 4 | 18 |
| MBBK22 | Conventional | 22.0 | 73 | 46 | 21 | 2 | 4 | 95 |
| | New | 22.0 | 50 | 119 | 41 | 4 | 4 | 10 |
| MBBK40 | Conventional | 40.0 | 115 | 83 | 36 | 2 | 4 | 44 |
| MBBK70 | Conventional | 70.0 | 154 | 179 | 94 | 4 | 5 | 19 |

*MBBK3.5：Under development

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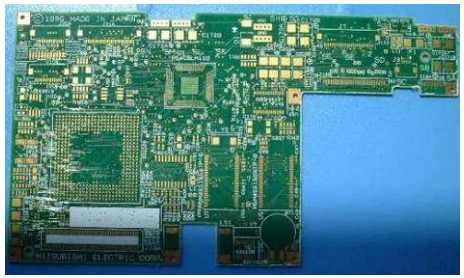
# Applications of Vecrus™

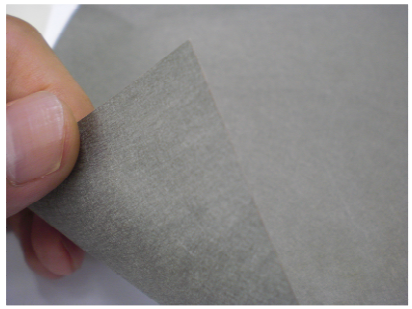
Base material for reinforcement
( for FRP, Tension member )

■Printed Wiring Board



■Grinding Carrier

■Electromagnetic shielding



■Insulating material of Motor

High strength
Lightweight

Lightweight
Thinness

Vecrus™

Denseness

Fine fiber

■Heat-resistant filter

■Heat-resistant wiper