

TEIJIN LIMITED

Fact book

Fundamental information

Last updated: November 2024

Contents

P. 1	Materials segment
P. 1	Aramid business
P. 5	Resin & Plastic Processing business
P. 9	Carbon fibers business
P. 13	Composites business
P. 15	Fibers & Products Converting segment
P. 21	Healthcare segment
P. 33	Others segment
P. 33	New Business Development

Note: Italicized product names and service names in this report are trademarks or registered trademarks of the Teijin Group in Japan and/or trademarks of other companies.

Information about pharmaceuticals, medical devices, and regenerative medical products (including pipeline products) included in this material is not provided for the purposes of advertising or medical advice.

© 2024 Teijin Limited. All Rights Reserved.

Materials segment Aramid business

◆Subsidiaries and affiliates

Company	Location		Business field	Equity held by the Group
1. Teijin Limited, aramid business	Japan	Tokyo, etc.	Research, manufacture and sales of aramid fibers	— %
2. Teijin Aramid B.V.	The Netherlands	Gelderland	Research, manufacture and sales of aramid fibers	100 %
3. Teijin Aramid USA, INC.	The U.S.	Georgia	Sales of aramid fibers	100 %
4. Teijin Aramid de Mexico S.A. de C.V.	Mexico	Nuevo Leon	Sales of aramid fibers	100 %
5. Teijin Aramid do Brasil LTDA.	Brazil	Sao Paulo	Sales of aramid fibers	100 %
6. Teijin Aramid Asia Co., Ltd.	China	Shanghai	Sales of aramid fibers	100 %
7. Teijin Aramid GmbH	Germany	Nordrhein-Westfalen	Sales of aramid fibers	100 %
8. Teijin Corporation (Thailand) Limited	Thailand	Pathumthani	Manufacture and sales of aramid fibers and sales of polycarbonate resin and processed plastics	100 %

Note: Equity held by the Group (as of the end of March 2024) includes equity held directly and indirectly by Teijin Limited.

◆Business history

1962. 7	Obtained license to introduce production technologies for nylon 6 from Allied Chemicals Corp. of the United States
1963.11	Production of nylon began at Mihara Factory
1971. 4	Started production of heat-resistant meta-aramid fiber <i>Teijinconex</i> at Iwakuni Factory
1987. 9	Started production of high-strength para-aramid fiber <i>Technora</i> at Matsuyama Factory
1995. 9	Established Teijin DuPont Limited jointly with DuPont to manufacture and market nylon fibers in Japan
2000.12	Reestablished <i>Twaron</i> products business unit, acquired from Acordis B.V. of the Netherlands, as Teijin Twaron B.V.
2002.10	Teijin and DuPont announced plans to dissolve Teijin DuPont Nylon Ltd.
2003. 4	Spun off industrial-use polyester fibers business as a separate company named Teijin Techno Products Limited because of Teijin's introduction of the holding company system
2003. 7	Expanded manufacturing capacity of para-aramid fiber <i>Twaron</i> at Teijin Twaron B.V. in the Netherlands
2003.12	Withdrew from nylon fibers business
2006.12	Expanded manufacturing capacity of para-aramid fiber <i>Twaron</i> at Teijin Twaron B.V. in the Netherlands
2007. 9	Teijin Twaron B.V. was renamed Teijin Aramid B.V.
2011.10	Commenced commercial production of high-performance polyethylene products
2012.10	Teijin Techno Products Limited was integrated with Teijin Limited
2013. 4	Established Technical Center Asia in Shanghai, the PRC
2013. 9	Established Teijin Corporation (Thailand) Limited, new type of meta-aramid fiber manufacturing and sales and polycarbonate resin and processed plastics sales company in Thailand
2015. 8	Commenced production and sales of <i>Teijinconex</i> and <i>Teijinconex neo</i> at Teijin Corporation (Thailand) Limited in Thailand
2016. 3	Announced a 10% increase in manufacturing capacity of <i>Technora</i> para-aramid fibers
2017.10	Started operations to boost production of <i>Technora</i> Para-aramid Fiber
2019.11	Published to expand <i>Twaron</i> Para-aramid Fiber. Production volume is anticipated to increase 25% by 2022 compared to 2017
2023. 6	Began operation of expanded facilities for <i>Twaron</i> para-aramid fibers

◆Production sites

Principal products		Location		Company	Form
Para-aramid fiber	<i>Twaron</i>	The Netherlands	Delfzijl, Groningen Emmen, Drenthe	Teijin Aramid B.V.	Filament yarn Staple fiber Pulp
	<i>Technora</i>	Japan	Matsuyama, Ehime	Teijin Limited, aramid business	Filament yarn Staple fiber
Meta-aramid fiber	<i>Teijinconex</i>	Japan	Iwakuni, Yamaguchi	Teijin Limited, aramid business	Staple fiber
		Thailand	Bang Pa-in, Ayutthaya	Teijin Corporation (Thailand) Limited	Staple fiber

◆ R&D sites

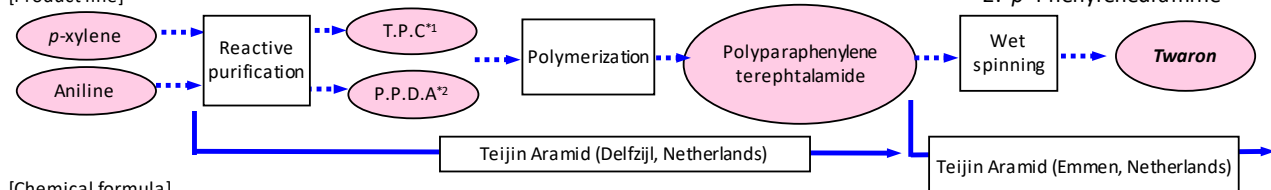
Company	Location	
Teijin Limited, aramid business	Japan	Matsuyama, Ehime Iwakuni, Yamaguchi
Teijin Aramid B.V.	The Netherlands	Arnhem, Gelderland
Teijin Aramid Asia Co., Ltd. (Technical Center Asia)	China	Shanghai

◆ Product line and chemical formula

● Para-aramid fiber

Twaron

[Product line]

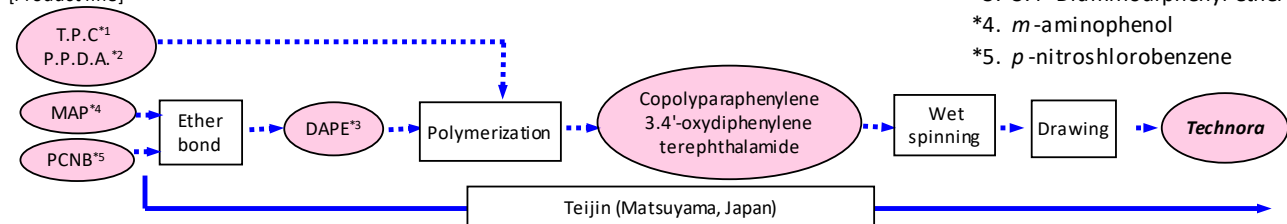


[Chemical formula]

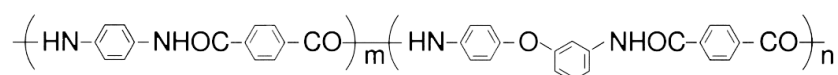


Technora

[Product line]



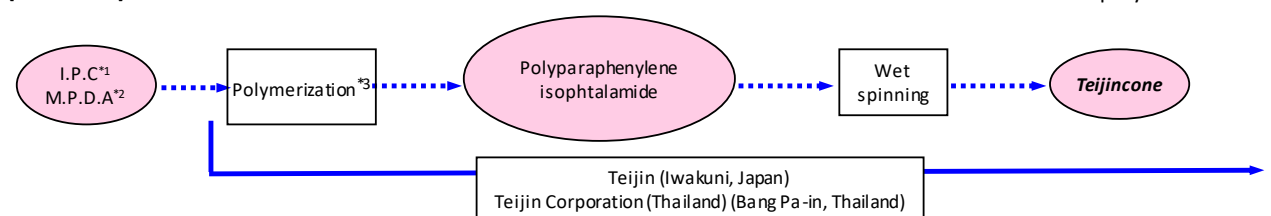
[Chemical formula]



● Meta-aramid fiber

Teijinconex

[Product line]



[Chemical formula]



- *1. Terephthaloyl chloride
- *2. *p*-Phenylenediamine

- *1. Terephthaloyl chloride
- *2. *p*-Phenylenediamine
- *3. 3,4'-Diaminodiphenyl ether
- *4. *m*-aminophenol
- *5. *p*-nitrochlorobenzene

- *1. Isophthaloyl chloride
- *2. *m*-Phenylenediamine
- *3. Interfacial polymerization in Japan,
solution polymerization in Thailand

◆ Characteristics of main products

● Aramid fibers

A type of nylon, aramid fibers are polyamide fibers with molecular structure of aromatic (benzene) rings. The U.S. Federal Trade Commission recognizes these fibers as being aliphatic polyamide fibers, that is, nylon, and in 1974 introduced the generic name "aramid." In 1977, the International Organization for Standardization (ISO) adopted "aramid" as the classification for a category of artificial fibers. Aramid fibers are divided broadly into para-aramid fibers, which have a straight molecular structure, and meta-aramid fibers, which have a zigzag molecular structure. The two types of aramid fibers have different characteristic

Products		Characteristics
Para-aramid fiber	<i>Twaron</i> <i>Technora</i>	<i>Twaron</i> and <i>Technora</i> para-aramid fibers boast high strength, tensile modulus and elasticity, as well as superb heat resistance and dimensional stability. (Example: Tensile strength is between five and eight times greater than steel of the same weight.) Thanks to these characteristics, <i>Twaron</i> and <i>Technora</i> are used primarily in bullet-resistant vests, automotive brake pads and other friction materials (as a substitute for asbestos) and in reinforcements for tire cords and optical fibers, among others.
Meta-aramid fiber	<i>Teijinconex</i>	<i>Teijinconex</i> meta-aramid fibers offer the same fiber performance characteristics as polyester fibers (extension, elasticity, specific density, texture, color), combined with superb resistance to long-term heat exposure (continuous use possible at 200°C) and incombustibility (higher flash and ignition points than nylon or polyester). Applications for <i>Teijinconex</i> include heat-resistant particulate filters for industrial applications (steel, cement, asphalt), fireproof clothing for firefighters, and factory and service industry uniforms.

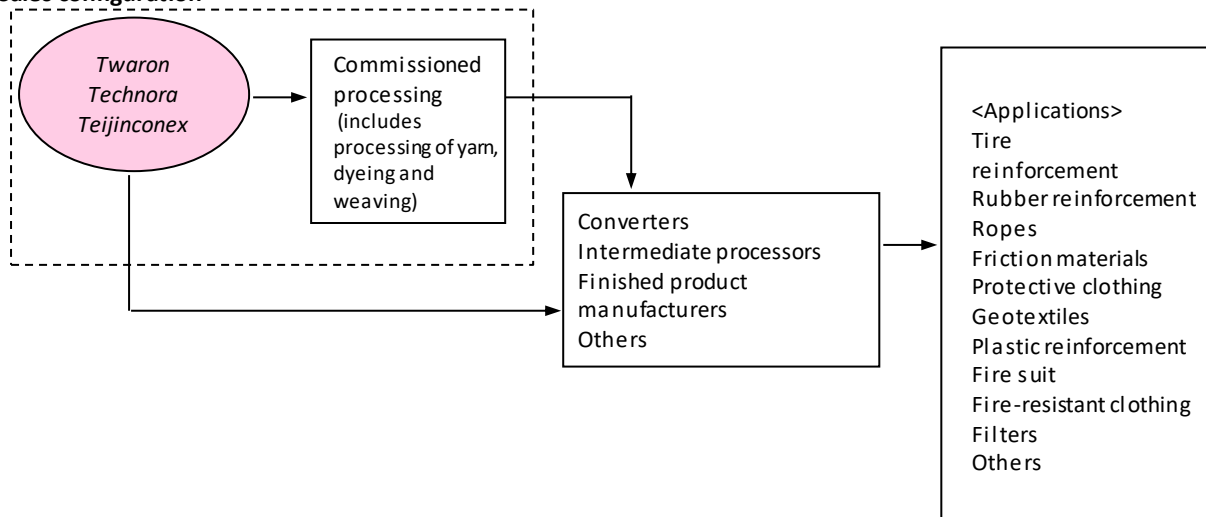
◆ Development of applications for principal products

● Aramid fibers

◎ : Excellent ○ : Good △ : Good under certain conditions

	Type	Para-aramid fibers		Meta-aramid fibers
		<i>Twaron</i>	<i>Technora</i> (copolymerization)	<i>Teijinconex</i>
Applications	Tires	◎ Strength and elasticity	△ Strength and fatigue-resistance	
	Elastomer reinforcements	○ Strength and elasticity	◎ Fatigue- and heat-resistance and strength	◎ Heat-resistance
	Linear tension members	○ Strength and elasticity	◎ Strength, fatigue-resistance and heat-resistance	
	Friction and sealing materials (brake pads, gaskets, alternative to asbestos)	◎ Heat-resistance, dimensional stability and easy for pulping	× Difficulty in pulping	△ Long-term heat-resistance (brake pads)
	Protective clothing	◎ Protectiveness and strength	○ Strength	
	Geotextiles	○ Modulus and strength	◎ Strength and high chemical resistance (concrete reinforcement)	
	Plastic reinforcements (thermoplastic, thermoset)	◎ Strength and elasticity	◎ Crashworthiness and strength	○ Sliding
	Fire-resistant clothing Flame-retardant uniforms	○ Strength and flame-resistance for short periods	○ Strength and heat-resistance for short periods	◎ Flame-retardance and heat-resistance
	Filters (used in plant of asphalt, cement, iron and steel))			◎ Long-term heat-resistance
	Optical fiber cables	◎ Strength and elasticity	◎ Strength and fatigue-resistance	

◆ Sales configuration



Materials segment Resin and plastic processing business

◆Subsidiaries and affiliates

Company	Location		Business field	Equity held by the Group
1. Teijin Limited, resin and plastic processing business	Japan	Tokyo, etc.	Manufacture and sales of polycarbonate resin and	— %
2. Kinkai Chemicals Co., Ltd	Japan	Okayama	Manufacture and sales of brominated flame retardants and fine chemicals intermediates	99.90 %
3. Hiroshima Plastic Co., Ltd	Japan	Hiroshima	Manufacture and sales of plastic molds	100 %
4. Teiyo Co., Ltd.	Japan	Hiroshima	Manufacture and sales of plastic extrusion products	100 %
5. Teijin Polycarbonate China Ltd.	China	Zhejiang	Manufacture of polycarbonate resin	100 %
6. Teijin Chemicals Plastic Compounds Shanghai Ltd.	China	Shanghai	Manufacture of polycarbonate resin compounds	100 %
7. Teijin Corporation (Thailand) Limited	Thailand	Pathumthani	Manufacture and sales of aramid fibers, manufacture of polycarbonate resin compounds and sales of polycarbonate resin	100 %
8. Teijin Kasei Europe B.V.	The Netherlands	Venlo	Sales of polycarbonate resin	100 %
9. Teijin Kasei Malaysia Sdn. Bhd.	Malaysia	Kuala Lumpur	Sales of polycarbonate resin	100 %
10. Shenzhen Teijin Kasei Trading Co., Ltd.	China	Shenzhen	Sales of polycarbonate resin	100 %
11. Shanghai Teijin Kasei Trading Co., Ltd.	China	Shanghai	Sales of polycarbonate resin	100 %
12. Teijin Kasei Taiwan Co., Ltd.	Taiwan	Taipei	Sales of polycarbonate resin	100 %
13. Teijin Kasei America, Inc.	The U.S.	Michigan	Sales of polycarbonate resin	100 %
14. Teijin Kasei (HK) Limited	China	Hong Kong	Sales of polycarbonate resin	100 %

Note: Equity held by the Group (as of the end of March 2024) includes equity held directly and indirectly by Teijin Limited.

◆Business history

1959.10	Established commercial production technology for <i>Panlite</i> polycarbonate resin
1960.11	Started manufacturing <i>Panlite</i> polycarbonate resin at Teijin Chemicals Limited's Matsuyama Factory
1968. 7	Began full-scale marketing of glass fiber-reinforced PET (<i>FR-PET</i>) resin
1973. 9	Started production of PBT resin
1973.10	Began production of PC/ABS polymer alloy <i>MULTILON</i>
1976.10	Started manufacturing polycarbonate sheet <i>Panlite</i> sheet
1982.10	Started marketing optical-grade <i>Panlite</i> for compact discs
1993. 6	Plastics Technical Center was established in Chiba City
1997. 6	Established Teijin Polycarbonate Singapore Pte Ltd. to manufacture and market polycarbonate resin
1999.10	Started manufacturing polycarbonate resin at Teijin Polycarbonate Singapore Pte Ltd. (60,000 tons/year)
2000.12	Increased manufacturing capacity of polycarbonate resin at Teijin Polycarbonate Singapore Pte Ltd. (60,000 tons/year --> 80,000 tons/year)
2001. 1	Started operations of WinTech Polymer Ltd. (established to integrate PBT resin and glass fiber-reinforced PET resin businesses with operations of Polyplastics Co., Ltd.)
2001. 4	Transferred the PET and PEN resin businesses of Teijin to Teijin Chemicals Limited
2001. 7	Increased manufacturing capacity of polycarbonate resin at Teijin Polycarbonate Singapore Pte Ltd. (80,000 tons/year --> 130,000 tons/year)
2002. 7	Established Teijin Chemicals Plastic Compounds Shanghai Ltd.
2002.12	Increased manufacturing capacity of polycarbonate resin at Teijin Polycarbonate Singapore Pte Ltd. (130,000 tons/year --> 180,000 tons/year)
2003. 3	Established Teijin Polycarbonate China Ltd.
2003. 8	Started operations of Teijin Chemicals Plastic Compounds Shanghai Ltd.
2003. 8	Transferred <i>Metton</i> business to RIMTEC Corporation, a joint venture with ZEON Corporation
2003.10	Introduced one of the largest injection press molding machines in the world (clamp capacity: 3,400 tons) at the Plastics Technical Center
2004. 4	Started marketing of PET resin recycled from used PET bottles with <i>Bottle to Bottle</i> technology, the world's first complete recycling system.
2004. 8	Increased manufacturing capacity of polycarbonate resin at Teijin Polycarbonate Singapore Pte Ltd. (+20,000 tons/year)
2005. 4	Started operations of Teijin Polycarbonate China Ltd. (50,000 tons/year)
2005. 7	Installed additional polycarbonate sheet extrusion equipment
2005.10	Completed second phase of construction at Teijin Chemicals Plastic Compounds Shanghai Ltd.'s compounding plant and commenced operations (total production capacity: 43,000 tons/year)
2006. 3	Commenced operation of next-generation high-precision optical film extrusion equipment
2006. 4	Established Teijin Kasei Malaysia Sdn. Bhd.
2006. 6	Established Shenzhen Teijin Kasei Trading Co., Ltd.
2006.10	Completed world-class, ultra large two-color injection press mold
2006.12	Increased manufacturing capacity of polycarbonate resin at Teijin Polycarbonate China Ltd. (50,000 tons/year --> 100,000 tons/year)
2007.11	Expanded polycarbonate resin compounds manufacturing capacity of Teijin Chemicals Plastic Compounds Shanghai Ltd. in Shanghai, China (43,000 tons/year --> 63,000 tons/year)

Fundamental information Materials segment Resin and plastic processing business

2008.10	Completed expansion of production facilities for clear electroconductive film (capacity: 1.2 million m ² -plus/year)
2008.12	Increased annual production capacity of Teijin Polycarbonate China Ltd., thereby expanding total production capacity for polycarbonate resin (100,000 tons/year --> 130,000 tons/year)
2009. 8	Increased annual production capacity of Teijin Chemicals Plastic Compounds Shanghai Ltd. (63,000 tons/year --> 102,000 tons/year)
2010. 4	Opened China Business Management Office to increase the efficiency of polycarbonate resins business in China
2011. 4	Shifted domestic PET resin for bottles operations to MCT PET Resin Co., Ltd., a joint venture with Mitsui Chemicals, Inc.
2011. 9	Teijin Polycarbonate China Ltd. expanded annual production capacity for polycarbonate resin (130,000 tons/year --> 150,000 tons/year)
2013. 4	Merged Teijin Chemicals Limited into Teijin Limited
2013. 9	Established joint venture Initz Co., Ltd. with SK Chemicals Ltd. to start polyphenylene sulfide (PPS) resins business
2014. 3	Started to sales of polycarbonate resin in Teijin Corporation (Thailand) Limited
2015.12	Halted production of polycarbonate resin at Teijin Polycarbonate Singapore Pte Ltd.
2019. 9	Newly established a compound plant and technical center at Teijin Corporation (Thailand) Limited and commenced operations
2024. 6	Added new production line for polycarbonate resin <i>Panlite</i> sheet and film
2024. 6	Established a representative office in Vietnam

◆ Production sites and Production capacity

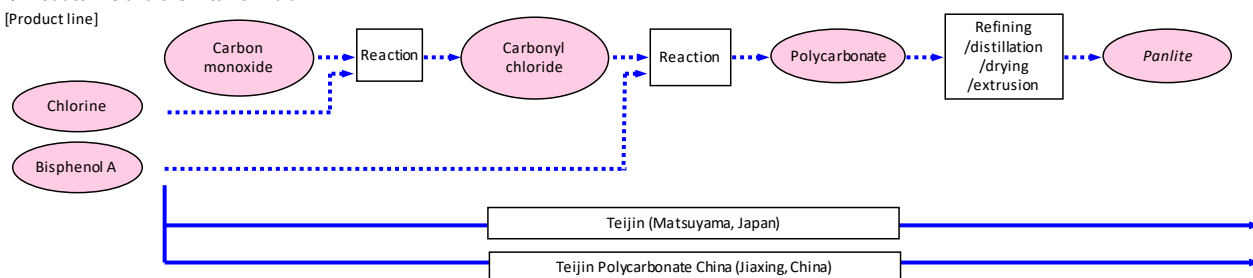
Principal products		Location		Company	Form	Production capacity (tons/year)
PC resin (Polycarbonate resin)	PC resin <i>Panlite</i> <i>Multilon</i>	Japan	Matsuyama, Ehime	Teijin Limited, resin and plastic processing	Polymer	125,000
		China	Jiaxing, Zhejiang	Teijin Polycarbonate China Ltd.	Polymer	150,000
		Japan	Mihara, Hiroshima	Teijin Limited, resin and plastic processing	Compounds	Undisclosed
		China	Shanghai	Teijin Chemicals Plastic Compounds Shanghai Ltd.	Compounds	102,000
		Thailand	Bang Pa-in, Ayutthaya	Teijin Corporation (Thailand) Limited	Compounds	Undisclosed
	PC film <i>PURE-ACE</i>	Japan	Matsuyama, Ehime	Teijin Limited, resin and plastic processing	Films	Undisclosed
	PC sheet <i>Panlite</i>				Sheets	16,100
PEN resin (Polyethylene naphthalate resin)	<i>Teonex</i>	Japan	Matsuyama, Ehime	Teijin Limited, resin and plastic processing	Polymer	Undisclosed
PET resin		Japan	Matsuyama, Ehime	Teijin Limited, resin and plastic processing	Polymer	Undisclosed

◆ R&D sites

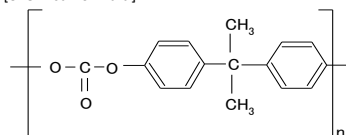
Company	Location	
Teijin Limited, resin and plastic processing	Japan	Matsuyama, Ehime Chiba, Chiba
Teijin Chemicals Plastic Compounds Shanghai Ltd.	China	Shanghai
Teijin Corporation (Thailand) Limited	Thailand	Bang Pa-in, Ayutthaya

◆Product line and chemical formula

[Product line]



[Chemical formula]



◆Characteristics of main products

Polycarbonate (PC) resin: With the largest market of any of the five key engineering plastics, polycarbonate has outstanding transparency, impact resistance, dimensional stability and strength and is used in OA equipment, automotive parts and other large items.

Polyethylene terephthalate (PET) resin: PET resin boasts excellent transparency, gas-barrier properties and mechanical strength and is used widely in plastic bottles.

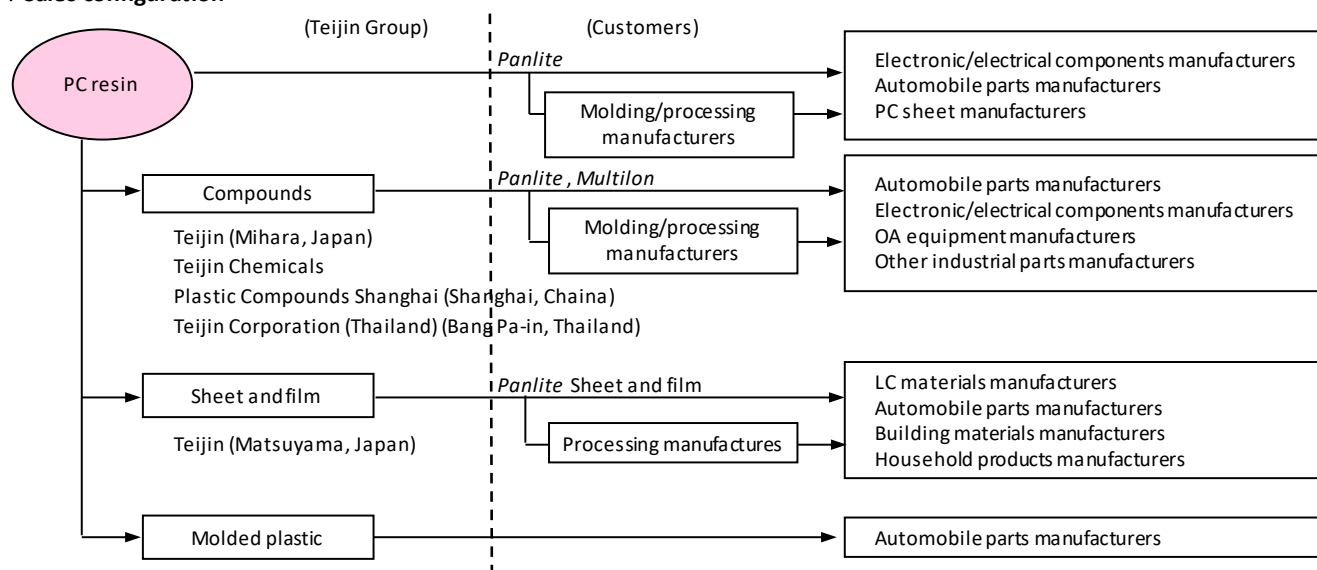
Polyethylene naphthalate (PEN) resin: PEN resin is superior to PET resin in terms of heat deflection temperature and strength and is popular for use in food containers and medical equipment.

Products	Characteristics	
PC resin	Impact properties	Highest impact strength of all plastics, 200 times superior to glass
	Operational temperature range	Stable properties throughout a wide temperature range (-100°C to +129°C)
	Transparency	Excellent properties for optical use, as transparent as glass
	Flame resistance	Good resistance against flames
	Dimensional stability	Good creep characteristics, resulting in minimal dimensional changes under temperature and humidity differences, and over time
	Electrical properties	Excellent insulation properties over a wide temperature range
PET resin	Gas barrier properties	Outstanding transparency and hygienic properties
PEN resin	Transparency	Transparency and superior UV shielding properties, ensuring contents are protected
	Operational temperature range	High heat deflection temperature and superb heat resistance
	Gas and moisture transmissivity	Extremely low gas and moisture transmissivity
	Chemical and hydrolysis resistance	Superb resistance to organic solvents and chemicals Zero flavor adsorption and repels dirt

◆ Development of applications for principal products

Products	Fields	Category	Applications
PC resin <i>Panlite</i> <i>Multilon</i>	Optical	Optical lenses	Camera lenses for smartphone, lenses for onboard vehicle cameras and eyeglasses
		Other	Blu-Ray Discs, DVDs
	Industrial	Electronic and electric equipment	Exterior parts of LED lamp, personal computers, audiovisual devices, digital cameras
		OA equipment	Exterior parts and mechanism elements of OA equipment, optical chassis of printers
		Automotive	External parts of automotive vehicles, such as headlamp lenses and door handle, internal parts
		Other	Traffic light lenses, external parts of electrical equipment
PEN resin <i>Teonex</i>			Medical equipment, plates for school lunch boxes, cosmetic container
PET resin			Food containers, sheet materials
PC resin sheet and film <i>Panlite</i> sheet and film <i>PURE-ACE</i>		Automotive	Instrument panels, heater A/C control panels, vehicle navigation system front panels
		Electric/Electronic	LCD-related parts (Diffuser, front panels)
		Vehicle	Construction equipment roofs, motorcycle windshields
		Miscellaneous goods	Dummy cans/bottles for vending machines
		Electric/Electronic	LCD-related parts (LCD optical compensation film, automotive and anti-reflective film), organic electroluminescent display (OLED) anti-reflective film
		Optics	3D eyeglasses, polarized sunglasses

◆ Sales configuration



Materials segment Carbon fibers business**◆Subsidiaries and affiliates**

Company	Location		Business field	Equity held by the Group
1. Teijin Limited, carbon fibers business	Japan	Tokyo, etc.	Manufacture and sales of carbon fibers	— %
2. Teijin Carbon America, Inc.	The U.S.	South Carolina, etc.	Manufacture and sales of carbon fibers	100 %
3. Renegade Materials Corporation	The U.S.	Ohio	Manufacture and sales of carbon fiber intermediate materials (prepreg)	100 %
4. Teijin Carbon Europe GmbH	Germany	North Rhine-Westphalia	Manufacture and sales of carbon fibers	100 %
5. Teijin Carbon Vietnam Co., Ltd.	Vietnam	Ha Nam	Manufacture and sales of carbon fiber intermediate materials (prepreg)	100 %

Note: Equity held by the Group (as of the end of March 2024) includes equity held directly and indirectly by Teijin Limited.

◆Business history

1999.10	Acquired an equity stake in Toho Rayon Co., Ltd. (Toho Tenax Co., Ltd.) with the aim of entering the carbon fiber business
2000. 2	Increased stake in Toho Rayon, making the company a consolidated subsidiary
2006. 9	Expanded manufacturing capacity of <i>TENAX</i> carbon fibers at Toho Tenax Europe GmbH (currently Teijin Carbon Europe GmbH) (1,900 tons/year --> 3,400 tons/year)
2007. 9	Made Toho Tenax Co., Ltd. a wholly owned subsidiary
2008. 4	Increased <i>TENAX</i> manufacturing capacity of Toho Tenax's Mishima Plant (3,700 tons/year --> 6,400 tons/year)
2009. 8	Toho Tenax Europe GmbH (currently Teijin Carbon Europe GmbH) completed its fourth production line, increasing annual production capacity (3,400 tons --> 5,100 tons)
2009.12	Toho Tenax America, Inc. (currently Teijin Carbon America, Inc.), revamped its third production line, increasing production capacity (2,000 tons --> 2,400 tons)
2010. 9	Commenced production on fourth line at Toho Tenax Europe GmbH (currently Teijin Carbon Europe GmbH)
2013.11	Suspended production of carbon fibers at Toho Tenax America, Inc. (currently Teijin Carbon America, Inc.)
2014. 5	<i>TENAX</i> TPCL (thermoplastic consolidated laminates) were qualified for use in the Airbus A350 XWB as a primary structural material
2016. 1	Announced a 40% increase in manufacturing capacity of <i>Pyromex</i> oxidized PAN fibers at Toho Tenax America, Inc. (currently Teijin Carbon America, Inc.)
2017.11	Announced the construction of a new carbon fiber production facility in United States and enhancement of productivity of the precursor at the Mishima Factory in Japan
2018. 4	Merged Toho Tenax within Teijin Limited
2019. 1	Teijin's carbon thermoplastic unidirectional pre-impregnated tape was qualified by Boeing as a material suitable for primary structural aircraft parts
2019. 8	Acquired Renegade Materials Corporation, a U.S. manufacturer/supplier of high heat-resistant thermoset prepreg for the aerospace industry
2021. 7	Established Teijin Carbon Vietnam Co., Ltd. in Ha Nam, Vietnam and started commercial production
2021.10	Announced that Renegade Materials Corporation will expand its production capacity of high heat-resistant carbon fiber prepreg for aerospace applications
2022. 3	Started operation of carbon fiber plant in the U.S. (currently Teijin Carbon America, Inc.)

◆Production sites and Production capacity

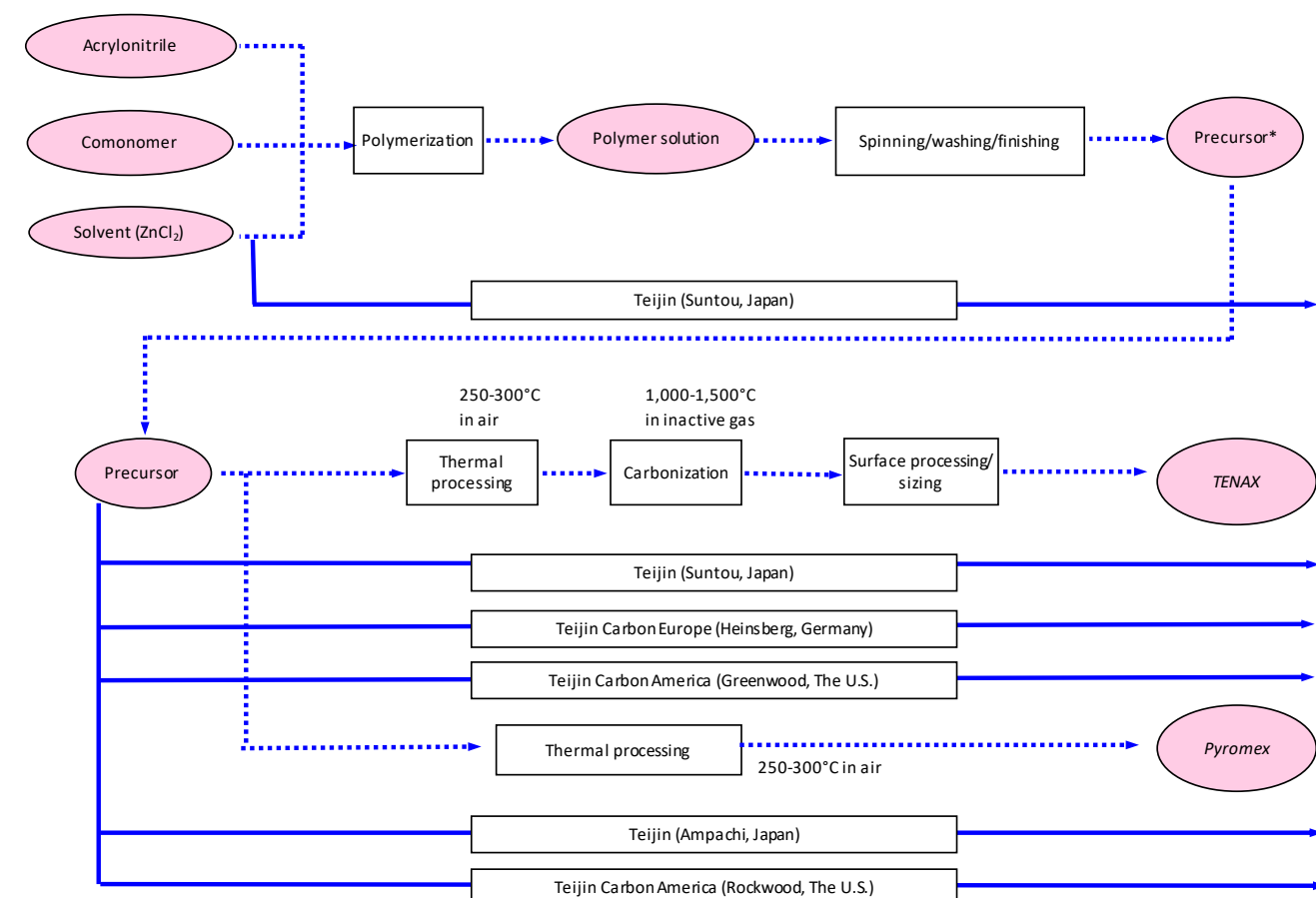
Principal products		Location		Company	Form	Production Capacity (tons/year)
Carbon fibers	<i>TENAX</i>	Japan	Suntou, Shizuoka	Teijin Limited, carbon fibers business	Regular-tow filament	6,400
		Germany	Heinsberg, North Rhine-Westphalia	Teijin Carbon Europe GmbH	Regular-tow filament	5,100
		The U.S.	Greenwood, South Carolina	Teijin Carbon America, Inc.	Regular-tow filament	Undisclosed
Oxidized PAN fibers	<i>Pyromex</i>	Japan	Ampachi, Gifu	Teijin Limited, carbon fibers business	Tow	Undisclosed
		The U.S.	Rockwood, Tennessee	Teijin Carbon America, Inc.	Tow	Undisclosed
Carbon fiber intermediate materials	<i>TENAX</i>	Japan	Suntou, Shizuoka	Teijin Limited, carbon fibers business	Prepreg	Undisclosed
		Germany	Heinsberg, North Rhine-Westphalia	Teijin Carbon Europe GmbH	TPCL (thermoplastic consolidated laminates)	Undisclosed
		The U.S.	Miamisburg, Ohio	Renegade Materials Corporation	Prepreg	Undisclosed
		Vietnam	Duy Tien, Ha Nam	Teijin Carbon Vietnam Co., Ltd.	Prepreg	Undisclosed

◆ R&D sites

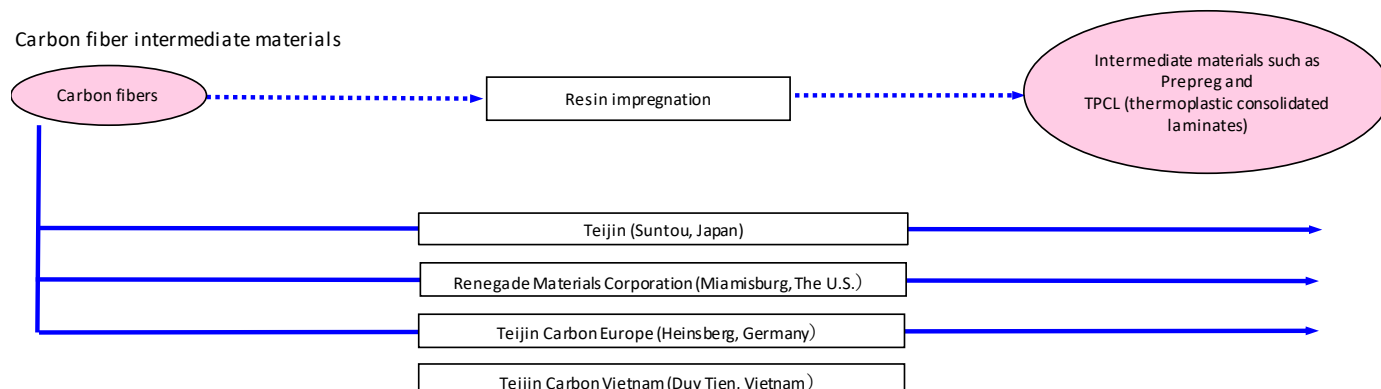
Company	Location	
Teijin Limited, carbon fibers business	Japan	Suntou, Shizuoka
Teijin Carbon Europe GmbH	Germany	Wuppertal, North Rhine-Westphalia
Renegade Materials Corporation	The U.S.	Miamisburg, Ohio

◆ Product line and chemical formula

Carbon fibers *TENAX*, Oxidized PAN fibers *Pyromex*



Carbon fiber intermediate materials



* Precursor: The raw fibers from which carbon fibers are made. Teijin uses acrylic precursor fibers with a different copolymer composition than those used for apparel. Pitch, rayon and other fibers are also used, but acrylic is the most suitable in terms of quality.

◆Characteristics of main products

●Carbon fibers /Oxidized PAN fibers

Products	Characteristics
Carbon fibers <i>TENAX</i> (Regular-tow)	With a lower density than metal, coupled with high tensile strength, elasticity and resistance to fatigue and abrasion and superb lubricity, <i>TENAX</i> carbon fibers are 10 times stronger than iron, but only one quarter the weight. <i>TENAX</i> is also characterized by a low coefficient of thermal expansion and excellent dimensional stability -meaning minimal mechanical deterioration at high temperatures and a low coefficient of thermal conductivity at ultralow temperatures- as well as excellent chemical stability, and is thus unaffected by acids, alkalis and various solvents. In terms of electrical and magnetic characteristics, <i>TENAX</i> is electroconductive and has electromagnetic shielding properties and outstanding X-ray transmissivity.
Oxidized PAN fibers <i>Pyromex</i>	<i>Pyromex</i> oxidized polyacrylonitrile (PAN) fibers deliver outstanding flame resistance. Properties are not hampered by high heat, with both gravity and dimensional stability remaining excellent. In addition to being durable, <i>Pyromex</i> is highly resistant to organic solvents, weak acid and weak alkali. <i>Pyromex</i> can also withstand strong acid and strong alkali for short periods. Further, because it is an organic fiber, it offers excellent physical properties -including textile processability and drape- not found in inorganic fibers.

Differences between regular-tow and large-tow carbon fibers

	Regular-tow	Large-tow
Number of filaments	Up to 24,000	More than 40,000
Major areas of use	Aircraft and aerospace, sports and leisure, industrial materials	Industrial materials (Wind power generation, chopped, etc.)
Characteristics	High-performance, easy to handle	Low price

●Carbon fiber intermediate materials

Products	Characteristics
Prepreg	Sheet-shaped material fabricated by impregnating carbon fibers with uncured thermosetting resin (such as epoxy resin, bismaleimide resin, or polyimide resin). Mainly used as a molding material (composite material) for parts and members in the aerospace and sports industries.
Thermoplastic Consolidated Laminates (TPCL)	Sheet-shaped material fabricated by impregnating carbon fibers with thermoplastic resin (such as polyetheretherketone). Qualified by Airbus as a molding material of members for A350XWB (extra wide body) aircraft parts.

◆Development of applications for principal products

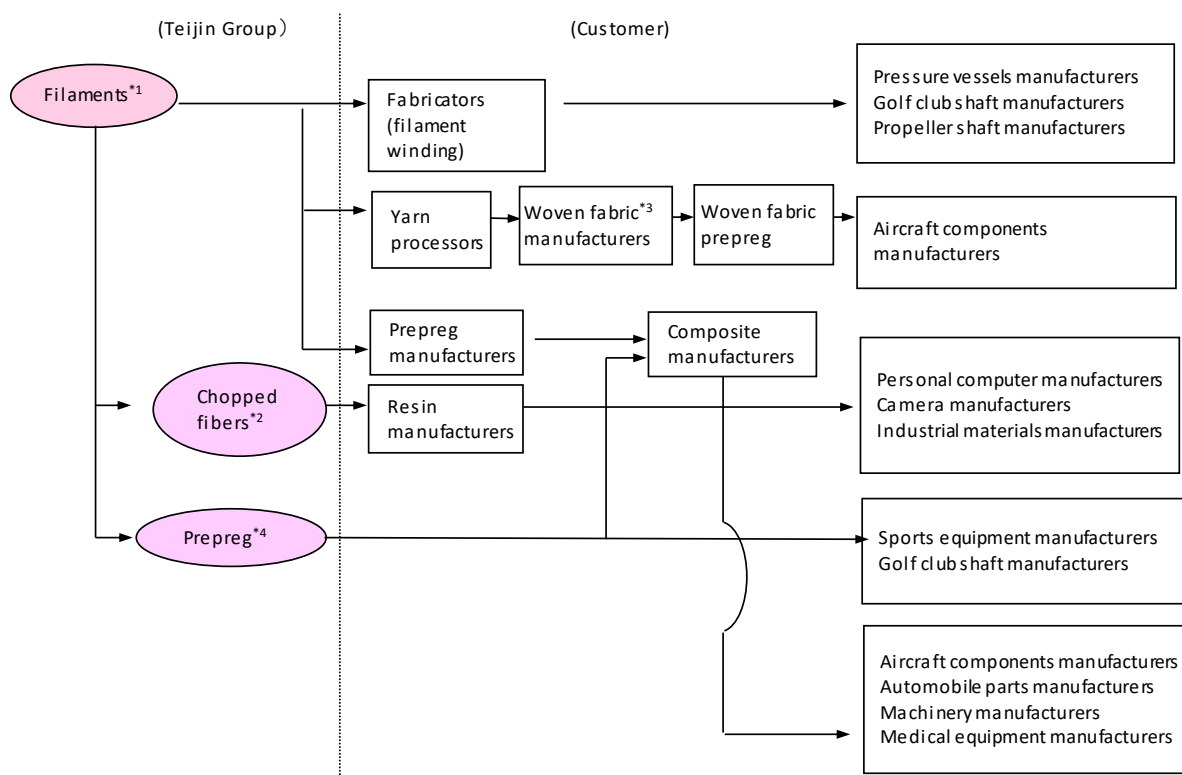
●Carbon fibers *TENAX*

Field	Main application	
Aerospace	Aircraft	Primary structural material: main wings, tail units, fuselages Secondary structural material: ailerons, rudders, elevators Interior material: floor panels, beams, lavatory, seats
	Others	Rockets, artificial satellites
Sports and leisure		Rackets (tennis, badminton), golf clubs, fishing rods, bicycles, ice hockey sticks, yachts, cruisers
Industrial materials	Wind power generation	Blades, nacelles
	Transport equipment	Automobile parts, motorcycle parts, train car bodies, ships
	Pressure vessels	Hydraulic cylinders, gas cylinders
	Construction	Cables, concrete reinforcement material
	Office equipment	PC housings, printer bearings, cams, housing
	Others	Machine parts, electrical and electronic components, precision instruments, chemical equipment, medical devices, corrosion resistant equipment

●Oxidized PAN fibers *Pyromex*

Field	Main application	
Aerospace	Aircraft	Aircraft brake materials
Industrial materials	Thermoresistant/protective materials	Insulation
	Electric/electronic parts	Graphite felt for NAS batteries
	Fuel cells	Gas diffusion layers (GDL)

◆ Sales configuration



*1. Filaments: Elongated strands made with 1,000, 3,000, 6,000, 12,000 and 24,000 fibers; twisted and untwisted varieties available.

*2. Chopped fibers: Carbon fibers bundled using a sizing agent and chopped into designated lengths.

*3. Woven fabric: Filament textile; plain, twill and satin weave are available.

*4. Prepreg: Acronym for preimpregnated material; an intermediate sheet material made from carbon fibers impregnated with a thermoset polymer, prepreg ensures stable quality for molded products and is therefore suited to automated laminating.

Materials segment Composites business

◆ Subsidiaries and affiliates

Company	Location		Business field	Equity held by the Group
1. Teijin Limited, composites business	Japan	Tokyo, etc.	Manufacture and sales of composites	— %
2. Teijin Automotive Technologies NA Holdings Corp.	The U.S.	Michigan	Manufacture and sales of automotive composites	100 %
3. Teijin Automotive Technologies Portugal, S.A.	Portugal	Porto	Manufacture and sales of automotive composites	100 %
4. Teijin Automotive Technologies Czech s.r.o.	Czech	The Central Bohemian	Manufacture and sales of automotive composites	100 %

Note: Equity held by the Group (as of the end of March 2024) includes equity held directly and indirectly by Teijin Limited.

◆ Business history

2011. 4	Teijin Composites Innovation Center, which had been in the New Business Development Group, was integrated and reorganized into the Carbon Fibers and Composites Business Group
2011.12	Established Teijin Advanced Composites America Inc. in the U.S.
2012.12	Began operations at a new thermoplastic CFRP pilot plant within the Matsuyama Plant
2013. 5	Moved the Teijin Composites Innovation Center to the Matsuyama Plant
2014.11	<i>Sereebo</i> thermoplastic CFRP was registered on General Motors's materials list
2017. 1	Acquired Continental Structural Plastics Holdings Corporation (hereinafter, "CSP"), one of the global leaders in automotive lightweight composite technologies
2018. 7	Newly installed the GF-SMC (Glass Fiber-Sheet Molding Compound) production line at CSP Europe, a development base for CSP in Europe
2018. 8	Acquired Inapal Plasticos,S.A., a Portuguese manufacturer of composite molding materials for automobiles
2019. 1	CSP announced establishment of a new plant for its Chinese joint venture, CSP-Victall, in Changzhou City, China
2019. 5	General Motors (U.S.) adopted the thermoplastic CFRP product <i>Sereebo</i> for their new car model
2019. 9	Acquired Benet Automotive s.r.o., a Czech composite material parts manufacturer for automobiles
2019. 9	Announced the establishment of a new plant in Texas, U.S.
2020. 2	Established Teijin Automotive Center Europe, a technical center for composite molding materials for automobiles, in Germany
2020.12	Changed the status of CSP Victall to consolidated subsidiary
2020.12	CSP opened Advanced Technologies Center, a development base for advanced technology in Michigan, U.S.
2021. 9	Integrated the globally expanding composites business for automobiles and developed the business brand name as "Teijin Automotive Technologies"
2023. 8	Decided to withdraw from China business
2023. 12	Completed withdrawal from China business

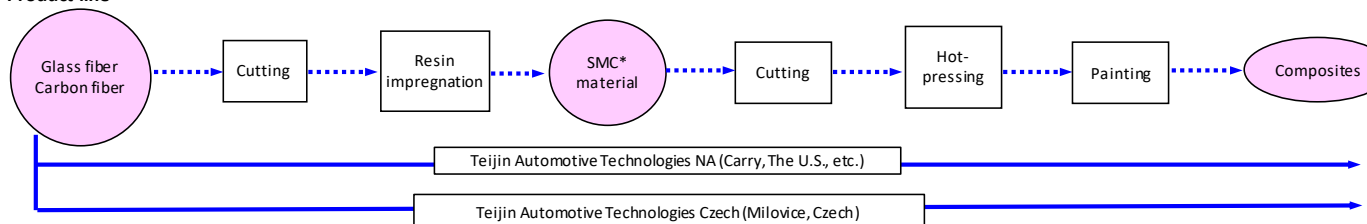
◆ Production sites

Principal products	Location		Company
Composites	Japan	Ampachi, Gifu Matsuyama, Ehime	Teijin Limited, composites business Teijin Limited, composites business
	The U.S.	Carey, Ohio	Teijin Automotive Technologies NA Holdings Corp.
		Conneaut, Ohio	Teijin Automotive Technologies NA Holdings Corp.
		North Baltimore, Ohio	Teijin Automotive Technologies NA Holdings Corp.
		Van Wert, Ohio	Teijin Automotive Technologies NA Holdings Corp.
		Grabill, Indiana	Teijin Automotive Technologies NA Holdings Corp.
		Huntington, Indiana	Teijin Automotive Technologies NA Holdings Corp.
		Salisbury, North Carolina	Teijin Automotive Technologies NA Holdings Corp.
		Lenoir, North Carolina	Teijin Automotive Technologies NA Holdings Corp.
		Sarepta, Louisiana	Teijin Automotive Technologies NA Holdings Corp.
		Seguin, Texas	Teijin Automotive Technologies NA Holdings Corp.
	Mexico	Tijuana, Baja California Saltillo, Coahuila	Teijin Automotive Technologies NA Holdings Corp. Teijin Automotive Technologies NA Holdings Corp.
	Portugal	Lesas de Barrio, Porto Palmela, Setúbal	Teijin Automotive Technologies Portugal, S.A. Teijin Automotive Technologies Portugal, S.A.
	Czech	Mladá Boleslav, The Central Bohemian Milovice, The South Bohemian	Teijin Automotive Technologies Czech s.r.o. Teijin Automotive Technologies Czech s.r.o.
	France	Pouancé, Maine-et-Loire	Teijin Automotive Technologies France

◆ R&D sites

Company	Location	
Teijin Limited, composites business	Japan	Matsuyama, Ehime
Teijin Automotive Technologies NA Holdings Corp.	The U.S.	Auburn Hills, Michigan
Teijin Automotive Technologies France	France	Pouancé, Maine-et-Loire
Teijin Automotive Technologies Wuppertal GmbH	Germany	Wuppertal, North Rhine-Westphalia

◆ Product line



*SMC: Sheet Molding Compound: Sheet-shaped material fabricated by cutting fibers to a length of 2 to 3 cm, randomly laying them out, and impregnating them with resin. The SMC material is then cut and heated in molds under pressure for curing, and molded articles are thus fabricated (SMC molding).

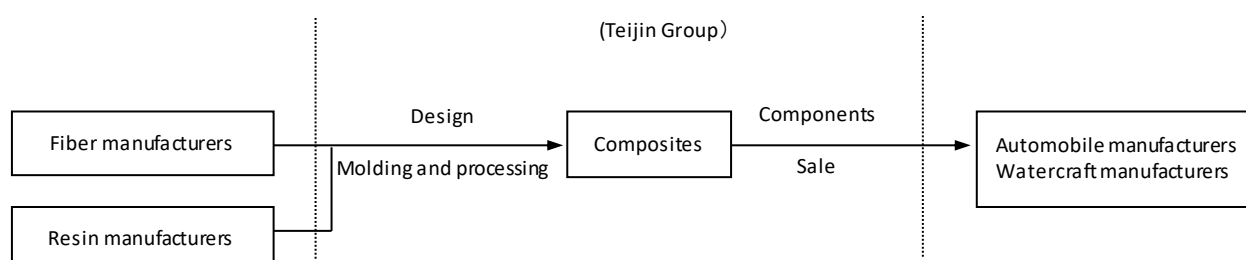
◆ Characteristics of main products

Composites refer to engineered materials made from two or more types of constituent materials with different properties, signifying materials with properties and performance exceeding those of their individual constituents. Fiber reinforced plastics (FRP), which combine plastics with advanced fiber, are well known. Various properties can be imparted to FRP depending on the type of fiber and plastic used, making it possible to provide an expansive range of solutions tailored to customer needs. Numerous benefits can be derived by using FRP instead of metal, including weight-reduction, higher strength, greater flexibility in shape, and shorter manufacturing processes.

Products	Characteristics
Glass Fiber Reinforced Plastics (GFRP)	Plastic reinforced with glass fibers. In general, composite materials produced by reinforcing light but low-modulus plastic with high-modulus glass fibers. Both strength and lightness of this material are lower than those of carbon fiber composite materials, but it features relatively low cost and high durability. It is thus used in the hulls of small boats or housing equipment such as prefabricated bath units or sewage tanks. In recent years, the scope of application of the material has expanded to interior and exterior materials for automobiles and rail vehicles, outboard engines in small boats, and battery covers for electric vehicles.
Carbon Fiber Reinforced Plastics (CFRP)	Plastic reinforced with carbon fibers. In general, composite materials produced by reinforcing light but low-modulus plastic with high-modulus carbon fibers. This material features extremely light weight and high strength and elasticity properties compared to other materials such as iron or aluminum. The material had mainly been used in the past for aircraft, sports gear such as fishing rods, rackets, and bicycles, and windmill blades for wind power generation. However, application of the material to mass-produced automobiles has increased in recent years in concert with drastic advances made in various carbon-fiber-based intermediates and molding methods. Its utilization as a solution for environmental control such as emission regulations is expected to expand.

Category	Application
Automobiles	Outer panel parts (Roofs for SUVs, track beds for pickup trucks, roofs for sports cars, fenders, hoods for heavy duty trucks, etc.) Battery covers for EVs, structural members (such as underbody shields), etc.
Watercraft	Outboard motors

◆ Sales configuration



Fibers & Products Converting segment

◆Subsidiaries and affiliates

Company	Location		Business field	Equity held by the Group
1. Teijin Frontier Co., Ltd.	Japan	Osaka	Sales of raw materials and products for fiber materials, apparel and industrial materials	100 %
2. Teijin Cordley Limited	Japan	Osaka	Manufacture and sales of artificial and synthetic leather	100 %
3. Teijin Tedy Co., Ltd.	Japan	Ehime	Manufacture and cord processing of polyester fibers	100 %
4. Teijin Frontier Knitting Co., Ltd.	Japan	Ishikawa	Manufacture and sales of special textured yarn and knitted fabrics	100 %
5. Folkner Limited	Japan	Okayama	Manufacture and sales of men's apparel, distribution and processing of apparel	100 %
6. Teijin Logistics Co., Ltd.	Japan	Osaka	Freight transportation, warehouse operation and sales processing	100 %
7. Teiken Limited	Japan	Osaka	Manufacture and sales of healthcare products, amenities, disaster mitigation and safety products	100 %
8. Teijin Frontier DG Co., Ltd.	Japan	Niigata	Manufacture of synthetic fabrics	99.00 %
9. Teisho Sangyo Co., Ltd.	Japan	Fukui	Collection and sorting of bobbins and packaging materials, transportation and storage of yarn, processed yarn and fabrics, etc.	100 %
10. Textet Limited	Japan	Tokyo	Planning and sales of consumer goods related to daily life	100 %
11. Unisel Co., Ltd.	Japan	Yamaguchi	Manufacture and sales of synthetic fibers, filament yarn and non-woven fabrics	100 %
12. Teijin Polyester (Thailand) Limited	Thailand	Pathumthani	Manufacture and sales of polyester fibers	67.61 %
13. Teijin (Thailand) Limited	Thailand	Pathumthani	Manufacture and sales of polyester fibers	100 %
14. Thai Namsiri Intertex Co., Ltd.	Thailand	Bangkok	Manufacture and sales of polyester filament fabrics	81.25 %
15. Nantong Teijin Co., Ltd.	China	Jiangsu	Manufacture and sales of polyester filament fabrics	100 %
16. N.I. Teijin Airbag Fabric (Nantong) Co., Ltd.	China	Jiangsu	Processing, manufacture, and sales of textile products for the automotive industry	64.35 %
17. J.H. Ziegler GmbH	Germany	Achern	Development, manufacture, and sales of composite sound absorbing materials and multi-layer seat wadding materials for automobiles made from non-woven fabric	100 %
18. Teijin FRA Tire Cord (Thailand) Co., Ltd.	Thailand	Ayutthaya	Manufacture of tire cord fabrics	66.66 %
19. Teijin Frontier (Thailand) Co., Ltd.	Thailand	Bangkok	Domestic sales and exports and imports of textile products	100 %
20. Nantong Teijin Automotive Fabrics Finishing Co., Ltd.	China	Jiangsu	Weaving, dyeing and finishing and sales of luxury fabrics, as well as procurement and sales of raw materials and products	100 %
21. Teijin Cord (Thailand) Co., Ltd.	Thailand	Pathumthani	Manufacture and sales of core materials used in the carcasses of transmission belts for agricultural and production machinery	100 %
22. Teijin Frontier (Hong Kong) Limited	China	Hong Kong	Exports and imports, domestic sales and triangular trade	100 %
23. Teijin Frontier (U.S.A.), Inc.	The U.S.	New York	Exports and imports, domestic sales and triangular trade	100 %
24. Teijin Frontier (Shanghai) Co., Ltd.	China	Shanghai	Exports, imports and sales of textile products, etc.	100 %
25. Teijin Frontier Europe GmbH	Germany	Hamburg	Exports and imports, domestic sales agency and triangular trade	100 %
26. PT. Teijin Frontier Indonesia	Indonesia	Jakarta	Exports and sales agency services for fiber products and other items manufactured in Indonesia	100 %

Note: Equity held by the Group (as of the end of March 2024) includes equity held directly and indirectly by Teijin Limited.

◆Business history

●Fibers & Products Converting

1952.11	Established Teijin Shoji Co., Ltd.
1960. 4	Established Folkner Limited
1979. 9	Established Teiken Limited
1988. 5	Established Textet Limited
1989. 7	Established Teijin Associa Limited, combining Teijin Men's Shop Limited, Winkle Limited and Teijin Interiart Limited Established weaving and dyeing company Thai Namsiri Intertex Co., Ltd.
1994. 3	Nantong Teijin Co., Ltd., established in China to manufacture and market polyester filament fabrics
1995. 4	Established Teijin (Hong Kong) Limited
1995.10	Invested in and gained control of Thai Namsiri Intertex Co., Ltd.
2001. 4	Teijin Shoji Co., Ltd., merged with the apparel division of Nissho Iwai Corp. under the name N.I. Teijin Shoji Co., Ltd. Expanded overseas bases (Milano, Taipei, Ho Chi Minh, Hanoi and Los Angeles)
2001. 7	Established Fashion Force No.1 Factory Co., Ltd., in Vietnam
2002. 4	Spun off apparel-use polyester fibers business as a separate company named Teijin Fibers Limited
2003. 1	Established the Dalian, Qingdao, Wuxi, and Ningbo Offices of N.I. Teijin Frontier (Shanghai) Co., Ltd.
2003.11	Established Teijin Modern Yar (Nantong) Co., Ltd., in China in response to car seat manufacturers' shift to production in China and growing local demand for high-value-added materials for textiles

Fundamental information Fibers & Products Converting segment

2004. 9	Launched Kurashi@Science, the Teijin Group's online shopping site
2005. 7	Established Guangzhou office of N.I. Teijin Shoji (Shanghai) Co., Ltd.
2008. 4	N.I. Teijin Shoji Co., Ltd.'s Tokyo branch established the Harajuku Office, a satellite office
2009. 3	Obtains commercial rights and OEM production of certain polyester fibers products from Asahi Kasei Fibers corporation
2010. 2	Established a representative office of N.I. Teijin Shoji Co., Ltd., in Dhaka, Bangladesh
2010. 5	Closed the Ningbo Office of N.I. Teijin Frontier (Shanghai) Co., Ltd.
2011. 1	Launched Mirai@Science, an online shop for commercial customers
2011.12	Closed the Wuxi Office of N.I. Teijin Frontier (Shanghai) Co., Ltd.
2012.10	Integrated the polyester fibers for apparel business of Teijin Fibers Limited with N.I. Teijin Shoji Co., Ltd., and relaunched as Teijin Frontier Co., Ltd.
2013. 2	Merged Fashion Force No.1 Factory Co., Ltd. and two branches (Ho Chi Minh City Office and Hanoi Office) of Teijin Frontier Co., Ltd., which restarted operations as Teijin Frontier (Vietnam) Co., Ltd.
2013. 4	Merged Teijin Frontier (Hong Kong) Limited. and Teijin Hong Kong Ltd.
2013. 9	Established Teijin Frontier Myanmar Co., Ltd.
2014. 6	Established Teijin FRA Tire Cord (Thailand) Co., Ltd., a tire cord production joint venture
2016. 4	Established Teijin Frontier Mexico, S.A. DE C.V. in Mexico as Teijin Frontier's first automotive material subsidiary in the U.S.
2017. 4	Formed the Fibers & Products Converting Business Group by integrating the polyester fiber business into the Products Converting Business Group
2018. 1	Established Teijin Frontier Thai Innovation Laboratory as a research and development base for fibers centered on polyester in Thailand
2018. 8	Acquired J.H. Ziegler GmbH which produces and sells automotive interior materials mainly in the EU
2021. 2	Established Teijin Frontier India Private Ltd. in India to conduct sales and trading activities that will further strengthen its global business
2021. 3	Withdrawal from Teijin Associate Retail Co., Ltd. and commenced liquidation procedures
2021. 4	Transferred Teijin Frontier Style Co., Ltd.
2021. 4	Teijin Frontier Co., Ltd. absorbed and merged Toho Textile Co., Ltd.
2021. 4	Teijin Frontier Knitting Co., Ltd. was established by integrating Teijin Modern Yarn Co., Ltd. and Shinwa Gosen Co., Ltd.
2023. 6	Reopened the internet shopping store Kurashi@Science as Teijin Mall

● Polyester fiber (until integration to the Fibers & Products Converting Business in Apr. 2017)

1918. 6	Teikoku Rayon Co., Ltd., established. Began production of rayon filament
1945. 8	Established Teijin Weaving Co., Ltd. (predecessor of Teijin Modern Yarn Co., Ltd.)
1951.11	Established DAISYOJI SEIREN (Unofficial translation) (predecessor of Teijin Nestex Co., Ltd.)
1955.11	Matsuyama Factory (currently the Matsuyama Factory (North)) established and began production of acetate filament
1957. 1	Teijin and Toray Industries, Inc., obtained license to introduce production technologies for polyester fibers and films from ICI of the United Kingdom
1957. 6	<i>Tetoron</i> is selected by Teijin and Toray as the trademark for polyester fibers
1957.12	Established Sankyo Worsted Mills Limited (predecessor of Teijin Tecloth Limited)
1958. 6	Production of <i>Tetoron</i> began at Matsuyama Factory
1967. 9	Established <i>Tetoron</i> production and sales company Thai Tetoron Co., Ltd. (currently Teijin Polyester (Thailand) Limited)
1968. 4	Tokuyama Factory commenced operations and began production of <i>Tetoron</i> staple fiber
1970.10	Ehime Factory (currently the Matsuyama Factory (South)) commenced operations and began production of <i>Tetoron</i> filament
1971.10	Production of rayon filament discontinued
1973.10	Established <i>Tetoron</i> production and sales company P.T. Teijin Indonesia Fiber Corporation
1976. 1	Production of <i>Tetoron</i> staple fiber began at Ehime Factory
1991.10	Established <i>Tetoron</i> production and sales company Teijin (Thailand) Limited
1993.11	Established TMI Europe S.p.A in Italy as a joint venture with Mantero Seta S.p.A. (Italy) and ITOCHU Corporation to manufacture and market polyester filament fabrics
1997. 1	Started marketing <i>ECOPET</i> (fibers made from PET bottles)
1999. 1	Launched recycling system for fiber products named <i>ECOCIRCLE</i>
1999. 4	Acquired 50% interest in polyester filament manufacturer Novacorp S.A. of Mexico, and renamed it Akra Teijin S.A. de C.V.
2000.11	Purchased the monofilament business of Johns Manville corporation of the United States and established Teijin Monofilament U.S., Inc., and Teijin Monofilament Germany GmbH
2001. 5	Announced Tetoron Global Strategy (TGS) plan
2001.11	Established Teijin Nestex Limited
2002. 3	Withdrew from acetate fibers business
2002. 4	Spun off apparel-use polyester fibers business as a separate company named Teijin Fibers Limited
	Launched new chemical recycling operations at Tokuyama Factory

Fundamental information Fibers & Products Converting segment

2002. 5	Established Solutex Corporation, a PTT fibers joint venture, with Asahi Kasei Corporation
2002. 7	Started expansion of "Fiber to Fiber" recycling system, helping to enhance public awareness of recycling
2003.11	Commenced operations of "Bottle to Bottle" recycling facility at Tokuyama Factory
2004. 5	Transferred "Fiber to Fiber" recycling facility from Tokuyama Factory to Matsuyama Factory
2005. 1	Announced withdrawal from Business Operation of TMI Europe S.p.A in Italy
2005. 3	Withdrew from the operations of Teijin Akra S.A. de C.V.
2005.12	Teijin Fibers Limited established car seat fabric manufacturing and sales company in China
2008. 7	Started commercial production of <i>Nanofront</i> high-strength polyester nanofiber
2008.12	Expanded production facilities for <i>BEWELL</i> high-performance, highly durable fiber
2009. 8	Announced structural reform plan for polyester fibers business
2009.12	Established Suminoe Teijin Techno Co., Ltd., a joint venture with Suminoe Textile Co., Ltd.
2010. 3	Dissolved joint venture Solutex Corporation and commenced liquidation proceedings Withdrew from the operations of Teijin Monofilament U.S., Inc. Withdrew from the operations of Teijin Nestex Limited
2010. 4	Transferred stake in P.T. Teijin Indonesia Fiber Tbk. to a third party
2010. 6	Transferred stake in Teijin Monofilament Germany GmbH to a third party
2010.12	Announced plans to begin full-fledged production and marketing of bio-derived PET products under the name <i>PLANTPET</i> in Japan and <i>ECO CIRCLE PlantFiber</i> overseas
2012. 9	Established Teijin Product Development China Co., Ltd
2012.10	Absorbed all businesses of Teijin Fibers Limited, except for its polyester fibers for apparel business
2013. 2	Established Zhejiang Jiaren New Materials Co., Ltd., polyester chemical recycling joint venture, in China
2017. 4	Formed the Fibers & Products Converting Business Group by integrating the polyester fiber business into the Products Converting Business Group

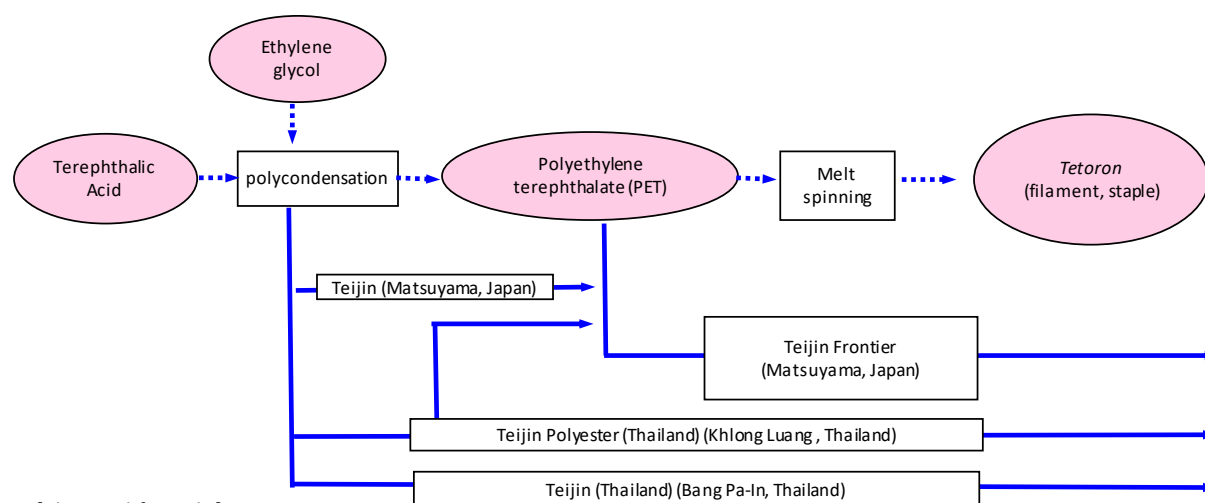
◆ R&D sites

Company	Location	
Teijin Frontier Co., Ltd.	Japan	Matsuyama, Ehime
	Thailand	Khlong Luang, Pathumthani
Teijin Product Development China Co., Ltd.	China	Nantong, Jiangsu

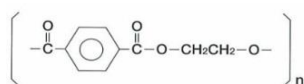
◆ Product line and chemical formula

● Polyester fibers

[Product line]



[Chemical formula]



◆Characteristics of main products

product	Characteristics
<i>Tetoron</i>	One of the stronger synthetic fibers, TeijinTetoron polyester fibers boast a low coefficient of linear expansion and water absorption (official moisture content: 0.4%) and excellent dimensional stability and have a higher melting point than other synthetic fibers (255~260 °C), meaning it can withstand processing and use at high temperatures. In terms of chemical properties, TeijinTetoron is insoluble in most organic solvents, while in an alkaline aqueous solution there is no loss of strength from the surface as decomposition is uniform. Colors develop well and fibers remain colorfast through multiple wearing and washings; UV-resistant; highly weather-resistant, so degradation by long-term outdoor use is minimal. Polyester fibers are the most commonly produced synthetic fiber in the world today.

◆Development of applications for principal products

Field	Principal products	Applications
Apparel & Textiles	<i>ECOPET, WAVERON, MINOTECH, TRIXION, DELTA, Octa, SOLOTEX, CALCULO, SUNBURNER</i>	Men's and ladies' fashions; sportswear; work and school uniforms; inner wear; garment lining fabrics
Industrial Textiles & Materials	<i>ECOPET, BELLOASIS, CHEMITAC, TEPYRUS, NANOFRONT, elk, V-Lap, FIBER CUSHION, Suzushiya</i>	Curtains; upholstery; bedding; office fabrics; paper diapers; wiping cloths; automobile, train and aircraft seats; tire cords; rubber reinforcements; seat belts; mats; cushions; filters
Healthcare	<i>MATOUS, Raffinan</i>	Sports, healthcare products, working clothes, underwear
Smart sensing	RFID shelf management system	An RFID* ¹ shelf management system that supports accurate and efficient management of books and goods in/out and location. The system utilizes Teijin's two-dimensional communication sheet <i>Cellform</i> * ² as an antenna sheet to read information from UHF band IC tags attached to items using a reader/writer, thereby enabling individual item management on a shelf-by-shelf basis.

*1. Abbreviation for Radio Frequency identification. A technology that reads and writes data in an IC chip contactlessly by transmitting and receiving radio waves.

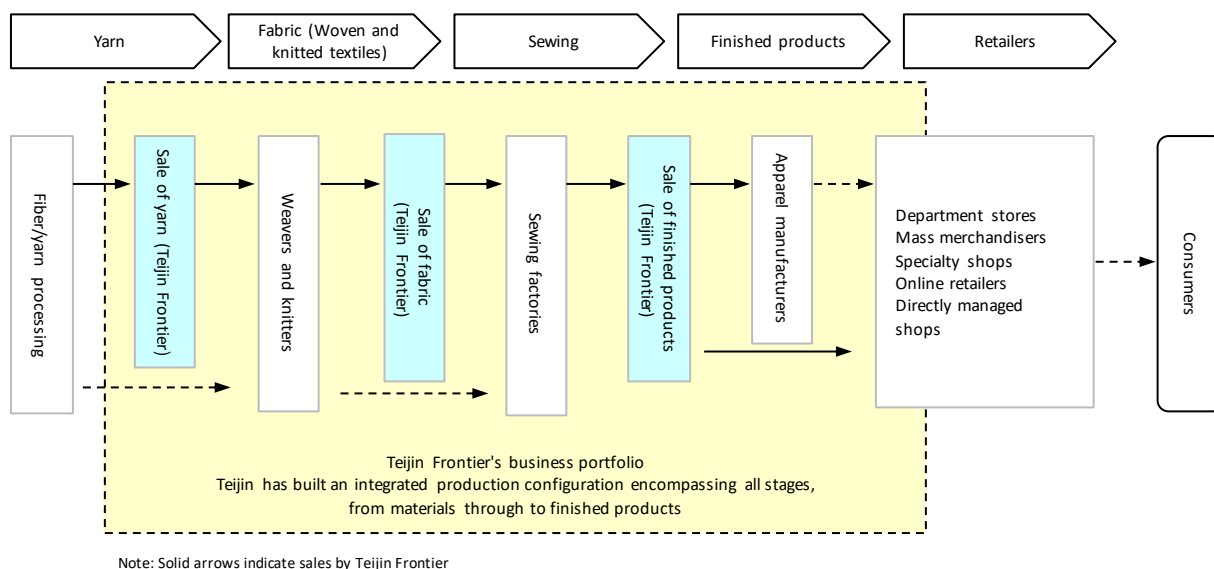
*2. A two-dimensional communication sheet developed using the two-dimensional communication technology @CELL developed by CELCROSS Inc., a venture company originating from the University of Tokyo, and Teijin's sheet manufacturing technology.

Fundamental information Fibers & Products Converting segment

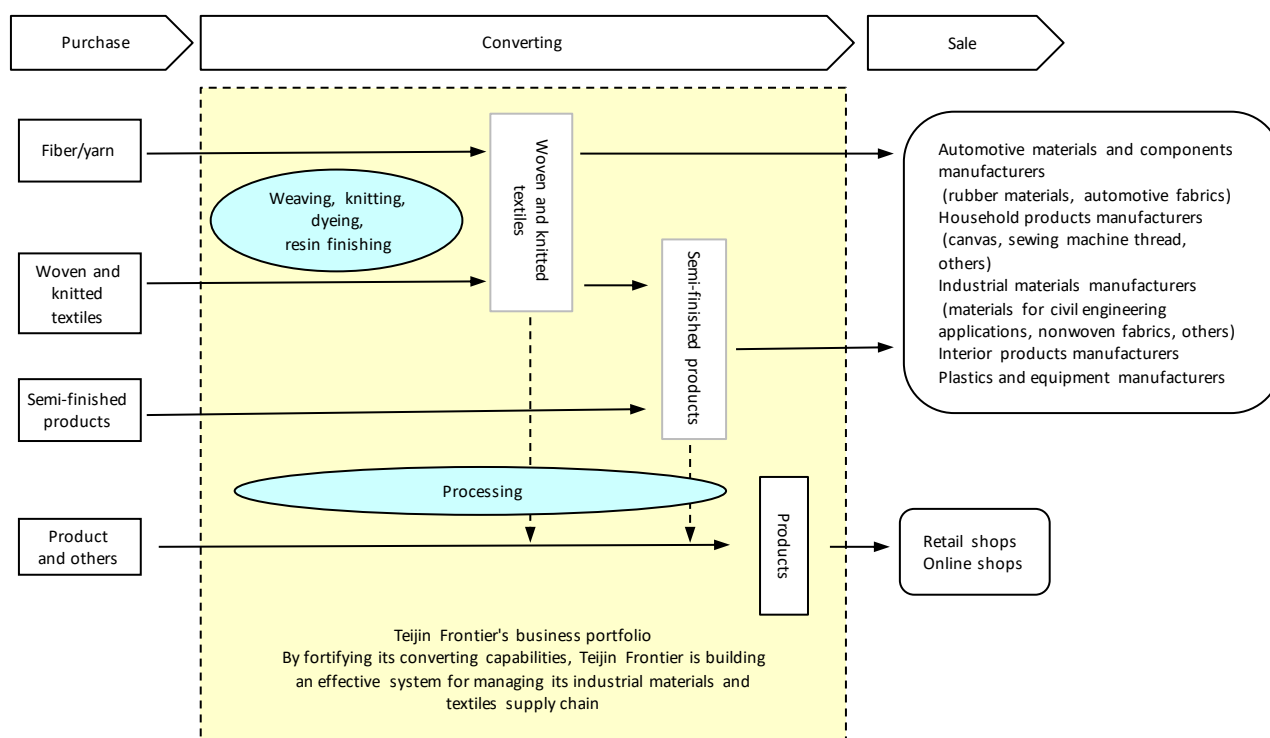
◆ Business Flow

● Teijin Frontier

1. Apparel & Textiles



2. Industrial Textiles & Materials

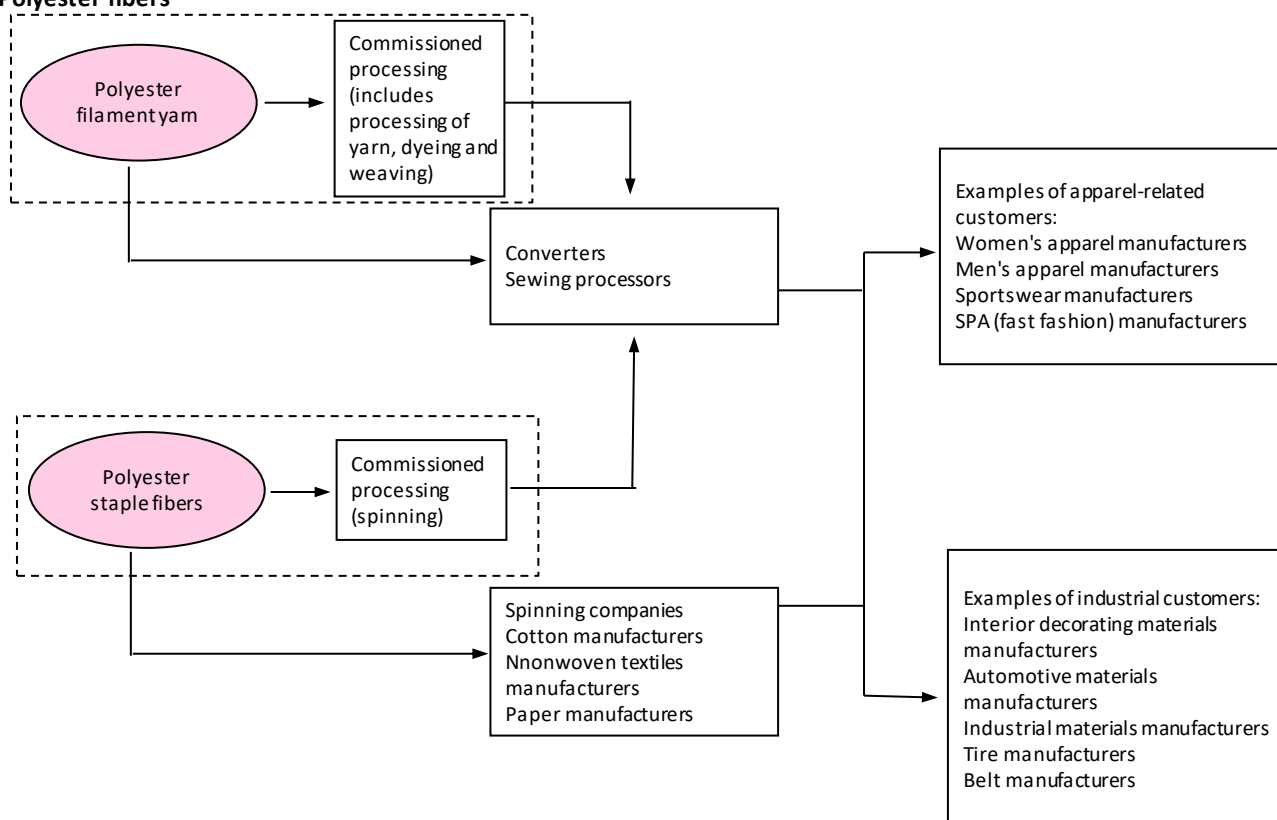


◆ **Products**

Field	Products
Apparel & Textiles	Textiles and apparel fiber materials, fabric materials, textiles Mens' and ladies' heavy clothing and casual apparel Sportswear, children's wear, inner wear, uniforms and other apparel products
Industrial Textiles & Materials	<div>Industrial textiles and materials:</div> <div>Tire cords; V-belt-related materials and fabrics; reinforced fibers for hoses; seatbelts and airbag textiles; others</div> <div>Industrial fabrics:</div> <div>Materials for civil engineering, construction and agriculture- and fisheries-related applications; tent and heavy industrial fabrics; materials for household applications; materials for felt: nonwoven fabrics; high-performance woven fabrics; others</div> <div>Automotive fabrics:</div> <div>Automotive interior materials; automotive products; others</div> <div>Living materials:</div> <div>Curtains, wall coverings and flooring materials; bedding fabrics; high-performance household products; healthcare products; others</div> <div>Plastics products:</div> <div>Synthetic resins; plastic films; plastic sheets; artificial leather; packing materials; others</div> <div>Equipment:</div> <div>Clean room equipment: industrial machinery and devices; others</div>

◆ **Sales configuration**

● **Polyester fibers**



Healthcare segment

◆ Subsidiaries and affiliates

Company	Location		Business field	Equity held by the Group
1. Teijin Limited, healthcare business	Japan	Tokyo	Promotion of new business in the Healthcare Business Field	— %
2. Teijin Pharma Limited	Japan	Tokyo	Research and manufacture of pharmaceuticals and durable medical equipment (DME), etc.	100 %
3. Teijin Healthcare Limited	Japan	Tokyo	Provision of information and sales / rental of pharmaceuticals and DME, provider of DME for home healthcare	100 %
4. Teijin Visiting Nurse Station Ltd.	Japan	Tokyo	Visiting nurse business	100 %
5. Teijin America, Inc.	The U.S.	California	Clinical development of new drugs, information gathering and business development control in the U.S.	100 %
6. Esteve Teijin Healthcare S.L.	Spain	Catalunya	Provider of DME for home healthcare	50 %
7. Yuyu Teijin Medicare Inc.	ROK	Seoul	Provider of DME for home healthcare	50 %

Note: Equity held by the Group (as of the end of March 2024) includes equity held directly and indirectly by Teijin Limited.

◆ Business history

● Pharmaceuticals

1968. 5	Studies began at the Future Business Division
1973. 8	Teijin Fher Medical Co., Ltd., jointly established with Germany's Boehringer Ingelheim
1974. 7	Established the Teijin Institute for Bio-Medical Research (Hino, Tokyo)
1974.10	Development partnership formed with The Chemo-Sero-Therapeutic Research Institute
1978. 3	Established Teijin Pharmaceutical Co., Ltd. (dissolved Teijin Fher Medical)
1978. 5	Started marketing alliance with Fujisawa Pharmaceutical Co., Ltd.
1980. 2	Started marketing <i>Venilon</i> (freeze-dried sulfonated human immunoglobulin), and <i>Laxoberon</i> (laxative)
1981. 1	Started marketing <i>Onealfa</i> (activated vitamin D3)
1983.10	Teijin Pharmaceutical absorbed by Teijin
1984. 3	Started marketing <i>Mucosolvan</i> (expectorant)
1994. 2	Opened New Pharmaceutical Research Center
1996.10	Started independent sales of drugs in Japan
2000. 5	Established clinical development base within Teijin America Inc. in New Jersey (currently California), the U.S.
2001. 8	Started marketing <i>Bonalon</i> , treatment for osteoporosis
2003.10	Spun off Teijin's pharmaceutical and medical business as a separate company named Teijin Pharma Limited following the introduction of the holding company system
2009. 3	Commenced sales of hyperuricemia and gout treatment febuxostat in the United States under the name <i>ULORIC</i> (febuxostat) in the U.S.
2010. 3	Commenced sales of hyperuricemia and gout treatment <i>ADENURIC</i> (febuxostat) in Europe
2011. 5	Commenced sales of hyperuricemia and gout treatment <i>Feburic</i> (febuxostat) in Japan
2012. 5	Launched <i>Bonalon</i> ^{*1} , Japan's first intravenous drip-form treatment for osteoporosis
2013. 1	Commenced sales of <i>Somatuline</i> ^{*2} subcutaneous, for the treatment of acromegaly and pituitary gigantism, in Japan
2013. 3	Launched <i>Bonalon</i> ^{*1} , world's first drug for osteoporosis in jelly form
2013. 7	Concluded a collaborative research contract and an R&D, production and marketing option agreement with Amgen Inc., U.S. for novel treatments for autoimmune diseases
2015. 7	Commenced sales of <i>Mucosolvan</i> , a sustained-release expectorant
2015. 9	Agreed with PeptiDream Inc. to jointly research and develop macrocyclic and constrained peptides
2015.10	Started operation of the Technology Integrated Pharmaceuticals Center at the Iwakuni Plant
2016. 1	Launched <i>LOQOA</i> ^{*3} , a transdermal anti-inflammatory analgesic patch formulation
2017. 5	Entered into an exclusive worldwide license agreement with Merck & Co., Inc., U.S. for the development, manufacture and commercialization of an investigational antibody candidate for a possible new treatment of Alzheimer's disease

Fundamental information Healthcare segment

2019.5	Teijin Pharma Launches <i>Revcovi</i> ^{*4} , Japan's first drug for ADA deficiency
2019.10	Reorganized from a two-business headquarters system consisting of a pharmaceutical business unit and a home healthcare business unit to a functional headquarters system consisting of a "Marketing&Sales Unit" and a "Research, Development & Technology Unit". Information provision activities for pharmaceutical products have been transferred to Teijin Home Healthcare Ltd, which has traditionally handled sales and services of Home Healthcare equipment
2020.4	Teijin Home Healthcare Ltd. changed its name to Teijin Healthcare Ltd.
2020.12	Started sales of <i>Xeomin</i> ^{*5} , a botulinum toxin type A
2020.12	Teijin Pharma Limited and TransThera Biosciences Co. Ltd. have entered into a strategic collaboration agreement for joint research and development of the innovative drugs
2021.2	Execution of asset transfer agreement for Transfer of Japan sales, intellectual properties, and manufacturing and marketing approval of Type 2 diabetes treatments (<i>Nesina, Liovel, Inisync, and Zafatek</i>)
2021.10	Changed the system from 12 branches and 75 sales offices to 18 branches and 129 sales offices with the aim of providing community-based medical services
2022.2	An investigational antibody candidate for a possible new treatment of Alzheimer's disease created by Teijin Pharma and developed by Merck & Co., Inc., U.S. entered clinical development
2023. 1	Commenced sales of <i>Ostavallo</i> , osteoporosis treatment drug
2023. 11	Entered into a licensing agreement with Ascendis Pharma, A/S, Denmark, for the research, development, manufacture and commercialization in Japan related to the three hormone therapy drugs for rare endocrine diseases
2024. 4	Entered into an exclusive worldwide license agreement with Bioprojet, France, for the development, manufacture and commercialization of investigational candidate for narcolepsy
2024.4	Established Axcelead Tokyo West Partners, Inc., a joint venture company related to drug discovery support service with Axcelead, Inc.

*1. *Bonalon* is the registered trademark of N.V.Organon, The Netherlands.

*2. *Somatuline* is the registered trademark of Ipsen Pharma, Paris, France.

*3. *LOQOA* is a registered trademark of Taisho Pharmaceutical Co., Ltd.

*4. *Revcovi* is the registered trademark of Leadiant Biosciences Ltd., the United Kingdom

*5. *Xeomin* is the registered trademark of Merz Pharma GmbH & Co. KGaA, Germany

Fundamental information Healthcare segment

● Home healthcare (including Comprehensive community-based healthcare)

1971. -	Research started on oxygen enrichment membranes at Teijin Limited
1982.10	Started Home Oxygen Therapy (HOT) business
1982.11	Established the Iwakuni Medical Factory
1985. 3	Health insurance coverage introduced for HOT
1993. 4	Established a sales company (six sales companies were established through 1997).
1997. 4	Established the Bio-medical Engineering Laboratories
1998. 1	Started Noninvasive Positive Pressure Ventilator (NPPV) business
1998. 6	Launched the SAFHS business (SAFHS: an ultrasound device for the accelerated healing of certain fractures)
1999.10	Established visiting nurse station in Osaka, eight nationwide currently
2000. 6	Launched the CPAP respirator business (continuous positive airway pressure (CPAP) respirator for the treatment of sleep apnea syndrome (SAS))
2005. 3	Fujisawa Pharmaceutical Co., Ltd. (currently Astellas Pharma Inc.) agreed on business consignment of Home Healthcare business
2006. 4	Six companies merge and restart operations as Teijin Home Healthcare Limited
2006.10	Established Yuyu Teijin Medicare Inc., a joint venture with Yuyu Inc. of the ROK
2008. 1	Acquired New York-based home health care services firm Associated Healthcare Systems Inc., which became a wholly owned subsidiary
2008. 6	Acquired Braden Partners L.P., a leading U.S. provider of home oxygen and respiratory therapy medications and equipment, making the company a wholly owned subsidiary
2009. 2	Established Esteve Teijin Healthcare S.L.—a joint venture with leading Spanish pharmaceuticals manufacturer Laboratorios del Dr.Esteve S.A.—to oversee HOT business in Europe
2010. 7	Commenced rentals of <i>Hi-Sanso 7R</i> , an energy-efficient home-use therapeutic oxygen concentrator featuring a system that monitors operating conditions and detects anomalies around the clock
2012. 3	Commenced rentals of <i>NIP NASAL</i> , a general-purpose bilevel noninvasive positive pressure ventilator (NPPV)
2012. 4	Launched <i>NemLink</i> , Japan's first monitoring system that uses mobile phone networks
2013. 1	Commenced rentals of <i>Hi-Sanso Portable</i> , a portable oxygen concentrator
2013. 4	Commenced rentals of <i>WalkAide</i> , a neuromuscular electrical stimulation device for treatment of gait impairment
2014. 6	Commenced rentals of <i>Sanso Saver</i> , a respiration-synchronized demand valve device, and <i>Hi-Sanso</i> , a therapeutic oxygen concentrator for HOT, which help resolve concerns and inconvenience for patients in the event of a major disaster or power failure
2015. 2	Commenced rentals of <i>AutoSet CS-A Type T</i> mask-type bilevel positive pressure ventilators
2015. 9	Commenced sales of <i>VitalLink</i> , a patient information sharing system
2016. 1	Commenced rentals of <i>SLEEPMATE 10</i> , a state-of-the-art device for the treatment of sleep apnea syndrome (SAS)
2016.11	Commenced sales of <i>ReoGo</i> , a portable robotic arm that supports the rehabilitation of paralyzed upper limbs due to stroke
2017. 4	Withdrew from the U.S. home healthcare business by selling Teijin Limited's entire equity interest in Braden Partners, L.P. and Associated
2019. 6	Launched <i>Neurostar</i> , a magnetic stimulator for transcranial treatment of depression
2019.10	Reorganized from a two-business headquarters system consisting of a pharmaceutical business unit and a home healthcare business unit to a functional headquarters system consisting of a "Marketing&Sales Unit" and a "Research, Development & Technology Unit". Information provision activities for pharmaceutical products have been transferred to Teijin Home Healthcare Ltd, which has traditionally handled sales and services of Home Healthcare equipment.
2019.12	Started rental of the latest oxygen concentrator <i>Hi-Sanso i</i> that supports a wide range of flow rates from low to high flow rates.
2020.4	Teijin Home Healthcare Ltd. changed its name to Teijin Healthcare Ltd.
2020.10	Established Teijin Visiting Nursing Station Ltd. for full-scale development of home-visit nursing business
2021. 9	Commenced NsPace, a web media for visiting nurses
2021.10	Changed the system from 12 branches and 75 sales offices to 18 branches and 129 sales offices with the aim of providing community-based medical services.
2022.10	Acquired 3Sunny Co., Ltd., a company that provides hospital admission and discharge coordination support services, making the company a wholly owned subsidiary
2023. 7	Commenced rentals of <i>Hi-Sanso Portable α III</i> , the new compact and lightweight portable oxygen concentrator
2024. 5	Entered into an agreement with JMS Co., Ltd. to establish a joint venture specializing in home renal failure treatment, primarily peritoneal dialysis

◆ Business network

Sales network	Location		Number of regional offices
1. Hokkaido Branch	Sapporo	Hokkaido	4
2. Tohoku Branch	Sendai	Miyagi	8
3. North Kanto Branch	Takasaki	Gunma	6
4. Koshinetsu Branch	Niigata	Niigata	5
5. Saitama Branch	Saitama	Saitama	5
6. Chiba Branch	Chiba	Chiba	5
7. First Tokyo Branch	Bunkyo	Tokyo	7
8. Second Tokyo Branch	Bunkyo	Tokyo	7
9. Kanagawa Branch	Yokohama	Kanagawa	8
10. First Tokai Branch	Nagoya	Aichi	5
11. Second Tokai Branch	Nagoya	Aichi	8
12. Kyoto-Shiga and Hokuriku Branch	Kyoto	Kyoto	8
13. First Kansai Branch	Osaka	Osaka	10
14. Second Kansai Branch	Osaka	Osaka	9
15. Chugoku Branch	Hiroshima	Hiroshima	9
16. Shikoku Branch	Matsuyama	Ehime	5
17. First Kyusyu Branch	Fukuoka	Fukuoka	9
18. Second Kyusyu Branch	Kumamoto	Kumamoto	6
Total			124

Distribution centers	Location	
1. Tokyo Distribution Center	Yashio	Saitama
2. Osaka Distribution Center	Ibaraki	Osaka

Visiting Nurse Station	Location	
1. Bouseidai Visiting Nurse Station Atsugi	Atsugi	Kanagawa
2. Teijin Visiting Nurse Station Yamato	Yamato	Kanagawa
3. Izumi Visiting Nurse Station	Nagoya	Aichi
4. Kishi Visiting Nurse Station	Tondabayashi	Osaka
5. Teijin Visiting Nurse Station Sakai	Sakai	Osaka
6. Noboricho Visiting Nurse Station	Hiroshima	Hiroshima
7. Teijin Visiting Nurse Station Furue	Hiroshima	Hiroshima
8. Hakata Mizuho Visiting Nurse Station	Fukuoka	Fukuoka

Service center	Location	
Technical Service Center	Anpachi	Gifu

◆ Manufacturing base

Company	Location	
Teijin Pharma Limited	Japan	Iwakuni, Yamaguchi
Teijin Medical Device (Shanghai) Ltd.	China	Shanghai

◆ R&D sites

Company	Location	
Teijin Pharma Limited	Japan	Hino, Tokyo
	Japan	Iwakuni, Yamaguchi
Teijin America, Inc.	The U.S.	Marin, California

◆ Sales of principal pharmaceuticals products

Billions of yen

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
<i>Feburic</i>	5.5	11.4	15.5	21.3	26.5	30.7	35.8	38.6	35.6	38.8	14.5	7.4
<i>Nesina</i>	-	-	-	-	-	-	-	-	-	13.1	12.2	11.1
<i>Inisync</i>	-	-	-	-	-	-	-	-	-	7.9	7.4	6.9
<i>Liovel</i>	-	-	-	-	-	-	-	-	-	4.1	3.4	2.8
<i>Zafatek</i>	-	-	-	-	-	-	-	-	-	2.5	1.7	2.0
<i>Bonalon</i> ^{*1}	15.9	14.2	12.9	12.9	11.6	10.9	10.0	9.4	8.3	7.8	6.9	6.3
<i>Somatuline</i> ^{*2}	0.1	0.6	1.1	1.5	1.7	2.5	3.7	4.7	5.2	5.4	5.7	6.1
<i>Venilon</i>	9.9	9.4	9.8	4.4	4.7	5.1	5.3	6.2	5.0	4.6	4.4	5.5
<i>Mucosalvan</i>	9.0	7.9	6.5	6.7	5.8	5.1	4.1	3.4	2.2	2.2	1.8	1.9
<i>LOQOA</i> ^{*3}	-	-	-	-	1.0	1.8	2.0	2.1	2.1	2.0	1.8	1.8
<i>Onealfa</i>	7.9	6.6	5.4	4.9	3.7	3.1	1.7	1.5	1.0	1.1	0.8	0.6
<i>Xeomin</i> ^{*4}	-	-	-	-	-	-	-	-	0.0	1.0	1.8	2.0
<i>Revcovi</i> ^{*5}	-	-	-	-	-	-	-	0.3	0.4	0.4	0.4	0.6
<i>Ostavalo</i>	-	-	-	-	-	-	-	-	-	-	0.0	1.1
<i>Alvesco</i>	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.2	1.1	0.9	0.9	0.8
<i>Laxoberon</i>	4.0	3.6	2.9	2.5	2.0	1.7	1.3	1.1	0.8	0.8	0.7	0.6
<i>Bonalfa</i>	1.4	1.3	1.1	0.9	0.8	0.6	0.5	0.4	0.4	0.3	0.3	0.3
<i>Spiropent</i>	0.9	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2

*1. *Bonalon* is the registered trademark of NV Organon, The Netherlands.*2. *Somatuline* is the registered trademark of Ipsen Pharma, Paris, France.*3. *LOQOA* is a registered trademark of Taisho Pharmaceutical Co., Ltd.*4. *Xeomin* is the registered trademark of Merz Pharma GmbH & Co. KGaA, Germany*5. *Revcovi* is the registered trademark of Leadiant Biosciences Ltd., the United Kingdom

◆ Principal Pharmaceuticals in Current Portfolio

Therapeutic Area	Product	Indication	Medical Properties/Characteristics	Dosage Form	Remarks	Launch	Overseas Sales Area	Overseas Sales Company
Bone and joint disease	<i>Onealfa</i>	Osteoporosis	<ul style="list-style-type: none"> Active vitamin D3 preparation proven to improve bone metabolism and minimize the risk of fracture Easy-to-take small tablet also developed 	Oral (tablet, solution)	Developed in-house	1981	ROK China Pakistan Egypt, Yemen, Sudan, Iraq	Ilsung Pharmaceuticals Co., Ltd., SUZUKEN(SHENZHEN), PHARMACEUTICAL Co., LTD., Martin Dow Limited, Minapharm Pharmaceuticals
	<i>LOQOA</i> TM	a transdermal anti-inflammatory analgesic patch formulation	A patch formulation for the treatment of osteoarthritis inflammation and pain. The formulation contains the active ingredients S-flurbiprofen and mentha oil, demonstrating a powerful anti-inflammatory analgesic action by vigorously inhibiting COX activity. It is a NSAIDs patch formulation with heightened drug delivery to the affected tissues through modification of the base material to enhance transdermal absorption. Along with having the properties of plaster, the NSAIDs patch uses a support material that is elastic and has suitable adhesion properties, allowing the patch to continuously adhere to joints and other movable parts of the body and skin areas with hair.	Patch formulation	Licensed in from Taisho Pharmaceutical Co., Ltd., Japan	2016	-	-
	<i>Ostavalo</i>	Osteoporosis	A self-injection formulation indicated for osteoporosis, which has a high risk of fractures. The active ingredient is abaloparatide acetate, a polypeptide with a partially modified 34 amino acid sequence from the N-terminus of human parathyroid hormone-related protein. Abaloparatide acetate has the characteristic of selectively stimulating the RG type of parathyroid hormone type 1 receptor, which is involved in bone metabolism, and is a new bone formation promoting agent that has a more dominant bone formation effect than bone resorption effect. The drug is injected subcutaneously by the patient once a day using a special electric injector called the "Ostavalo Injector," and can be administered for up to 18 months	Aqueous injection (cartridge agent)	Licensed in from Ipsen Pharma SAS, France/Radius Health, Inc, U.S.	2023	-	-

Fundamental information Healthcare segment

Therapeutic Area	Product	Indication	Medical Properties/Characteristics	Dosage Form	Remarks	Launch	Overseas Sales Area	Overseas Sales Company
Bone and joint disease	<i>Xeomin</i> TM	Upper limb spasticity / lower limb spasticity treatment drug	A type A botulinum toxin injection that acts on peripheral cholinergic nerve endings, weakens the muscle strength of voluntary muscles by inhibiting the release of the neurotransmitter acetylcholine, and relieves muscle tone. Neutralizing antibody is produced by removing the complex protein from type A botulinum toxin produced by Clostridium botulinum by the purification technology developed by Meltz, and using only neurotoxin as the active ingredient. It is expected that the possibility of diminishing the effect will be reduced.	Injection	Licensed in from Merz Pharma GmbH & Co. KGaA, Germany	2020	-	-
Respiratory disease	<i>Mucosolvan</i>	Expectorant	<ul style="list-style-type: none"> Acts by stimulating the secretion of surfactants and other secretions in the respiratory tract, effectively facilitating expectoration of phlegm regardless of its properties Seven dosage forms available, including <i>Mucosolvan</i> Tablet and <i>Mucosolvan</i> L Tablet a sustained-release tablet (once-daily dosing). 	Oral (tablet, L tablet, L capsule, solution, pediatric syrup, dry syrup, pediatric dry syrup)	Licensed in from Sanofi S.A., France	1984	-	-
	<i>Alvesco</i>	Asthma	<ul style="list-style-type: none"> Japan's first once-daily steroid preparation for adults. Increased compliance is anticipated. An inhaled steroid that directly targets areas in the lung to be stimulated, this drug reduces side effects affecting the oropharynx. A new small-capacity standard that is easy for pediatric patients to use was launched in April 2011, further enhancing the convenience of taking medication. 	Aerosol spray	Licensed in from Covis Pharma GmbH, The Netherlands	2007	-	-

Fundamental information Healthcare segment

Therapeutic Area	Product	Indication	Medical Properties/Characteristics	Dosage Form	Remarks	Launch	Overseas Sales Area	Overseas Sales Company
Cardiovascular and metabolic disease	<i>Feburic</i>	Hyperuricemia and gout	A novel non-purine drug that inhibits synthesis of uric acid; taken once daily, it reduces serum uric acid levels to the target level and keeps it low; no adjustment of dosage is required for patients with mild to moderate renal impairment, thereby offering hope to a significantly broader group of patients.	Oral	Developed in-house	2011	North America Europe ROK Asia Middle East and North Africa Central and South America, CIS and Oceania Israel	Takeda Pharmaceuticals U.S.A., Inc./URL Pharma, Inc. Menarini Group/Ipsen Pharma SK Chemicals Astellas Pharma Inc. Algorithm SAL Menarini Group Neopharm
	<i>Somatuline</i> TM	Acromegaly and pituitary gigantism, thyroid-stimulating hormone-secreting pituitary adenoma, and gastroenteropancreatic neuroendocrine tumours	Suppresses the excessive secretion of growth hormones associated with acromegaly; pharmaceutical formulation facilitates sustained release and extended pharmaceutical action, while prefilled syringe format makes it more convenient than existing acromegaly drugs and thus more conducive to patient compliance.	Injection	Licensed in from Ipsen Pharma SAS, France	2013	-	-
	<i>Revcovi</i> TM	Therapeutic agent for adenosine deaminase deficiency	Intramuscular preparation of recombinant bovine ADA analog (PEG-rADA) derived from Escherichia coli chemically modified with polyethylene glycol. It is the first drug in Japan to be indicated for adenosine deaminase deficiency. This drug has been designated as an orphan drug by the Ministry of Health, Labor and Welfare.	Injection	Licensed in from Leadiant Biosciences Ltd., the United Kingdom	2019	-	-
	<i>Inisink</i>	Type 2 diabetes treatment	A combination drug of alogliptin benzoate, which is a dipeptidyl peptidase-4 (DPP-4) inhibitor, and metformin hydrochloride, which is a biguanide drug. By using alogliptin benzoate and metformin hydrochloride in combination tablets, it is expected that the number of doses and the number of drug tablets will be reduced from the combination therapy with each single agent, the adherence will be improved, and long-term glycemic control will be achieved.	Oral	Licensed in from Takeda Pharmaceutical Company Limited	2021 (Sales succession time)	-	-
	<i>Zafatec</i>	Type 2 diabetes treatment	Selective dipeptidyl peptidase-4 (DPP-4) inhibitor (trelagliptin succinate). It has a blood glucose-dependent insulin secretagogue action through an increase in glucagon-like peptide-1 (GLP-1) concentration. Good medication adherence can be expected by reducing the number of doses taken once a week.	Oral	Licensed in from Takeda Pharmaceutical Company Limited	2021 (Sales succession time)	-	-

Fundamental information Healthcare segment

Therapeutic Area	Product	Indication	Medical Properties/Characteristics	Dosage Form	Remarks	Launch	Overseas Sales Area	Overseas Sales Company
Cardiovascular and metabolic disease	<i>Nessina</i>	Type 2 diabetes treatment	Selective dipeptidyl peptidase-4 (DPP-4) inhibitor (alogliptin benzoate). It exhibits a hypoglycemic effect by suppressing the degradation of glucagon-like peptide-1 (GLP-1), which has the effect of promoting insulin secretion from the pancreas in a glucose concentration-dependent manner. It shows an excellent blood glucose improving effect when orally administered once a day.	Oral	Licensed in from Takeda Pharmaceutical Company Limited	2021 (Sales succession time)	-	-
	<i>Riobel</i>	Type 2 diabetes treatment	A combination drug of alogliptin benzoate, which is a dipeptidyl peptidase-4 (DPP-4) inhibitor, and pioglitazone hydrochloride, which is an insulin sensitizer. By combining alogliptin benzoate and pioglitazone hydrochloride into combination tablets, it is expected that the number of tablets to be taken will be reduced as compared with the combination therapy with each single agent.	Oral	Licensed in from Takeda Pharmaceutical Company Limited	2021 (Sales succession time)	-	-
Others	<i>Kenketsu Venilon-I</i>	Severe infection, Kawasaki disease; etc.	<ul style="list-style-type: none"> The intact intravenous immunoglobulin (IVIG) developed first in Japan using the unique domestic technology Manufactured from blood donated in Japan The only IVIG storable at the room temperature 	Injection	Joint development: KM Biologics Co., Ltd.	1980	-	-
	<i>Laxoberon</i>	Laxative, colonic evacuation	<ul style="list-style-type: none"> Relieves constipation by stimulating bowel movement and softening stool Solution enables adjustment of dose to suit patient; also appropriate for colonic evacuation prior to investigational procedures 	Oral (solution, tablet)	Licensed in from Sanofi S.A., France	1980	-	-

*1. *Bonalon* is the registered trademark of NV Organon, The Netherlands.

*2. *LOQQA* is a registered trademark of Taisho Pharmaceutical Co., Ltd.

*3. *Xeomin* is the registered trademark of Merz Pharma GmbH & Co. KGaA, Germany

*4. *Somatuline* is the registered trademark of Ipsen Pharma, Paris, France.

*5. *Revcovi* is the registered trademark of Leadiant Biosciences Ltd., the United Kingdom

◆ Pharmaceuticals Pipeline

Therapeutic Area	Product	Indication	Medical Properties/Characteristics	Dosage Form	Remarks	Stage
Bone and joint	TCK-276	Rheumatoid arthritis	A new class of oral therapeutic drug that have an anti-rheumatic effect by directly acting on synovial fibroblasts, which are the main cells of pannus hyperplasia characteristic of rheumatoid arthritis, and suppressing proliferation.	Oral	Developed in-house	Phase I
Others	NT 201S (Incobotulinum toxin A)	Chronic hypersalivation	The suppression of saliva secretion by the active component of type A1 botulinum toxin is expected to improve symptoms of chronic saliva flow outside the mouth.	Injection	Licensed in from Merz Pharma GmbH & Co. KGaA, Germany Under development as an expanded indication for <i>Xeomin</i>	Supplemental NDA submitted
Others	NT 201C (Incobotulinum toxin A)	Spasmodic torticollis	The muscle relaxation effect of the active component of type A1 botulinum toxin is expected to relieve abnormal muscle contractions in the neck and shoulder area.	Injection	Licensed in from Merz Pharma GmbH & Co. KGaA, Germany Under development as an expanded indication for <i>Xeomin</i>	Phase III
Others	NT 201B (Incobotulinum toxin A)	Blepharospasm	The muscle relaxation effect of active component of type A1 botulinum toxin is expected to alleviate the abnormal contraction of the muscles around the eyelid fissure that are involved in opening the eyelid.	Injection	Licensed in from Merz Pharma GmbH & Co. KGaA, Germany Under development as an expanded indication for <i>Xeomin</i>	Phase III
Bone and joint	ACP-015	Achondroplasia	By prolonging the action of C-type natriuretic peptide (CNP), the frequency of injections can be reduced to once a week and it is expected to reduce the burden of achondroplasia treatment in pediatric patients.	Injection	Licensed in from Ascendis Pharma, A/S, Denmark	Under preparation for Phase III
Others	ACP-014	Hypoparathyroidism	By prolonging the action of parathyroid hormone (PTH), it is expected the improvement of the physical and cognitive symptoms caused by hypoparathyroidism.	Injection	Licensed in from Ascendis Pharma, A/S, Denmark	Under preparation for the NDA
Others	ACP-011/ ACP-011A	Pediatric growth hormone deficiency/ Adult growth hormone deficiency	By prolonging the action of human growth hormone (hGH), it is expected the treatment of pediatric growth hormone deficiency and adult growth hormone deficiency by the injection once a week.	Injection	Licensed in from Ascendis Pharma, A/S, Denmark	Phase III / Phase III

◆ Principal home healthcare products

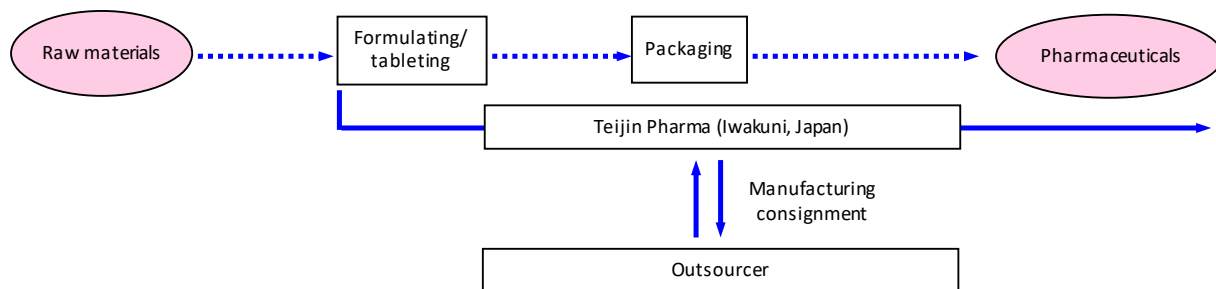
Area	Device	Properties	Products
Home oxygen therapy (HOT) devices	Therapeutic oxygen concentrators	Oxygen concentrators draw in air and concentrate the oxygen in the air from the normal level (21%) to 90% by adsorbing the nitrogen particles. Used by patients undergoing home oxygen therapy (HOT)	<i>Hi-Sanso</i> series <i>Mildsanso</i> series
	Oxygen demand valve devices	Prolongs the life of portable oxygen tanks used when undergoing outpatient treatment or partaking in other outside activities by synchronizing oxygen flow with the patients breathing so that oxygen is provided only when the patient inhales	<i>Sanso Saver</i> series
	Portable lightweight oxygen tanks	Oxygen tanks for during outside activities and during power failures	<i>Ultressa / Lite TEC</i> / oxygen tanks manufactured by the Luxfer Group
Noninvasive positive pressure ventilators	Mask-type bilevel positive pressure ventilators	Positive pressure ventilator that supports a breathing pattern similar to spontaneous respiration and automatically adjusts pressure to the patient's needs, making it suitable for those suffering from conditions that causes unstable breathing, including alveolar hypoventilation and hypopnea.	<i>AutoSet CS-A/Resmed AirCurve 10</i>
		Noninvasive positive pressure ventilator that delivers a continuous supply of oxygen through a mask to chronic respiratory failure patients suffering concurrently from hypoxemia and type II respiratory failure accompanying chronic accumulation of carbon dioxide in the blood.	<i>NIP NASAL</i> series
Sleep-disordered breathing related devices	Automatically adjusting CPAP ventilators	Sleep apnea syndrome (SAS) treatment device. A device that suppresses apnea by applying positive pressure to the airways through a mask to prevent airway obstruction. A device that automatically adjusts the insufflation pressure required for CPAP therapy.	<i>SLEEPMATE</i> series <i>Dream station</i> series
	Sleeping pattern analysis devices (Devices for recording and analyzing sleeping polygraph data)	A device that records sleep and breathing conditions using multiple sensors such as brain waves, eye movements, electrocardiograms, and breathing.	PSG-1100 NoxA1s System Sleep Profiler PSG2
	Sleeping pattern analysis devices (Portable device used in testing for sleep apnea)	A small, portable sleep apnea tester that records breathing conditions such as breathing and snoring during sleep.	SAS-2200
Ultrasound bone fracture treatment devices	Ultrasonic fracture treatment device	Fracture treatment device that promotes bone fusion by applying mechanical stimulation to the fracture site by the sound pressure of intermittent (pulse) ultrasonic waves.	<i>SAFHS</i> series
Depression treatment equipment	Magnetic stimulator for transcranial treatment	A device that non-invasively changes cortical and subcortical activity by inducing eddy currents with a pulsed magnetic field and stimulating cortical neurons.	<i>NeuroStar TMS</i> treatment device
Data management system (Supports remote monitoring)	CPAP data management system	A network system that centrally manages CPAP data and information required for SAS medical care and supports efficient CPAP medical care	<i>Nemlink</i>
	HOT data management system	A system for viewing data on the use of oxygen concentrators and SPO2 / pulse values measured with a pulse oximeter on the Web.	<i>HOT Mimamori-ban Web</i>
Comprehensive Community Healthcare System	Medical / long-term care multidisciplinary information sharing system	A system for sharing patient information among multiple occupations of medical care using personal computers, smartphones, and tablets.	<i>Vitalink</i>

Fundamental information Healthcare segment

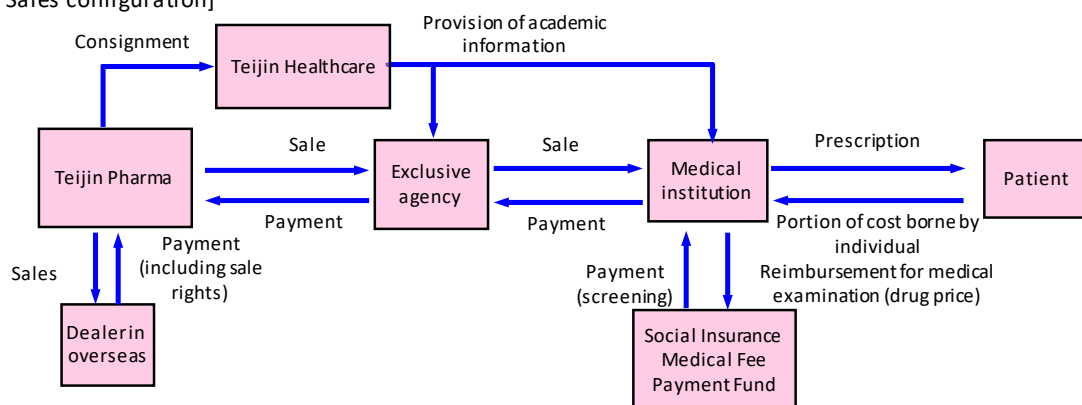
◆ Product line and Sales configuration

● Pharmaceuticals

[Product line]

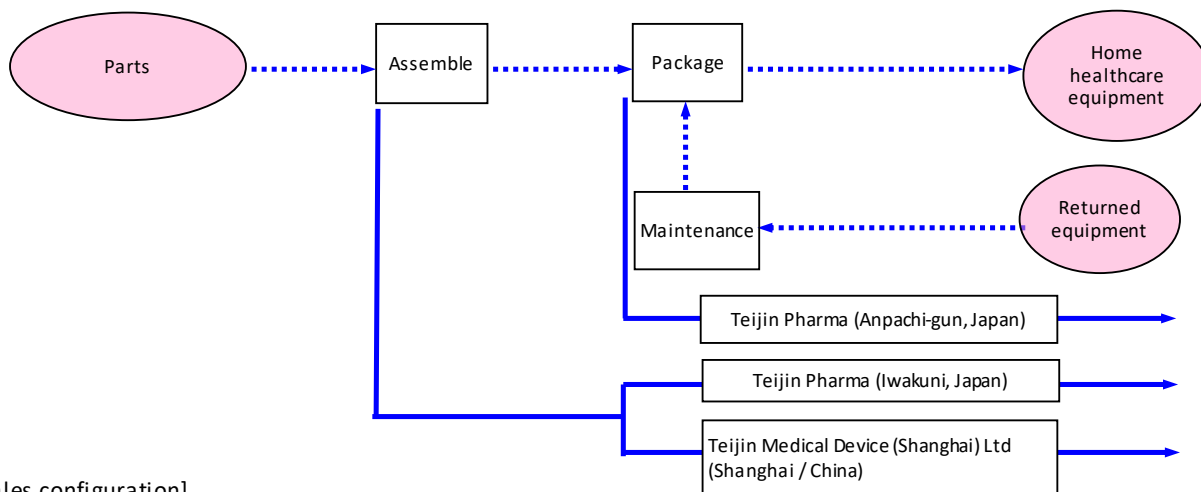


[Sales configuration]

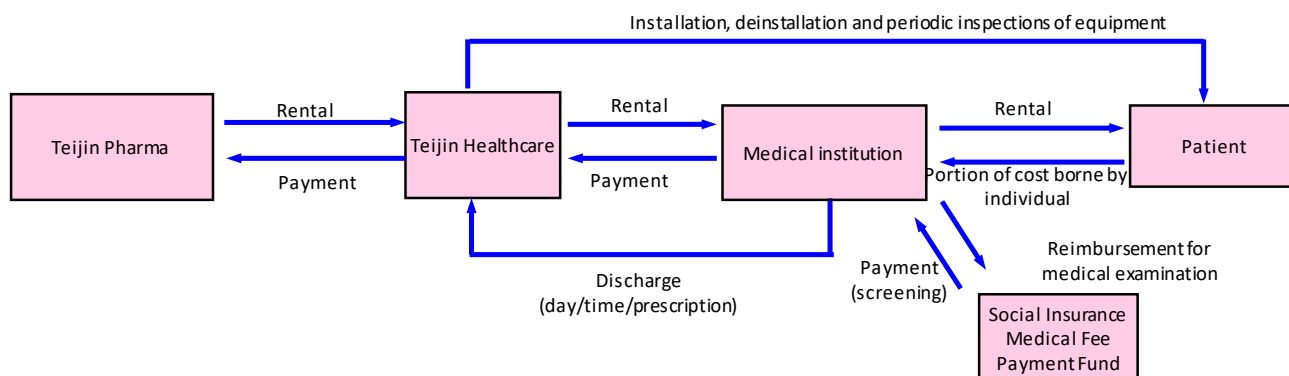


● Home healthcare

[Product line]



[Sales configuration]



Others segment New Business Development

◆ Subsidiaries and affiliates

(As of April 1, 2023)

Company	Location		Business field	Equity held by the Group
1. Teijin Limited	Japan	Tokyo	Planning, execution, and support of new business development strategies/plans	— %
2. Teijin Agency Corporation	Japan	Osaka	Planning and production of printed matter and promotional materials, advertising agency business, insurance agency business	100 %
3. Toho Chemical Engineering & Construction Co., Ltd.	Japan	Shizuoka	Engineering business such as environmental analysis, pollution prevention, manufacturing of environmental protection equipment, etc.	100 %
4. Toho Machinery Co., Ltd.	Japan	Tokushima	Design, manufacture and sale of various mechanical devices, etc.	100 %
5. Teijin Engineering Limited	Japan	Osaka	Machinery and engineering business	100 %
6. Teijin Eco-science Limited	Japan	Tokyo	Environmental assessment, analysis and measurement	100 %
7. Teijin Nakashima Medical Co., Ltd.	Japan	Okayama	Manufacture and sales of durable medical equipment	50 %
8. Teijin Medical Technologies Co., Ltd.	Japan	Osaka	Manufacture and sales of durable medical equipment	100 %
9. Japan Tissue Engineering Co., Ltd. *1	Japan	Aichi	Development, manufacturing, sales and contract of regenerative medicine products and related products	57.7 %
10. NOMON, Co., Ltd.	Japan	Tokyo	Sales of nutraceutical products and related businesses in general	100 %
11. Teijin Meguro Institute Co., Ltd.	Japan	Osaka	Manufacture, sales, and export of raw materials for pharmaceuticals, functional foods, feed and compositions, and contract cultivation	100 %
12. Teijin Lielsort Korea Co., Ltd.	ROK	Chungcheo ngnam-do	Manufacture and sales of separators for lithium-ion secondary batteries	100 %
13. RePEaT Co., Ltd.	Japan	Tokyo	Licensing of chemical recycling technology using polyester products as raw materials to domestic and overseas markets	45 %
14. Teijin Regenet Co., Ltd.	Japan	Tokyo	Project development consulting and design of product specification of cell & gene therapies including tissue-engineered products Contract development of manufacturing process Contract manufacturing of products for clinical research, clinical trials and commercial products	100 %

Note: Equity held by the Group (as of the end of March 2024) includes equity held directly and indirectly by Teijin Limited.

*1. Tokyo Stock Exchange Growth Listed Company <https://www.jppe.co.jp/en/>

◆ Business history

● Regenerative Medicine & Implantable Medical Device

2008. 4	Established Innovation Research Institute in Iwakuni Factory
2009. 7	Established the Integrative Technology Research Institute to combines exploratory research technologies
2010. 4	Established Innovative Medical material Project (IMM), which is charged with conducting research and commercializing medical materials
2015. 4	Established Teijin Nakashima Medical Co., Ltd., to expand joint prostheses
2017. 7	Established Teijin Medical Technologies Co., Ltd., to expand the bone-connecting material business
2017.10	Teijin Nakashima Medical Co., Ltd. acquired the spine business of Century Medical Co., Ltd.
2021. 3	Tender offer of common stock of Japan Tissue Engineering Co., Ltd. to make it a subsidiary
2022. 2	Teijin Nakashima Medical Co., Ltd. acquired the spine and trauma (fracture) business of Otsuka Group's KISCO Co., Ltd.
2022. 9	Established of regenerative medicine platform for creation of innovative treatments in Kashiwanoha, Chiba
2023. 3	Submitted for manufacturing and marketing approval of cardiovascular surgical patch
2023. 3	Strengthen the regenerative medicine CDMO business through an agreement to supply raw materials used in the development and manufacture of regenerative medicine products
2023. 4	Agreed with Japan Tissue Engineering Co., Ltd. to form an international business alliance with Resilience US, Inc. for regenerative medicine CDMO
2023. 7	Novel cardiovascular surgical patch <i>SYNFOLIUM</i> received manufacturing and marketing approval in Japan
2023. 8	Established Teijin Regenet Co., Ltd. to develop and expand of regenerative medicine CDMO business
2024. 2	Teijin Regenet Co., Ltd. commenced operation of Kashiwanoha Facility as a regenerative medicine CDMO business base
2024. 6	Teijin Medical Technologies Co., Ltd. commenced sales of cardiovascular surgical patch <i>SYNFOLIUM</i>

● Battery Materials & Membrane

2011.10	Established a lithium-ion battery (LiB) separator operating company in ROK (currently Teijin Lielsort Korea Co., Ltd.)
2012. 7	Began production of <i>LIELSORT</i> , a Teijin-developed LiB separator
2014.12	Commenced operation of a second production line for <i>LIELSORT</i> at Teijin Lielsort Korea Co., Ltd.
2015. 7	Expand in earnest <i>MIRAIM</i> , a high-performance membrane
2018. 2	Installed new facility for mass production of <i>MIRAIM</i>
2018. 2	Decided the commenced operation of a third production line for <i>LIELSORT</i> at Teijin Lielsort Korea Co., Ltd.
2019.11	Concluded a technical license agreement with Shanghai Energy Co., Ltd. for the manufacture of solvent-based coated separators used in in-vehicle lithium-ion secondary batteries
2020.12	Concluded a comprehensive license agreement with Shanghai Energy Co., Ltd. for the manufacture of solvent-based coated separators used in lithium-ion secondary batteries
2022. 3	Began initiatives to realize carbon neutrality in Teijin Lielsort Korea Co., Ltd.

● **Biolier & Nutraceutical**

2013. 1	Established the Alliance Promotion Department within the New Business Development Group to propose, search out and advance M&A activities and alliances worldwide in materials-related fields
2013. 1	Signed a strategic partnership agreement with InCube Labs LLC in the U.S.
2016. 7	Commenced sales of <i>BARLEYmax</i> , an enhanced barley product
2018. 8	Commenced sales of fermentable dietary fiber <i>INULIA</i>
2019. 5	Established NOMON, Co., Ltd., a sales company for nutraceutical products
2020. 1	Commenced sales of probiotic materials
2020. 9	Accepted notification of foods with function claims for products containing <i>INULIA</i>
2021. 3	Launched Japan's first food supplement with functional claims to improve vaginal health
2021. 7	Launched a new brand of good bacteria supplement <i>melito</i> . Commenced sales of lactic acid bacteria <i>UREX</i> ^{*1} , <i>LGG</i> ^{*1} and bifidobacteria <i>BB-12</i> ^{*2}
2022. 6	Commenced sales of <i>BARLEYmax</i> , an enhanced barley product, in Europe
2022.10	Established Teijin Meguro Research Institute Co., Ltd. as a base for the development and manufacturing of probiotic products in the functional food ingredients business
2024.3	Commenced sales of <i>ASTARTE</i> , an novel probiotics materials
2024.4	Teijin Meguro Institute Co., Ltd. commenced sales of products such as the lactic acid bacteria business of Amano Enzyme Co., Ltd., which concluded a business transfer agreement in December 2023.

*1. *UREX* and *LGG* are registered trademarks of Chr. Hansen Holding A/S (Denmark)

*2. *BB-12* and *ASTARTE* are trademarks of Chr. Hansen Holding A/S (Denmark)

● **Environmental Solution**

2018. 3	<i>AFRW</i> (Advanced Fiber Reinforced Wood) ^{*3} won the grand prize at the Japan Resilience Awards
2018. 9	Constructed the world's first building using <i>AFRW</i>
2019.11	Building using <i>AFRW</i> won Wood City TOKYO Model Architecture Award
2020.12	Launched a hybrid material of high-performance fibers and wood as <i>LIVELY WOOD</i> brand
2021. 1	Established European Sustainable Technology Innovation Center (ESTIC) in Arnhem, the Netherlands
2021. 2	Concluded a distribution agreement for the licensed sale of hydrogen fuel cells
2021. 9	Started developing the <i>LIVELY VILLA</i> brand of relocatable buildings made of a hybrid material of high-performance fiber and wood
2022.10	Conducted demonstration experiment using hydrogen fuel cells with Tokyu Construction Co., Ltd.
2022.12	Established a joint venture company (RePeaT Co., Ltd.) to license polyester chemical recycling technology
2023. 1	Started joint trials with Fujitsu Limited to enhance environmental value of recycled carbon fiber used in the manufacturing process of bicycle frames
2023. 2	RePeaT Co., Ltd. concluded license agreement regarding polyester chemical recycling technology with Zhejiang Jianxin Jiaren New Materials Co., Ltd.
2023. 3	Developed new fuel cell units and pressure vessel units
2023. 3	Developed the industry's thinnest class of gas diffusion layer, which contributes to the miniaturization and performance improvement of fuel cells
2023. 9	Selected for the NEDO Research and Development of Technologies to Promote Biomanufacturing Project: "Development of bio-upcycling technology to produce useful chemicals from unused raw materials"

*3. Laminated timber for wooden buildings using high-performance fibers

◆ **Production sites**

Company	Location	
Teijin Nakashima Medical Co., Ltd.	Japan	Okayama, Okayama
Teijin Medical Technologies Co., Ltd.	Japan	Himeji, Ehime Iwakuni, Yamaguchi
Japan Tissue Engineering Co., Ltd.	Japan	Gamagori, Aichi
Teijin Meguro Institute Co., Ltd.	Japan	Kasai, Hyogo
Teijin Limited	Japan	Matsuyama, Ehime
Teijin Lielsort Korea Co., Ltd.	ROK	Asan, Chungcheongnam-do
Teijin Regenet Co., Ltd.	Japan	Kashiwa, Chiba Iwakuni, Yamaguchi

◆ **R&D sites**

Company	Location	
Teijin Limited	Japan	Hino, Tokyo Iwakuni, Yamaguchi Matsuyama, Ehime
	The Netherlands	Arnhem, Gelderland
Teijin Nakashima Medical Co., Ltd.	Japan	Okayama, Okayama
Teijin Medical Technologies Co., Ltd.	Japan	Okayama, Okayama
Japan Tissue Engineering Co., Ltd.	Japan	Gamagori, Aichi

◆Characteristics of main products, Product line and Sales configuration

●Regenerative Medicine & Implantable Medical Device

[Characteristics of main products]

Model / Material	Insurance coverage	feature	Product lineup	Sales company
Joint prostheses	○	An artificial material used for the purpose of regaining the original function of a joint that has been deformed or destroyed due to osteoarthritis or rheumatoid arthritis. It is expected that the pain will be eliminated by replacing the deformed part with an artificial joint, which will lead to improvement of activity and quality of life in daily life. Joints commonly replace include knees, hips, shoulders, elbows, ankles and fingers etc.	[Hip joint] <i>UNIVERSIA, GS-Taper, VLIAN</i> [Knee joint] <i>Future Knee, FINE</i>	Teijin Nakashima Medical Co., Ltd.
Spinal fixation system	○	A medical device used for the purpose of reducing and fixing the spine to an appropriate shape after removing nerve compression for spinal diseases such as spondylolisthesis and herniated disc.	<i>Saccura, UNIOS PL spacer</i>	Teijin Nakashima Medical Co., Ltd.
Biodegradable and resorbable osteosynthesis material	○	A bioactive, high-strength biodegradable and resorbable osteosynthesis material consisting of a complex of poly-L-lactic acid and non-calcined hydroxyapatite (u-HA). Medical devices implanted in the body for bone fixation purposes, including screws, plates and intramedullary rods Used in a wide range of fields, including orthopedics, oral surgery, plastic surgery, neurosurgery, and thoracic surgery. Bioresorbable bone-connecting materials have the properties of being broken down and absorbed within the body, eliminating the need for secondary surgery to remove the material.	<i>Super Fixove EX, Super Fixove MX, Osteotrans Plus, Thread-tightening interference screw, GR Tuck Pin</i>	Teijin Medical Technologies Co., Ltd.
Synthesized cardiovascular surgical patch	○	A sheet with knitted fabric consisting of bio-absorbable (poly-L-lactic acid: PLLA threads) and non-absorbable (polyethylene terephthalate: PET threads) yarns coated with a cross-linked gelatin membrane. It is used in surgical operations for congenital heart disease to correct blood flow, secure blood flow channels, and construct and reconstruct surrounding tissue.	<i>SYNFOLIUM</i>	Teijin Medical Technologies Co., Ltd.

Please refer to the link below for an overview of products handled by Japan Tissue Engineering Co., Ltd.

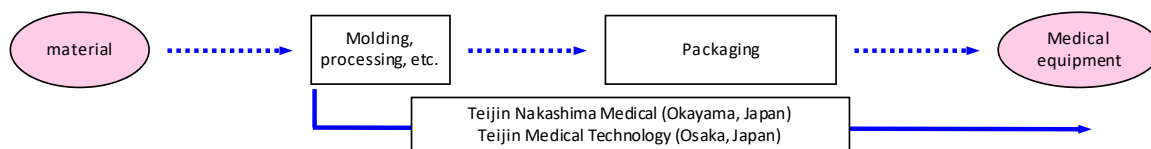
<https://www.jpte.co.jp/en/business/index.html>

Please refer to the link below for an overview of products handled by handled by Teijin Nakashima Medical Co., Ltd.

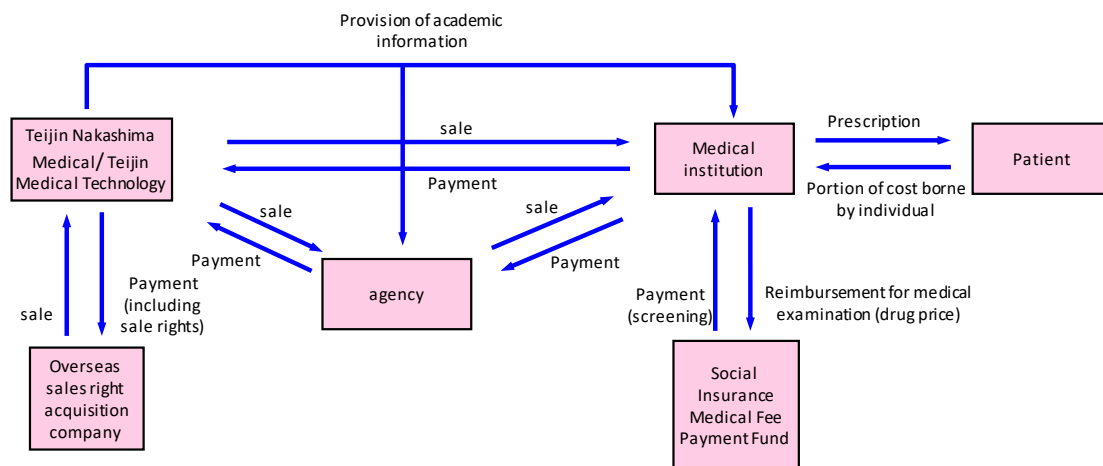
<https://www.teijin-nakashima.co.jp/en/product/implant/>

Fundamental information Others segment New Business Development

[Product line]



[Sales configuration]



● Battery Materials & Membrane

[Characteristics of main products]

1. LiB separator *LIELSORT*

Made from microporous polyethylene membranes sandwiched between layers of Teijin's porous aramid resin or fluorine compound and used to separate cathode and anode without hindering the movement of lithium ions between the electrodes, thereby enhancing battery safety and performance

Teijin used our expertise in polymeric chemistry acquired over a long period of time to develop the world's first technology for simultaneously coating both sides of a base separator. We also developed a high-speed coating technology that is five times faster than conventional coating. Our coating capabilities live up to customers' expectations.

Product type	Features	
Meta-aramid coating	High safety, long lifespan	LiB separator with meta-aramid materials coating is capable of maintaining its shape at temperatures up to 250 °C In spot heating test, does not break down even at 350 °C
Fluorine compound coating	High output, long lifespan	Fluorine compound coatings deliver superior adhesion to the polymer electrolyte and resistance to oxidation under high voltages

2. High-performance membrane (porous membrane) *MIRAIM*

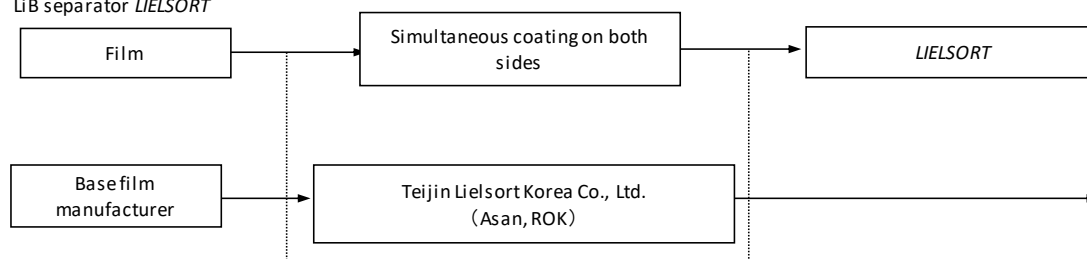
By combining the basic film-forming technology of extrusion and stretching with the molding know-how that Teijin has cultivated over many years, it has three characteristics: 1) high pore diameter accuracy, 2) precise film thickness control, and 3) high porosity.

Taking advantages of these properties, it can be used as a base material for filters that remove nano-level particles in the electronics and semiconductor fields, and in the energy field as electrolyte membranes for fuel cells and moisture-permeable waterproof membranes that exceed non-woven fabrics. Moreover, it demonstrates high performance in in vitro diagnostic reagent applications, virus removal and cell separation membranes, etc. in the life science field. It can be made hydrophilic by surface treatment (Water repellent treatment is also possible).

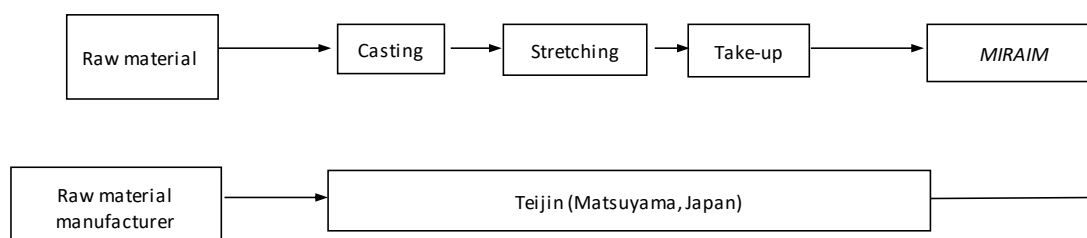
Product type	Features
Single layer membrane	A polyethylene membrane that features a uniform pore structure with no difference between the front and back sides.
Composite membrane	A value-added membrane made by laminating non-woven fabric to single-layer polyethylene. By laminating non-woven fabric, rigidity can be added to the membrane and it can act as a pre-filter.

[Product line]

1. LiB separator *LIELSORT*



2. High-performance membrane (porous membrane) *MIRAIM*



● **Biolier & Nutraceutical, Environmental Solution**

[Characteristics of main products]

Classification	Model / Material	feature	Product lineup	Sales company
Functional food material	Super barley	A barley developed by the Australian Federal Institute of Science and Industry, a superfood containing twice the total dietary fiber and four times the resistant starch (indigestible starch) compared to ordinary barley.	<i>BARLEYmax</i>	Teijin Limited
	Chicory-derived inulin	It is made by extracting from the roots of chicory, a plant of the Asteraceae family cultivated in the Netherlands. Due to its water-soluble nature, it is easy to use in beverages and foods, and it is possible to easily ingest dietary fiber, which is said to be in short supply by the Japanese.	<i>Inulia</i>	Teijin Limited
	Bifidobacterium	Bifidobacterium is the most frequently published paper and is being researched. It is acid-resistant and can reach the depths of the intestines alive, and it is also safe for powdered milk.	<i>BB-12</i> *1	Teijin Limited
	Lactic acid bacteria	Lactic acid bacteria for women focusing on the support of vaginal flora. Two types of lactic acid bacteria are mixed in a well-balanced manner, reaching the depths of the intestines and staying for a long time.	<i>UREX</i> *2	Teijin Limited
		It is one of the few varieties that is acid resistant and can reach the depths of the intestines alive. It is characterized by a high adhesion rate due to having special cilia, and can be used safely by infants and the elderly.	<i>LGG</i> *2	Teijin Limited
		A probiotic material made from a blend of four live strains of lactic acid bacteria. It supports the maintenance of a healthy vaginal flora.	<i>ASTARTE</i> *1	Teijin Limited
	Nicotinamide mononucleotide (NMN)	Originally produced naturally in humans and living organisms, it is a substance necessary to generate the energy of cells that are essential for all human activities, and is expected to have the effect of delaying the aging phenomenon.	<i>Nadaltas</i>	NOMON, Co., Ltd.
	Wasabi Sulforaphane (6-MSITC)	Judgment (ability to process information accurately) and attention, which are a part of cognitive function, are the main health ingredients contained in a small amount of wasabi's rhizome from which the pungent ingredient peculiar to wasabi has been removed. It is a nutritional material that can suppress the generation of active enzymes by improving the performance and high antioxidant activity.	<i>WASAbis</i>	NOMON, Co., Ltd.

*1. *BB-12* and *ASTARTE* are trademarks of Chr. Hansen Holding A/S (Denmark)

*2. *UREX* and *LGG* are registered trademarks of Chr. Hansen Holding A/S (Denmark)

Please refer to the link below for an overview of products handled by Teijin Meguro Institute Co., Ltd

<https://www.meguro-kenkyujo.co.jp/en/>