



Business with Russia

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EU Sales Manager



Foundation of JSR Corporation

Japan **S**ynthetic **R**ubber was established by the Japanese government in 1957 to produce synthetic rubber for car tires.

Opening Ceremony Yokkaichi Plant



Groundbreaking Chiba Plant



First president Ishibashi



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JSR Corporation

Petrochemical Business



Digital Solutions Business



Life Science Business

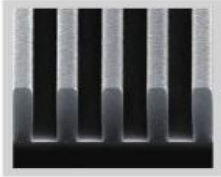


JSR Corporation

Date of Establishment:	December 10, 1957
Capital:	23,320 million yen
Employees: Annual	>8000
Net Sales:	4.5 billion USD (As of March 31, 2019)



Semiconductor Market



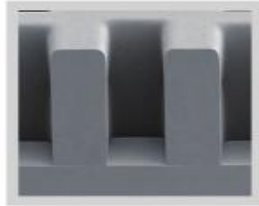
Lithography Materials

In the rapidly advancing world of integrated circuits, there is a constant demand for high-quality materials such as large-scale integration (LSI). JSR offers a wide range of cutting edge products catering to such demand, including high-resolution photoresists for optical wavelengths of 248nm (KrF) and 193nm (ArF), photoresists and top-coat materials for immersion lithography, and spin-on hardmask materials. For next-generation semiconductor processes, we have developed EUV resists.



CMP Materials and Process Materials

Chemical mechanical planarization (CMP), which planarizes surfaces out of thin films for wiring and insulation layers on wafers, is indispensable to the formation of multilayer interconnections in LSIs. JSR supplies slurries that support the polishing of various thin-films having high planarity and low scratch characteristics. We also supply post-CMP cleaning solutions to remove impurities such as metals, organic and slurry residues from planarized wafer surface. In addition, JSR supplies process materials that can support next-generation semiconductor production.



Device Integration Materials

JSR responds to the high performance and high reliability requirements of packaging systems such as high density and 3D. JSR provides photoresist to form thick-film wiring which has high plating resistance, temporary bonding materials and insulation materials with high reliability for 3D packages.

JSR Global Network for Semiconductor Business



JSR, a trusted global Partner

- Close collaboration with all major semiconductor manufacturers
- Contingency by multiple facilities in different continents
- Continuous evolution since decades within the JSR Corporation

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JSR Micro N.V., Leuven (Belgium)



Bart Denturck, CEO

Semiconductor Manufacturing

- Design Concept: Copy exact to JSR Corp. & US manufacturing process
- Plant Completion: November 2002
- Available space for new materials
- Total Investment: 20 million EUR
- **KrF & EUV resist, underlayer & developer production**

Support our European Customers

- Capital: 20 MEUR (100% owned by JSR)
- > 200 employees

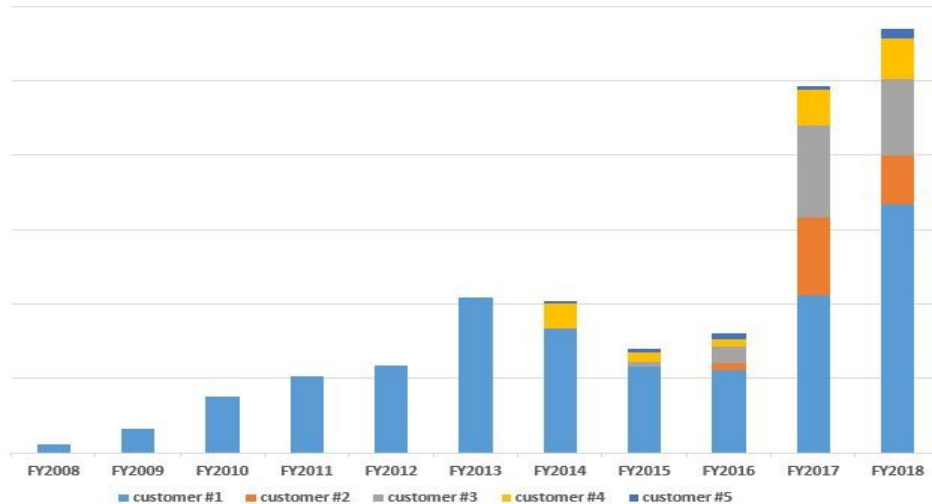
ELECTRONIC MATERIALS

LIFE SCIENCES

ENERGY & PERFORMANCE
MATERIALS



Business with Russia: the early years



- In 2008 JSR steps in to Russian market. One customer low volumes
- 2008 – 2013: strong growing market which JSR wants to investigate further

The opportunities: 2008 – 2014

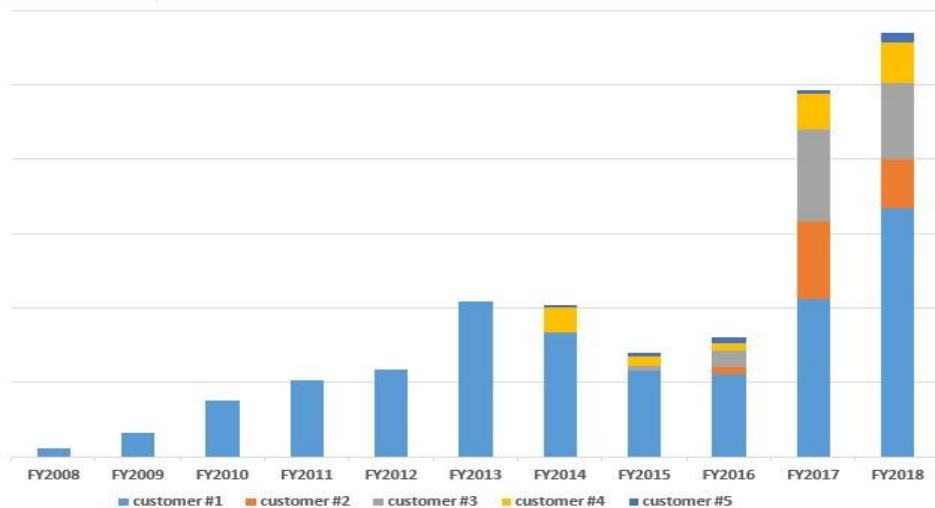
- Russia is a growth market
- Russia is a very good profit market
- Russia is profitable because consumers and government understand quality and are willing to pay premium prices for quality
- Russia has the developing middle class, providing an excellent customer base
- Russia has initiated new investment programs and is encouraging foreign investment. (RUSNANO)



(Biased) Opinion of Russian Business

- The economy is vulnerable to any major downturn in the oil price
- Black cash (small bribes)
- Shell companies (in Russia, and abroad)
- Tax evasion (everyone wants more money)
- Murky political links (who really owns your partner?)
- Criminal involvement (who really owns your partner?)
- Payment risks (cash, paperwork, arbitration)
- Malpractice at customs clearance
- Not complying to Russian EHS laws

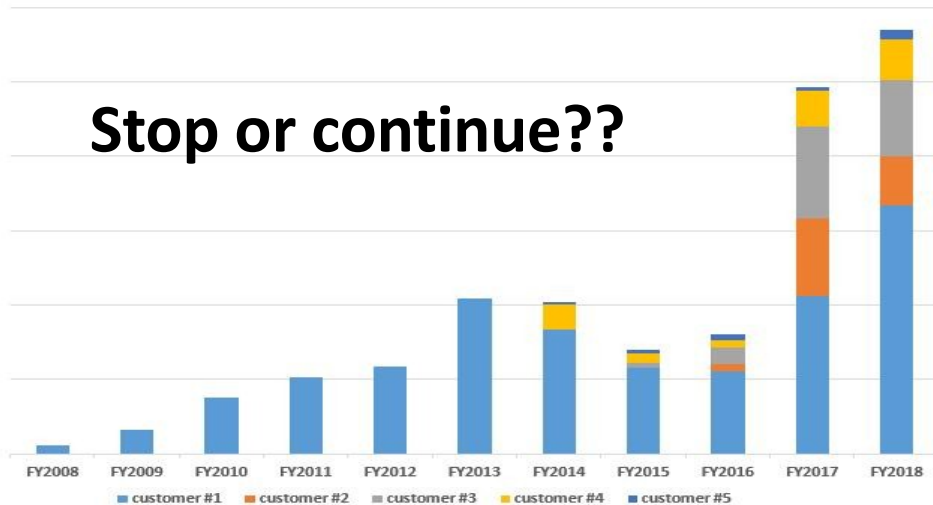
Business with Russia: the sanctions



- In 2014 EU and US put sanctions in to work over Ukraine conflict:
 - Drop in oil price
 - Key materials restricted under dual use regulation

Business with Russia: after the sanctions

Stop or continue??



- In 2014 EU and US put sanctions in to work over Ukraine conflict:
 - Drop in oil price
 - Key materials restricted under dual use restriction

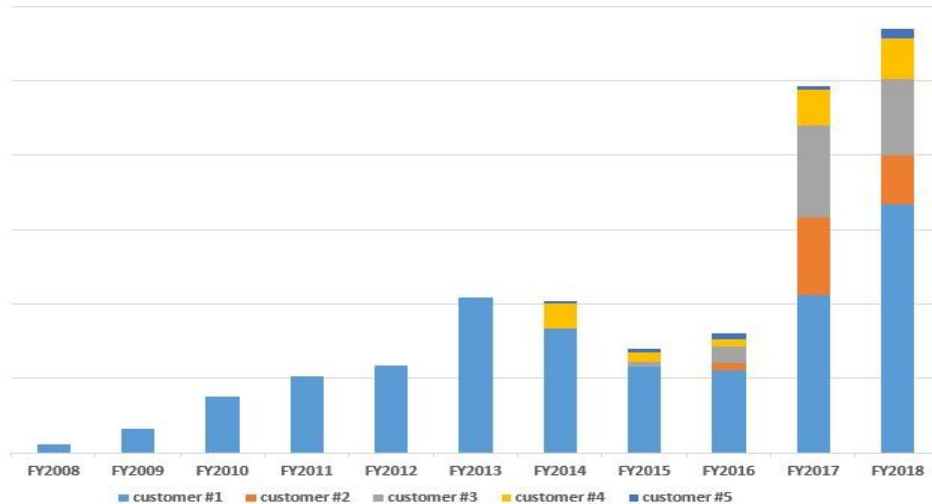
Risk Assessment

- How can you protect yourselves?
 - Internal (within your company):
 - Train people to know and uphold the law
 - Decide ethical criteria and infuse them within the company's ethical culture
 - Choose the best agents, the best partners, the best distributors. Let them uphold the same criteria like you do with your own employees.
 - External (with your customer):
 - Do your due diligence!!
 - Understand the local context. But do not give into it. Play by your rules, not the local rules.
 - Do not be afraid to build a reputation as being intolerant of corruption.
 - A reputation for honesty is a source of competitive advantage: long term business strategy

What did JSR do?

- Explain to the customer what is the current situation with the EU/US government. Give regular updates. Work together to find solutions.
- Avoid potential risk areas (financial, customs, EHS) by working with local agents who understand Russian market
- Make clear statement that you support the customer and that you are here to stay long term.

Business with Russia: after the sanctions



- Since 2014 we extended substantially our customer base.
- Increase in number of customers and increased volume per customer
- Thanks to clear communication, good collaboration between JSR, the customers and our distributor.



Conclusions

- JSR was able to support changing Russian Market, after the sanctions, due to its global network and due diligence.
- Companies that are able to balance the risks and rewards can find measurable success in Russia.
- Be clear about your position!



Latent Heat Storage Material CALGRIP™

JSR offers thermal storage materials that allow for "thermal control," the trapping and release of heat, leading to more efficient use of energy. They are suitable for transportation under controlled temperatures, thermal management for buildings, etc.



General purpose Synthetic Rubber

SSBR is special molecular structure in parts good workability and dynamic performance for shock resistant and high performance tires. ESSBR has excellent tensile strength and abrasion resistance. It is used for the tread portion of car tires and other applications. Polybutadiene rubber (BR) has good low-temperature properties and high rigidity on elasticity and is used as the backbone for heavy vehicle tires and for golf balls. JSR also supplies products for medical applications.



Thermoplastic Elastomers (Dibfin Type)

The dibfin-type thermoplastic elastomer, JSR EXCEL NCM, has strength and elasticity comparable to vulcanized rubber, but with the same excellent moldability of thermoplastic resin. It is used in place of vulcanized rubber in automobiles, appliances, electronics, and other products. This is an energy and resource-conserving environment-friendly material that can be recycled.



Special-purpose Synthetic Rubber

Nitrile rubber (NBR) is highly resistant to heat, oil, and abrasion in applications such as extrudable hose hoses, seals and rubber rollers, among others. Ethylene propylene rubber (EPDM) is used for automobile parking and heels, electric wires, thermal belts, cooling, modifying of synthetic rubber, and other applications. Butyl rubber (BR) has outstanding gas impermeability and is used for inner tire, liners and medical applications.



Thermoplastic Elastomers (Butadiene Type/Styrene Type)

JSR BR is syndiotactic 1,2-polybutadiene, developed with unique technology. It is used in various kinds of applications such as shoe sole, medical tube and film in all over the world. JSR TPO-G is styrenic thermoplastic elastomers. It is used as a modifier of resin and asphalt, adhesive and floorographic printing plate. JSR DYNADON is hydroxy-terminated polyether with linear molecular structure. It is used as perfect film by its superior property in compatibility and adhesives with polyolefin.





SIFCLEAR™ Water-based emulsion with excellent durability and stain resistance

Modified acrylic emulsion achieved by alloying styrene-butadiene polymer with acrylic polymer or 2 molecular level. SIFCLEAR™ resin, has been used as a binder resin of emulsion combination paint for building materials, such as exterior wall and roof, owing to its excellent durability and stain resistance in outdoor exposure in particular for the application of thermal insulation paints. SIFCLEAR™ series contributes to the long-term retention of the thermal barrier effects as its outstanding stain resistance property causes a surface stain from dispersing the heat reflecting effect. The applications of SIFCLEAR™ have been extending to the growing markets of the water based paint system used in construction and thick and thin coats on coating materials like tiles, bridge piers, and port facilities. Various applications of anti-staining film and rain-coating are also expected hereafter.



SB Latex

Styrene butadiene (SB) latex comes in a wide lineup, of grades with different properties. Some latexes are used to make foam rubber by being foaming into sponges or processed into such applications as bedding, mattresses, and car-matting tufts. In addition, these latexes excel in adhesive strength and flexibility and can be used in such wide-ranging uses as asphalt modifier and a variety of adhesives.



PCL

A leading product in the emulsions business is paper coating latex (PCL). Its strong adhesion and excellent printability meet the needs of a wide range of applications, including paper coating material and paint for magazines, catalogs, wrapping paper, and other types of coated paper.



High-Performance Acrylic Emulsions

High-performance acrylic emulsions (AE) products, originated from the fusion of our synthetic and conventional water-based polymers which were developed in the fields of adhesives and "ion-colonies, have developed new applications. The AE "ion products" that are incorporating synthesis compared to conventional foam materials are now being used in many applications: sound-absorbing materials for vehicle back-cushion in self-driving of fire cars for fire control, and other application use for floor. Other applications are under examination widely as well, such as, cushioning sheets for mobile electronic equipment and weather-absorbing materials for musical instruments. Showing excellent water resistance, new AE water product (NACWAL™) series is expected to apply to various fields such as in ponds for aquatic house materials and for aquatic topics in outdoor use.



Binders for Batteries

JRI has been developing the latest binder for secondary batteries with advanced emulsion synthesis technologies. ZrI binder is an indispensable material for manufacturing electrode of lithium ion batteries and nickel hydrogen batteries which used in today's smartphones, PCs, electric vehicles and etc. With good bonding property, excellent battery performance and high reliability, ZrI binder is highly performed in the market. Furthermore, unlike conventional solvent-based binder (PVDF), it is a high-performance water-based binder that is environmentally friendly and cost-effective.





ABS General Grade

A wide range of grades including ultra high impact resistant, highly fluid, and highly rigid types are available. It is easily molded, has a good balance of physical properties, and is suitable for coloring and glazing. It is widely used for industrial goods, household goods, electrical equipment, game consoles, and many other applications.



Weather-resistant Resin ABS Grade

With a high level of weather and impact resistance, combined with excellent rigidity and workability, these grades are used extensively for auto parts, outdoor equipment, gardening supplies, and building materials. It has impact resistance, mechanical characteristics and workability equivalent to ABS General Grade, so it can be molded in the same way.



ABS Special Grade

A range of grades, covering high rigidity and heat resistance, to high fire resistance are available. ABS Heat Resistant Grade has outstanding practical heat resistance, impact resistance, and workability. It is widely used for auto parts and electronic appliances. This grade has outstanding fluidity and moldability. It is used for office equipment, fax machines, portable devices and other IT equipment and home appliances.



HUSHLON™ Anti-Squeak Plastic

From all parts of the car, plastic parts do not make any noise because of its low noise and squeaking even in the most extreme conditions. HUSHLON™ is a plastic material that has a unique property that prevents squeaking. Its addition to the car parts of anti-squeak components, HUSHLON™ also reduces the anti-squeak properties automatically.



Research Reagents Field

Biotech reagent research is essential to the production of advanced therapies. JSR Group supports a variety of research programs for isolating and purifying biological materials such as proteins, nucleic acids and cells. One of the representative example products is Leucopha which isolates cell-derived enzymes or magnetic particles coated with functional ligands leading to accurate capture on various surfaces.



Diagnostic Reagents Field

The pre-treatment diagnosis of evaluating health conditions and detecting diseases is extremely important because of its role in the treatment of corresponding therapeutic drugs. Magnetic particles, latex particles and other JSR Group products are widely used as materials for in vitro diagnostic reagents. JSR Group has been working with partner companies to establish product ranges for use in various assay and diagnostic tools such as personalized medicine.



Bioprocess Field

JSR Group combines precision polymer synthesis and surface modification technology with genetic engineering to develop materials for innovative bioreactors and bioprocesses. We supply protein A affinity chromatography resins, which are used to refine antibodies, in our product line. In Japan and overseas markets, we also provide products and services for using efficient bioprocesses in various biotech processes used in antibody drug manufacturing.



3D Cell Culture Plates

The Nano-Culture™ 3D cell culturing system supplied by JSR Group is used in disease research and R&D by pharmaceutical companies. Users are able to conduct studies in 3D cultures of the cells and tissues. These products are able to make the cells be provide a case for cell growth. Cell masses are able to form in the same way as within living bodies. These products are ideal for research and testing, since they allow cells to function and proliferate under conditions similar to those encountered in vivo.



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