

# Technology

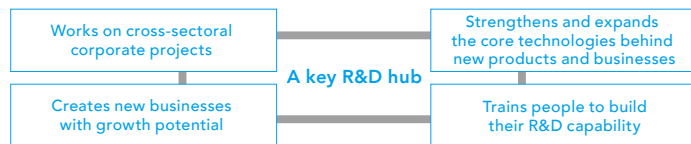
## Research and Development

We aim to create the new technologies our future society needs by fusing our core technologies developed over many years with leading-edge technologies.

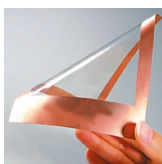
Research and development is the foundation of manufacturing. By integrating promising new and peripheral technologies with our core polymer, inorganic materials, fiber and textile technologies, we have developed a number of high-performance, high value-added products with the highest global market share, many of which are world firsts. Thinking outside the box, we create new technologies with clear foresight of the changes in the world that lie ahead. In parallel with cross-business projects and long-term research and development, we are developing the products the world needs now and in the future.

### Unitika Research & Development Center

Located in Kyoto Prefecture's Uji City, the Unitika Research & Development Center is the Unitika Group's vital technological development hub. In addition to basic research, the Center focuses on research and technological development that responds directly to market needs through collaboration with our business divisions. Using a range of analysis and testing technologies, the Center helps move our research and development forward. Coexisting with the local community and the environment is another important focus, and the Center became ISO 14001 certified in 2001.



## FILM



### Uniamide

"Uniamide" is a biaxially oriented film made from thermoplastic aromatic polyamides, which traditionally have been difficult to convert into films.



### Silicone-free release film

This silicone-free release film eliminates the potential of silicone contamination during the production process. It's not only environmentally friendly but features excellent coating performance.



### Environmentally friendly food packaging films

This food packaging film was created using Unitika's original chemical and material recycling technologies.

## RESIN



### XecoT

"XecoT" is an aromatic polyamide resin with exceptionally high performance. It's an environmentally friendly engineering plastic developed using its original polymerization and compounding technology.



### Thermal-conductive resin

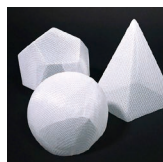
In addition to specially designing the polyamide structure and composition, we used our proprietary compounding technology to create a nylon resin with high thermal conductivity in response to the growing need for high thermal-conductive resins.

## INDUSTRIAL FIBERS



### Polyamide hollow fiber membrane

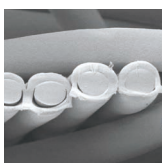
This solvent-resistant hollow fiber membrane was developed by employing a new thermally induced phase separation method. Helps save energy by replacing distillation with membrane separation.



### MELSET

"Melset" is high performance polyester fiber that can be molded into various shapes. It combines a high-viscosity resin and a low-melting point resin using Unitika's expertise in sheath-core fibers.

## NONWOVEN



### ELEVES

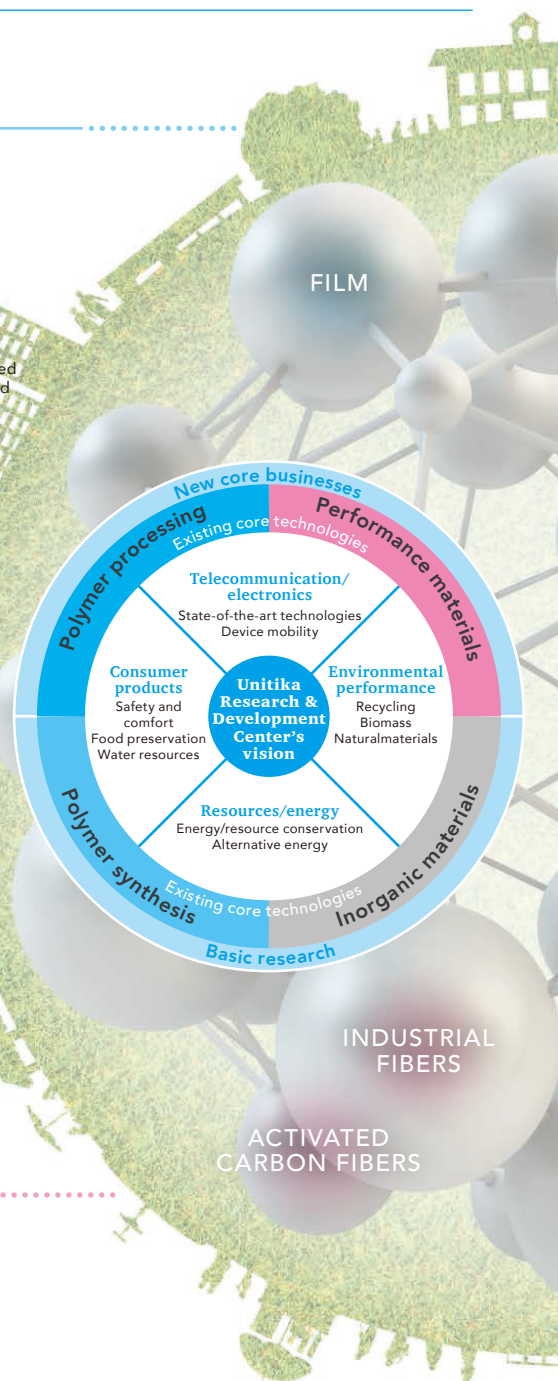
"Eleves" is an olefin spunbond nonwoven fabric with excellent heat seal performance made using sheath-core fiber technology.

## GLASS FIBERS



### Glass-fiber reinforced resin sheet

Glass-fiber reinforced resin sheet is a composite sheet made of an ultra-thin glass fabric and special resin. Fire blocking, transparent, lightweight, and certified as a fire retardant material for use in buildings by the Japanese government, it can be used as an alternative to glass plates for smoke-proof vertical walls.



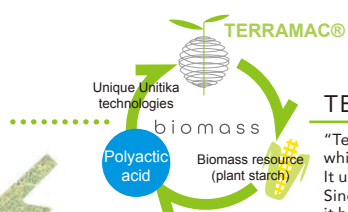
# Sustainability

## Sustainable Material Development

**Committed to making environmentally friendly products, Unitika has developed original technology that enables upcycling. As a manufacturer of performance materials, Unitika is dedicated to realizing a sustainable society.**

Unitika established the Sustainability Promotion Office to oversee the planning, development, and sales promotion of environmentally friendly products as it moves forward in earnest with efforts to realize the Sustainable Development Goals (SDGs). In addition to promoting biomass materials and carbon-free products, we as a manufacturer of performance materials are focusing on the recycling and reducing part of the 3Rs (reduce, reuse, recycle). We have established our own material and chemical recycling technologies and operate a recycling-oriented production system that enables upcycling, waste reduction, and resource saving. We develop food packaging films that make effective use of recycled resources and more as part of our comprehensive efforts to realize a sustainable society.

## SUSTAINABLE DEVELOPMENT GOALS



### TERRAMAC

"Terramac" is a biomass material using polylactic acid (PLA), which is made from plant-derived sugars. It ultimately decomposes to water and carbon dioxide in the natural environment. Since it was first released in 1998 as an eco-friendly non-fossil fuel-based plastic, it has been used in various products, including resins, spunbond fabrics, fibers, and other daily products.



### XecoT

Made from castor oil extracted from castor beans, "XecoT" is a highly heat-resistant polyamide resin with the world's highest performance. Its excellent physical properties, surpassing those of conventional nylon resins, have changed the way we think about biomass materials, which had posed issues with functionality.



### Plant-derived fiber with less environmental impact

"Castlon" is a 100% biomass-based nylon 11 material made from castor oil extracted from the seeds of non-edible castor beans. We work with a French supplier in a comprehensive effort to use recycled material.

### CHEMICAL RECYCLING

Unitika's original chemical recycling technology features an excellent impurity removal rate. It enables us to collect used PET bottle and waste materials from fiber factories, chemically decompose them down to the raw material level, and repolymerize them. The technology is used for making food packaging films and more.

### ECO FRIENDLY

Our group company, Unitika Trading, employs both material and chemical recycling technologies to make high quality products composed of a high percentage of recycled materials for a full line of environmentally friendly materials certified under its own Eco-Friendly certification system.



### Wet curing sheet for concrete

Wet curing sheet for concrete is a wet curing sheet for concrete that prolongs the life of concrete structures. Made from natural cotton, it can be used repeatedly, reducing the environmental impact caused by disposal of used sheets.



### COMPANY-WIDE ACTIVITIES

Unitika is making a company-wide effort to shrink its environmental footprint, by reducing CO<sub>2</sub> emissions, energy consumption, and waste in its offices.