MATERIALS INNOVATION

PLANT OUTLINE
Outline of JSR

Sustainable growth by providing indispensable materials to society

JSR Corporation (formerly ‘Japan Synthetic Rubber Co., Ltd.’) was established in 1957 for domestic production of synthetic rubbers. Since then, JSR has continuously expanded its business to emulsions, plastics and other materials for the semiconductor, flat panel display, and optical materials fields by leveraging our proprietary polymer technologies. The development of these advanced materials for the information and electronics fields have served as a gateway to innovative changes to the company’s business structure. In the new mid-term business plan “JSR2019” started from April 2017, we assume “Strengthening Competitiveness for the future” a mission. We place SSBR, semiconductor materials and Life Sciences Business with earnings drivers and will expand the profit. Also we work on labor productivity improvement through working on digitalization and will strengthen the competitiveness. JSR Group’s Corporate Mission is “Materials Innovation: We create value through materials to enrich society, people and the environment”. We will pursue the possibilities that materials represent, creating value that will make the world around us a better place to live and work.”

* "JSR2019” (twenty-nineteen) emphasizes the “Innovation” to realize Materials Innovation, which is the heart of our corporate mission.

Connection between Petrochemical Complex and JSR

Crude Oil is refined at the petroleum refining companies, and it becomes petroleum products such as naphtha, kerosene, light oil, heavy oil, LPG (Liquefied Petroleum Gas), etc. Naphtha is a mixture of various hydrocarbons and this becomes starting material for the petrochemical industry. In case thermal cracking is conducted on the naphtha at high temperature, it will be cracked into ethylene propylene C4 fraction, C5 fraction and cracked oil. These chemicals are referred to as the building blocks of the petrochemical industry, and using these chemicals as the raw materials, all sorts of derivatives are produced. JSR receives supplies of ethylene, propylene, styrene, acrylic, C, fraction, and produce various products from these raw materials.

Activities for Environment and Safety

As a company that stresses corporate social responsibility (CSR), JSR Corporation takes an active stance with respect to the environment and safety. In recent years, we have been expected to create benefits for both society and the company and to contribute to the realization of a sustainable global environment and society. Thus, since 1995, we have been promoting independent and self-managed activities designed to proactively conserve the global environment and to maintain and improve safety, and health as part of our Responsible Care program. At the same time, we are endeavoring to develop business establishments that earn even greater trust by building communication with local communities and petrochemical complexes through various activities. We will remain focused on realizing a sustainable global environment and society by continuously improving these initiatives.

Capacity

(As of April 1, 2018, Unit: tons / year)

<table>
<thead>
<tr>
<th>Products</th>
<th>Yokkaichi plant</th>
<th>Chiba plant</th>
<th>Kashima plant</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBR (including NBR, HSBR)</td>
<td>250,000</td>
<td></td>
<td></td>
<td></td>
<td>250,000</td>
</tr>
<tr>
<td>Latex</td>
<td>120,000</td>
<td></td>
<td></td>
<td></td>
<td>120,000</td>
</tr>
<tr>
<td>BR</td>
<td>72,000</td>
<td></td>
<td></td>
<td></td>
<td>72,000</td>
</tr>
<tr>
<td>Solution SBR, Hydrogenated Polymer</td>
<td>70,000</td>
<td>100,000 (Thailand)</td>
<td></td>
<td></td>
<td>170,000</td>
</tr>
<tr>
<td>IR</td>
<td>41,000</td>
<td></td>
<td></td>
<td></td>
<td>41,000</td>
</tr>
<tr>
<td>EP</td>
<td>36,000</td>
<td></td>
<td></td>
<td></td>
<td>220,000 (Korea)</td>
</tr>
<tr>
<td>RR</td>
<td>80,000</td>
<td></td>
<td></td>
<td></td>
<td>98,000</td>
</tr>
<tr>
<td>BR</td>
<td>24,000</td>
<td></td>
<td></td>
<td></td>
<td>24,000</td>
</tr>
<tr>
<td>ABS resin, AS resin</td>
<td>250,000</td>
<td></td>
<td>150,000 (Ube, Okazaki)</td>
<td></td>
<td>400,000</td>
</tr>
<tr>
<td>ACRYLON</td>
<td>5,000</td>
<td></td>
<td></td>
<td></td>
<td>5,000</td>
</tr>
<tr>
<td>Butadiene</td>
<td>148,000</td>
<td>130,000</td>
<td>120,000</td>
<td></td>
<td>398,000</td>
</tr>
<tr>
<td>Isoprene</td>
<td>36,000</td>
<td></td>
<td></td>
<td></td>
<td>36,000</td>
</tr>
<tr>
<td>WSP</td>
<td>1,200</td>
<td></td>
<td></td>
<td></td>
<td>1,200</td>
</tr>
</tbody>
</table>

Notes: *1 JSR BST Elastomer Co., Ltd.  *2 Kumho Polychem Co., Ltd.  *3 Japan Butyl Co., Ltd.  *4 Techno-UMG Co., Ltd.
Major Products and Applications

**Plastics Business**

**AUTOMOBILES**

- **ABS Resin**
  1. **Blow Grade**
     - **Heat and Flame resistant Grade**
     - **Alloy Grade**

- **Plating and Painting Grade**

**Digital Solutions Business**

- **SEMICONDUCTORS**
  - **Lithography Materials**
  - **Process Materials**
  - **Advanced Packaging Materials**
  - **Photosensitive Spacers**
  - **Protective Coating**

**Life Sciences Business**

- **Amsphere™ A3**
- **ExoCap™**
- **Magnosphere™**

---

**Elastomers Business**

**TIRES**

- **SSBR Series**
  1. **NBR (Natural Rubber)**
  2. **IR (Isoprene Rubber)**
  3. **BR (Polybutadiene Rubber)**

- **SBR Series**

**AUTOMOBILES**

- **EP (Ethylene Propylene Rubber)**
  1. **NBR (Nitrile Rubber)**

**OTHERS**

- **RB (Random 1,3-polybutadiene)**
  1. **TR (Styrene Butadiene Thermostatic Elastomer)**
  2. **DYNARON™ (Hydrogenated Polyisoprene)**
  3. **SIS (Styrene Isoprene Thermostatic Elastomer)**

**Paper Coating Latex**

** Binders for Batteries**

---

**ESBR (Ethynyl-Propylene Styrene-butadiene Rubber)**

**Process Materials**

- **Cyclo-Polymerization**
  1. **Rubber**
  2. **Elastomers**

**Lithography Materials**

**Process Materials**

**Advanced Packaging Materials**

**Photosensitive Spacers**

**Protective Coating**

---

**Plaster**

**Acrylic Emulsions**

**Binder for Batteries**

**ARTON™**

---

**Digital Solutions Business**

**FLAT PANEL DISPLAYS**

**Retardation Films**

**Color Pigmented Resists**

**Protective Coating**

**Life Sciences Business**

**Amsphere™ A3**

**ExoCap™**

**Magnosphere™**

---

**Digital Solutions Business**

**SEMICONDUCTORS**

**Lithography Materials**

**Process Materials**

**Advanced Packaging Materials**

**Photosensitive Spacers**

**Protective Coating**
Isoprene
Isoprene is produced as a byproduct of C5 at the ethylene plant. Isoprene is isolated from the C5 fraction by distillation using a polar aprotic solvent, from which it is then stripped by distillation. It is an important industrial chemical used as a monomer for the production of synthetic rubbers.

Butadiene
Butadiene is produced as a byproduct of C4 at the ethylene plant. Butadiene is isolated from the C4 fraction by distillation using a polar aprotic solvent, from which it is then stripped by distillation. It is an important industrial chemical used as a monomer for the production of synthetic rubbers.

BR (Polybutadiene Rubber)
Base material is butadiene. Solvent is added to butadiene and organic metal compound is used as catalyst for solution polymerization. Polymerization takes place in a polymerization solution in which some fraction of butadiene is polymerized, while the rest of the butadiene is collected from the polymer solution. Rubber is washed, dried, measured and readied for packing.

IR (Isoprene Rubber)
Base material is isoprene. Solvent is added and organic metal compound is used as catalyst for solution polymerization. Polymerization takes place in a polymerization solution in which some fraction of isoprene is polymerized, while the rest of the isoprene is collected from the polymer solution. Rubber is washed, dried, measured and readied for packing.

EP (ethylene propylene rubber)
Base material is ethylene and propylene. Solvent is added and organic metal compound is used as catalyst for solution polymerization. Polymerization is carried out in a polymerization solution in which some fraction of butadiene is polymerized, while the rest of the butadiene is collected from the polymer solution. Rubber is washed, dried, measured and packed for delivery.

ESBR (Ethylene Propylene Styrene Butadiene Rubber)
Base material is ethylene, propylene, styrene and butadiene. Solvent is added and polymerized with a certain monomer for solution polymerization. Polymerization takes place in a polymerization solution in which some fraction of butadiene is polymerized, while the rest of the butadiene is collected from the polymer solution. Rubber is washed, dried, measured and packed for delivery.

SSBR (Styrene Butadiene Rubber)
Base material is styrene, butadiene and other monomers. Solvent is added and polymerized with a certain monomer for solution polymerization. Polymerization takes place in a polymerization solution in which some fraction of butadiene is polymerized, while the rest of the butadiene is collected from the polymer solution. Rubber is washed, dried, measured and packed for delivery.

WSP (water soluble polymer)
WSP is made by isoprene. Isoprene is sulfurated by anhydrous sulfuric acid, and then hydrolyzed and deoxidized, it is copolymerized with various monomers.

Digital Solutions Products

Color Pigmented Resin (Display Materials)
Acrylic resins, crosslinker agents, photo sensitizers and solvents which are designed to achieve desired performance properties are added to solvents and additives. Then it is filtered and filled in the bottles under clean environment.

Photore sist for semiconductor manufacturing (Semiconductor Materials)
Polymer and glass substrates (PSG) which are designed for wafer edge (highly precise) are added to solvents and additives. Then it is filtered and filled in the bottles under clean environment.
The Yokkaichi Plant is a Japan’s first full-scale styrene-butadiene rubber (SBR) production center. It was constructed in 1960 as part of the Yokkaichi Petrochemical Complex. It is based on a JSR design that incorporated the most advanced technologies available at the time from Esso, Houdry, and Goodyear of the United States. In addition to SBR, the plant began manufacturing nitrile rubber (NBR) in 1964 and polybutadiene rubber (BR) in 1965. It also entered the latex and synthetic resins sectors using polymerization know-how gained through synthetic rubber manufacturing, beginning production of paper coating latex (PCL) in 1963 and ABS resin in 1964. JSR’s Synthetic Resins business is currently handled by Techno-UMG Co., Ltd., a JSR Group company. The plant later began producing a series of Electronic Materials, making use of unique polymer technologies we acquired in these petrochemicals-related fields. The plant began manufacturing photoresist materials used in semiconductors in 1979, and display materials in 1998. Ever since, the Yokkaichi Plant has served as the core facility and production base for JSR’s Elastomers Business and Digital Solutions Business. It continues to enhance its competitiveness through various initiatives. It built a new next-generation semiconductor materials plant in 2009. And in 2011, it expanded its capacity for producing solution styrene butadiene rubber (SSBR), a material for high fuel-efficiency tires that has seen growing global demand in recent years. Additionally, the plant is home to R&D centers—namely, the Performance Polymer Research Laboratories, Display Solution Research Laboratories, Fine Electronic Materials Research Laboratories, Advanced Materials Research Laboratories, Edge Computing Research Laboratories. Capable of handling everything from R&D to production in a broad range of materials sectors, the Yokkaichi Plant is the JSR Group’s “main plant.”

Yokkaichi Plant Organization Chart (As of 1 Oct, 2018)

Activities for Environment and Safety

Accreditations regarding plant safety

| International standards | ISO14001, ISO9001 |

Wastewater treatment flowchart

Pollutants are handled by two separatory systems that separate oil and water and a comprehensive plant wastewater treatment facility. Compliances with environmental protection regulations and safety management systems enable the continuous operation of the plant.

Boiler exhaust treatment flowchart

Exhaust from the boiler is gasified and led to the boilers. The heavy oil and coal used as fuel in the plant’s boilers contain sulfur and nitrogen. When burned, these produce sulfur dioxide (SO2) and nitrogen oxides (NOx). These degrade the air quality in the source of photochemical smog and other forms of air pollution, the boiler’s exhaust is treated by desulfurization and denitrification equipment.

Synthetic rubber manufacturing exhaust treatment flowchart

A regenerative thermal oxidizer (RTO) is a facility that detoxifies exhaust by oxidizing and combusting odorants and hydrocarbon traces in it by passing it through a heat reservoir (ceramic).

Yokkaichi Plant is a Japan’s first full-scale styrene-butadiene rubber (SBR) production center. It was constructed in 1960 as part of the Yokkaichi Petrochemical Complex. It is based on a JSR design that incorporated the most advanced technologies available at the time from Esso, Houdry, and Goodyear of the United States. In addition to SBR, the plant began manufacturing nitrile rubber (NBR) in 1964 and polybutadiene rubber (BR) in 1965. It also entered the latex and synthetic resins sectors using polymerization know-how gained through synthetic rubber manufacturing, beginning production of paper coating latex (PCL) in 1963 and ABS resin in 1964. JSR’s Synthetic Resins business is currently handled by Techno-UMG Co., Ltd., a JSR Group company. The plant later began producing a series of Electronic Materials, making use of unique polymer technologies we acquired in these petrochemicals-related fields. The plant began manufacturing photoresist materials used in semiconductors in 1979, and display materials in 1998. Ever since, the Yokkaichi Plant has served as the core facility and production base for JSR’s Elastomers Business and Digital Solutions Business. It continues to enhance its competitiveness through various initiatives. It built a new next-generation semiconductor materials plant in 2009. And in 2011, it expanded its capacity for producing solution styrene butadiene rubber (SSBR), a material for high fuel-efficiency tires that has seen growing global demand in recent years. Additionally, the plant is home to R&D centers—namely, the Performance Polymer Research Laboratories, Display Solution Research Laboratories, Fine Electronic Materials Research Laboratories, Advanced Materials Research Laboratories, Edge Computing Research Laboratories. Capable of handling everything from R&D to production in a broad range of materials sectors, the Yokkaichi Plant is the JSR Group’s “main plant.”

Yokkaichi Plant Organization Chart (As of 1 Oct, 2018)

Activities for Environment and Safety

Accreditations regarding plant safety

| International standards | ISO14001, ISO9001 |

Wastewater treatment flowchart

Pollutants are handled by two separatory systems that separate oil and water and a comprehensive plant wastewater treatment facility. Compliances with environmental protection regulations and safety management systems enable the continuous operation of the plant.

Boiler exhaust treatment flowchart

Exhaust from the boiler is gasified and led to the boilers. The heavy oil and coal used as fuel in the plant’s boilers contain sulfur and nitrogen. When burned, these produce sulfur dioxide (SO2) and nitrogen oxides (NOx). These degrade the air quality in the source of photochemical smog and other forms of air pollution, the boiler’s exhaust is treated by desulfurization and denitrification equipment.

Synthetic rubber manufacturing exhaust treatment flowchart

A regenerative thermal oxidizer (RTO) is a facility that detoxifies exhaust by oxidizing and combusting odorants and hydrocarbon traces in it by passing it through a heat reservoir (ceramic).
The Yokkaichi Training Center provides hands-on safety training primarily to new employees. Trainees gain actual experience in avoiding getting caught in rotating mechanisms, being exposed to liquids, dealing with solvent explosions, and hanging from a safety belt. They also practice basic plant operations, including how to use tools and valves operation. Additionally, a plant museum in the center displays many cut-away models showing the internal structures of pumps, compressors, valves, and steam traps that are used in employee education.
In 1968, JSR Corporation constructed and began operating its second plant, a butadiene plant, at the Chiba Seaside Industrial Zone. The following year, 1969, a polybutadiene rubber (BR) plant was completed. The plant established an integrated production system that covered everything from raw materials to products. In 1973, the world’s first thermoplastic elastomers, developed with JSR’s own technologies, and a butadiene resin (RB) plant went into operation. And in September of 1997, a plant for ARTON™ resins, which have superior heat-resistant transparency, came on line. The Chiba Plant acquired certification under the international quality assurance standard ISO 9001 in 1997, and under the international environmental management system standard ISO 14001 in 1999.

Activities for Environment and Safety

Accreditations regarding plant safety
High Pressure Gas Safety Act: Safety / completion inspection
Fire Safety Act: Completion inspection
Industrial Safety and Health Act: Overhaul inspection period of class-1 pressure vessels

International standards
ISO14001, ISO9001

Awards
1986 Excellent High Pressure Gas Manufacturing Plant Award, Minister of Commerce, Trade and Industry
1994 Superior Dangerous Relations Office Award, Commissioner, Fire and Disaster Management Agency
1995 Excellence Award (Safety), Minister of Labor
1999 Safety Award, Japan Chemical Industry Association
2002 Effort Award (Health), Minister of Health, Labor, and Welfare
2007 Achieved the second-class of accident free record (500,000 hours)
2010 Safety Award, Japan Chemical Industry Association
2010 Encouragement Award, Director, Chiba Labor Bureau
2013 Responsible Care Award, Japan Chemical Industry Association

Wastewater treatment flowchart
Process wastewater is handled by an oil separator that separates oil and water and a comprehensive plant wastewater treatment facility comprised ofbiotreatment equipment that breaks down waste with organisms and activated carbon treatment equipment that treats wastewater with low biodegradability.

VOC emissions treatment flowchart
A heat storage combustion facility treats volatile organic compounds (VOC) existing in exhaust emitted from the synthetic rubber drying process.

Reducing the plant’s environmental footprint
The Chiba Plant conducts environmental impact studies for chemical substances and strives to systematically reduce its environmental emission. It reduces its environmental footprint in terms of waste through thoroughgoing observation of “reduction,” “reuse,” and “recycling.”

Water pollution prevention
In the area of water pollution prevention, the plant strives to keep pollution below the requirements of the Water Pollution Control Law and pollution control agreements by treating plant wastewater with oil and water separation, flotation, activated sludge, and activated carbon treatment technologies.

Air pollution control act
The plant installed heat-storage combustion-type deodorizing equipment for the synthetic rubber finishing process that treats volatile organic compounds (VOC) with high efficiency.
The Chiba Plant also provides safety and environmental education from a variety of angles. The Training Center provides hands-on training on pinching, static electricity, and other dangers; education on safety and environmental laws; and televised training through television lines that link JSR’s three plants. For new employees and young operators, it provides simulated operations training for practice in dealing with various actual worksite problems as well as on-the-job training for practical skills improvement. It also organizes regular lifesaving courses that are led by personnel of the Ichihara Fire Department.
The Kashima Plant was constructed as JSR's third plant with experience gained by the Yokkaichi and Chiba Plants in synthetic rubber manufacturing. Design emphasis was placed on product sophistication and high production efficiency as well as streamlining, energy savings and safety. Facilities for manufacturing butadiene and styrene-butadiene rubber (SBR) were completed and began production in 1971 (SBR production was terminated in 1982). The following year, 1972, facilities for manufacturing isoprene rubber (IR) and isoprene were completed and began domestic production of these products for the first time in Japan. These facilities were installed in anticipation of expanding demand for IR, which has qualities resembling natural rubber. In 1989 latex manufacturing facilities were constructed and began operation in the Kashima Plant, making it the second JSR plant to have this capability, following the Yokkaichi Plant. In 1992, the Kashima Plant also began producing ethylene propylene rubber (EP). As its facilities were expanded and improved, the plant acquired certification under the international quality management system ISO 9002 in 1997 (switched to ISO 9001 in 2002 and to the 2008 version in 2009) and under the international environmental management system ISO 14001 in 1999 (switched to the 2015 version in 2017). Meanwhile, the plant ceased SBR production in 1982 in response to a change in the synthetic rubber demand structure. The unneeded SBR production facilities were then used in the new construction of Japan Butyl Co., Ltd.'s Kashima Plant, which began halogenated butyl rubber in 1985. In 1987, the Kashima Plant of Shell JSR Elastomers K.K., which was established through a merger by JSR and Shell in Japan (currently Kraton JSR Elastomers K.K.), following a merger with Kraton Polymers Holdings B.V., was constructed and began producing thermoplastic elastomers as well as IR on a contracted basis. In 1987 the Kashima Plant received a subsidy from the Ministry of International Trade and Industry as a part of research on alternative energies to petroleum. It then built a pilot plant for the production of coal slurry dispersants and other products and proceeded with R&D in this area. Today it is producing various water-soluble polymers (WSP) that are the results of further research. In 1999 (switched to the 2008 version in 2009) and under the international environmental management system ISO 14001 in 1999 (switched to the 2015 version in 2017). Meanwhile, the plant ceased SBR production in 1982 in response to a change in the synthetic rubber demand structure. The unneeded SBR production facilities were then used in the new construction of Japan Butyl Co., Ltd.'s Kashima Plant, which began halogenated butyl rubber in 1985. In 1987, the Kashima Plant of Shell JSR Elastomers K.K., which was established through a merger by JSR and Shell in Japan (currently Kraton JSR Elastomers K.K.), following a merger with Kraton Polymers Holdings B.V., was constructed and began producing thermoplastic elastomers as well as IR on a contracted basis. In 1987 the Kashima Plant received a subsidy from the Ministry of International Trade and Industry as a part of research on alternative energies to petroleum. It then built a pilot plant for the production of coal slurry dispersants and other products and proceeded with R&D in this area. Today it is producing various water-soluble polymers (WSP) that are the results of further research.

Activities for Environment and Safety

Accreditations regarding plant safety:
High Pressure Gas Safety Act: Safety / completion inspection
Fire Service Act: Completion inspection
Industrial Safety and Health Act: Overhaul inspection period of class-1 pressure vessels
International standards:
ISO14001, ISO9001

Awards:
1976: Progress Award (Safety), Labor Standards Bureau
1979: Safety Award, Japan Chemical Industry Association
1992: Excellent High Pressure Gas Manufacturing Plant Award, Minister of Commerce, trade and industry
1993: Progress Award (Safety), Minister of Labor
1994: Self-defense Fire Brigade Award, Commissioner, Fire and Disaster Management Agency
1995: Excellence Award (Safety), Minister of Labor

The Kashima Plant organized a “general affairs and environmental countermeasures liaison council,” which is comprised of all companies in the Tobu Industrial Complex, and participates in a “Kashima Tobu Industrial Complex security measures liaison council” that tackles safety and security issues. The plant provides the activities of both organizations.

Kashima Plant Organization Chart (As of 1 Oct, 2018)

Activities for Environment and Safety

Accreditations regarding plant safety:
High Pressure Gas Safety Act: Safety / completion inspection
Fire Service Act: Completion inspection
Industrial Safety and Health Act: Overhaul inspection period of class-1 pressure vessels
International standards:
ISO14001, ISO9001

Awards:
1976: Progress Award (Safety), Labor Standards Bureau
1979: Safety Award, Japan Chemical Industry Association
1992: Excellent High Pressure Gas Manufacturing Plant Award, Minister of Commerce, trade and industry
1993: Progress Award (Safety), Minister of Labor
1994: Self-defense Fire Brigade Award, Commissioner, Fire and Disaster Management Agency
1995: Excellence Award (Safety), Minister of Labor

The Kashima Plant organized a “general affairs and environmental countermeasures liaison council,” which is comprised of all companies in the Tobu Industrial Complex, and participates in a “Kashima Tobu Industrial Complex security measures liaison council” that tackles safety and security issues. The plant provides the activities of both organizations.

Kashima Plant Organization Chart (As of 1 Oct, 2018)

Activities for Environment and Safety

Accreditations regarding plant safety:
High Pressure Gas Safety Act: Safety / completion inspection
Fire Service Act: Completion inspection
Industrial Safety and Health Act: Overhaul inspection period of class-1 pressure vessels
International standards:
ISO14001, ISO9001

Awards:
1976: Progress Award (Safety), Labor Standards Bureau
1979: Safety Award, Japan Chemical Industry Association
1992: Excellent High Pressure Gas Manufacturing Plant Award, Minister of Commerce, trade and industry
1993: Progress Award (Safety), Minister of Labor
1994: Self-defense Fire Brigade Award, Commissioner, Fire and Disaster Management Agency
1995: Excellence Award (Safety), Minister of Labor

The Kashima Plant organized a “general affairs and environmental countermeasures liaison council,” which is comprised of all companies in the Tobu Industrial Complex, and participates in a “Kashima Tobu Industrial Complex security measures liaison council” that tackles safety and security issues. The plant provides the activities of both organizations.

Kashima Plant Organization Chart (As of 1 Oct, 2018)

Activities for Environment and Safety

Accreditations regarding plant safety:
High Pressure Gas Safety Act: Safety / completion inspection
Fire Service Act: Completion inspection
Industrial Safety and Health Act: Overhaul inspection period of class-1 pressure vessels
International standards:
ISO14001, ISO9001

Awards:
1976: Progress Award (Safety), Labor Standards Bureau
1979: Safety Award, Japan Chemical Industry Association
1992: Excellent High Pressure Gas Manufacturing Plant Award, Minister of Commerce, trade and industry
1993: Progress Award (Safety), Minister of Labor
1994: Self-defense Fire Brigade Award, Commissioner, Fire and Disaster Management Agency
1995: Excellence Award (Safety), Minister of Labor

The Kashima Plant organized a “general affairs and environmental countermeasures liaison council,” which is comprised of all companies in the Tobu Industrial Complex, and participates in a “Kashima Tobu Industrial Complex security measures liaison council” that tackles safety and security issues. The plant provides the activities of both organizations.

Wastewater treatment flowchart

Industrial waste disposal flowchart

We are promoting recycling to achieve zero industrial waste disposals (zero emission).

Major disaster security facilities

The Kashima plant maintains various facilities to prevention and prepare for disasters. (Below are examples)
Upgrade work on isoprene towers

The Kashima Plant produces isoprene monomers (IPM), which are monomers of tire rubber (mainly IR) made with the C5 fraction from ethylene centers. There are totally 19 towers used for IPM extractive distillation and refinement. Three large towers (length: approx. 53 m; diameter: 2.0 to 3.2 m; weight 120 to 200 tons) underwent a full-scale upgrade during the FY2014 regular maintenance period (May to July) to replace antiquated equipment and improve energy efficiency. The new tower which was manufactured at other prefecture, was unloaded at Kashima Port and transported by land. Exiting towers were removed and installation of the new tower was completed. Mobilizing a total of 6,080 workers and requiring a work schedule of approximately 160 days, it was described as the largest project after the Kashima plant started operation in 1971. We achieved zero accident, zero disaster, zero pollution (three zeros).
JSR Corporation

Head Office
Shiodome Sumitomo Bldg.
1-9-2 Higashi-Shimbashi, Minato-ku, Tokyo
105-8640 Japan
TEL. 81-3-6218-3500
FAX. 81-3-6218-3682

Nagoya Branch
Dai Nagoya Building 15F
3-28-12 Meieki, Nakamura-ku, Nagoya-shi, Aichi,
450-6415 Japan
TEL. 81-52-533-2260
FAX. 81-52-586-0261

Yokkaichi Plant
100, Kawajiricho, Yokkaichi-shi, Mie
510-8552 Japan
TEL. 81-59-345-8000
FAX. 81-59-345-8111

Chiba Plant
5, Chigusakaigan, Ichihara-shi, Chiba
299-0108 Japan
TEL. 81-436-62-4161
FAX. 81-436-62-1946

Kashima Plant
34-1, Towada, Kamisu-shi, Ibaraki
314-0102 Japan
TEL. 81-299-96-2511
FAX. 81-299-96-5695

Yokkaichi Research Center
100, Kawajiricho, Yokkaichi-shi, Mie
510-8552 Japan
TEL. 81-59-345-8084
FAX. 81-59-345-8118

Tsukuba Research Laboratories
25, Miyukigaoka, Tsukuba-shi, Ibaraki
305-0841 Japan
TEL. 81-29-856-1001
FAX. 81-29-856-1003

JSR-Keio University Medical and
Chemical Innovation Center
35, Shinanomachi, Shinjuku-ku, Tokyo
160-8582 Japan
TEL. 81-3-6274-8602
FAX. 81-3-6274-8649

Taiwan Branch
17F-C1, No.8, Zhičiang S. Rd., Jhubei City,
Hainchu County 302, Taiwan, R.O.C.
TEL. 886-3-657-6600
FAX. 886-3-657-6642

http://www.jsr.co.jp/jsr_e