



JSR Micro
MATERIALS INNOVATION



2021
CSR REPORT

About this report

REPORTING PERIOD

This corporate sustainability report covers the period from April 1, 2019 to March 31, 2021.

GRI STANDARDS

The report has been prepared in accordance with the core option of the Global Reporting Initiative (GRI) standards.

ASSURANCE

We did not pursue assurance for this report. However, much of the data and practices detailed in this report are tracked in management systems that have been certified by independent third parties.

NOTE ABOUT JSR MICRO

This report covers the activity of JSR Micro NV, which has its headquarters in Leuven, Belgium and is a subsidiary of JSR Corporation. When the report mentions JSR Micro, it is referring to the operations of JSR Micro NV only. JSR, in contrast, may refer to a broader selection of companies in the JSR group, including JSR Micro NV.

WE WELCOME YOUR FEEDBACK!

Please refer any questions or suggestions concerning this report to our CSR coordinator.

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Contents

Contents	1
About this report	1
Message from the President	2
JSR Micro, enabling in high-tech and healthcare	3
Caring for the well-being of our employees	6
Making mobility more comfortable and sustainable	11
Ensuring employees' health and safety	13
Excelling in quality	15
Based on continuous innovation	17
Product stewardship and compliance	19
Business continuity and risk management	20
Managing and lowering our environmental impact	21
Responsible supply chain management	23
Validated by the Responsible Business Alliance (RBA)	24
2021 GRI content index	25

Message from the President

This fourth edition of our CSR report aims to shine a positive light on what has been a challenging and complicated time.

Halfway through the reporting period, we were confronted with the start of the COVID-19 pandemic that, within a few months quickly spiraled into a global health crisis. Prior to this pandemic, however, geo-political tensions were on the rise, migration crises were worsening, and the impacts of climate change had become unequivocally clear.

Still, we want to bring an optimistic message. Keeping our employees safe and healthy was our highest priority and we managed to prevent an outbreak. Having sites on three continents proved to be an asset when geo-political tensions rose. The redundancy that we built into our operations kicked in when the first wave of the pandemic started, and our lean organization allowed us to quickly expand our production capacity while further reducing our environmental impact.

During the pandemic, the need for IT material rose sharply with the accelerated switch to teleworking. Our customers in the semiconductor business saw the demand largely exceeding their capacity. The chips that they are producing are the enablers for this evolution that will have a major impact on our lives and on the environment. Our activities in the life sciences domain were not impacted either by the above-mentioned crises, on the contrary. It became increasingly clear that affordable medication and healthy competition, with a push for cost and efficiency are essential.

The JSR group as a whole had already shown a great deal of resilience and preparedness for the future. Adding to that we now adopted an updated five pillar strategy with sustainability at the core, linking everything together. The drivers for the coming decade are in place and we can already see the effects rippling through the organization.

Our stakeholders have increasingly advocated for a move towards sustainability and care for the environment and, with this report, we aim to demonstrate our evolution in that direction. Besides reporting, we also issue this work to receive your open feedback as well as your guidance on what are for you the most important aspects for the coming years.

Sincerely,



Bart Denturck

JSR Micro, enabling in high-tech and healthcare

At JSR Micro we are innovative materials specialists whose chemicals enable our customers' manufacturing processes in the semiconductor, life sciences, and battery industries. The hallmark of our products is quality, and we are constantly working to raise the bar for distinction within these industries.

Headquartered in Leuven, Belgium, we deliver our products to customers primarily in the EMEA region. And, together with our satellite in Singapore and our close collaboration with our sister JSR companies in the United States and Japan, we have the whole globe covered.

Chip industry

A new generation of the latest lithography tools—extreme ultraviolet (EUV) lithography scanners—have come onto the market during the reporting period. JSR Micro is producing several matching photoresists for this technology and, in 2020, we scaled up their production considerably. We will continue to keep pace with the demand for these products.

The photolithography process is one of the first steps of microchip production. During this phase, the silicon base material is covered with a photosensitive layer—the photoresist—that is produced by JSR Micro. The chip's layout is then projected onto this photosensitive layer and the fine lines and structures of the chip are defined onto the surface. The purer the photoresist solution, the higher the yield will be for the chip producer.

Life Sciences

Our goal for our Life Sciences products is to enable faster and more efficient processes for the discovery and production of antibody drugs. Ultimately, this should lead to the development of sophisticated medical therapies that are more affordable and universally accessible. Our main product, Amsphere™ A3, helps to efficiently separate valuable therapeutic antibodies from a biological mixture. It does so with a great efficiency and is currently being tested by numerous companies who are ready to incorporate its uses into their processes. Amsphere™ A3 is a product set to improve our society's healthcare as well as one on which to build JSR Micro's future.

Better batteries

In support of the transition to ubiquitous electrification, JSR Micro has introduced aqueous binders for the fabrication of battery cells. JSR's binders offer significant improvements in safety, performance, and manufacturing costs compared to traditional binders. Most importantly, they are water-based. This allows for cheaper, more environmentally-friendly battery production.

Thriving despite the pandemic

The world was hit by the COVID pandemic during the second half of the reporting period. Throughout this tumultuous time, JSR Micro maintained its commitment to continue supplying its customers with an uninterrupted flow of products while simultaneously keeping our employees safe and healthy. Though demand for our EUV photoresist doubled during this challenging period, we were able to scale up production to the satisfaction of our customers.

In this report, we detail the measures we took to ensure employee safety and business continuity.

A strong and caring corporate culture

JSR Micro has been able to uphold its warm corporate culture throughout this period of substantial production and employee growth. Our team's shared values—care, continuous learning, customer orientation, honesty, quality, teamwork—help to create both the internal energy and customer experience of JSR Micro. They are also crucial benchmark qualities when searching for the right people to join our teams.



Care

Act with compassion, listen respectfully, value differences and capabilities, commit to sustainable solutions.

JSR Micro JSR Life Sciences



Continuous learning

Grow, educate yourself and others, embrace change.

JSR Micro JSR Life Sciences



Customer orientation

Put the need and interest of our customer at the center of everything you do.

JSR Micro JSR Life Sciences



Honesty

Be fair and authentic, do what you say and say what you do.

JSR Micro JSR Life Sciences



Quality

Don't settle for anything less than excellence now and work on improvements for tomorrow.

JSR Micro JSR Life Sciences



Teamwork

Collaborate across boundaries, share information and achieve results together.

JSR Micro JSR Life Sciences



Left to right:
Johan Desimpelaere,
Paul Buysse, Xavier Buch,
Takanori Matsuzawa,
Kurt Adams, Bart Denturck,
Johan Vercammen,
Kenji Nakajima



Governance and ethics

JSR Micro is a wholly-owned subsidiary of JSR Corporation and our daily operations are run by an eight-person executive committee.

The Board of Directors, with members from JSR Micro and JSR Corporation, oversees the performance, long-term decisions, and strategy development for the company.

All of the company processes are captured in certified management systems that focus on continuously improving performance: ISO 9001 for quality management, ISO 14001 for managing environmental aspects, and ISO 45001 for occupational health and safety.

JSR Micro adheres to the JSR Group Principles of Corporate Ethics as a baseline for our ethical choices, internally as well as with respect to our stakeholders. The JSR Group is also a signatory and supporter of the United Nations Global Compact.

Managing Corporate Social Responsibility (CSR)

Caring for all our stakeholders has always been central to JSR Micro's operations. The success of our customers and suppliers, the well-being of our employees and their communities, and the health of our environment and planet all matter to us. We believe these are all interwoven and we aspire to promoting these components as universally valuable. Many of our practices are described in this report. Also included are the successful results of the RBA certification and audits carried out by an external party.

Our stakeholders' main interests

We queried our stakeholders extensively when writing our first CSR reports to identify their priority topics and we feel confident that these have remained the same today as then. Our customers value quality and business continuity above all, which is in turn what we expect from our suppliers and partners. Well-being, mental health (particularly in light of the pandemic), and improved transportation options were key concerns for our employees. And now more than ever, JSR Corporation, our owner and parent company, is gearing its strategy towards sustainability and care for the environment and planet. The latter is also a main concern for our local community, the government and our collaborative EU agencies. Our stakeholders value a healthy and responsible supply chain and a sustained emphasis on innovation is a crucial component in determining our future success.

Caring for the well-being of our employees



JSR Micro strives to be a welcoming and caring company for its employees and we have established measures and procedures to ensure that this remained the case throughout our recent period of steep growth. Our efforts proved invaluable, as we were well-positioned to cope with the main challenge during the reporting period: the COVID pandemic. Although its profound impact was experienced during the second half, there is no denying that it overshadowed the entire reporting period.

Our key concern has been to prevent COVID outbreaks within our community. Naturally we wanted to prevent illness for our employees and their families, but because we were delivering products that were crucial to our customers' businesses, we also wanted to forestall any production and quality challenges. We are pleased to report that we succeeded on both counts: we had no COVID outbreaks or transmissions at JSR Micro and no disruptions to our operations.



Working from home

Because teleworking already had an established precedent before the pandemic, JSR Micro employees were well equipped to switch to the home office before it was officially mandated. It was required that everyone who could work from home do so—a change that was ultimately relevant for 65% of our employees. We have continued to strictly employ this rule, even during periods when the government allowed more leniency. Our employees' well-being was also a priority for us and, to facilitate their transition, all home-workers were encouraged to apply for any needed ergonomic equipment. Additionally, we checked in with them through regular communications, we organized training workshops for managers to help their staff manage the new way of working, and offered access to MindLab, an online tool with well-being programs, questionnaires, relevant sources, and tips to help contend with mental challenges.



Working on-site

Approximately 35% of our employees are directly involved with production and were needed on-site throughout the pandemic. They often work fairly close together and, as a crucial production site, JSR Micro sought and was granted an exemption from the rule of keeping a 1.5 meters (6 feet) distance as long as we compensated with other measures. Understandably, some of our people were worried. We sat down with our employees, EHS (Environment, Health and Safety) staff, and our company doctor to determine how we could ensure on-site safety. Changes were made to operation processes and each modification was assessed by EHS and our company doctor before it was implemented. Following the initial safety meetings, we have installed weekly meetings to follow-up and refine the measures.



Well-being

JSR Micro undertook the first company-wide inquiry into well-being in 2019. With those results, we held a workshop for each department that culminated in specific action plans. Departments were working on implementing these plans when the COVID pandemic hit, but we were already primed to respond to our employees' needs in a very real and systematic way. This manifested primarily in sitting down together more frequently, listening, and taking specific and necessary measures to improve employee health and well-being. We fully acknowledge that some of our employees have had a hard time working in isolation despite our measures, and we will do our best to offer further individualized support. Once the pandemic ends, we will incorporate these lessons learned within the original action plans.



The future and challenges

In many ways, the COVID pandemic has accelerated the trend to a new, individualized way of working that allows for a more efficient and healthy work-life balance. Going forward, for example, salespeople will likely meet online more and travel less. Office staff will choose between their home office or company offices depending on their types of work, and we will maintain our increased focus on ergonomics for operational staff. We plan to start implementing the concepts of Activity-Based Working in the coming period, including office building renovations that are based on this principle.

Introducing new employees

JSR Micro has seen a steep increase in new hires in the past few years and we have established a number of practices to welcome everyone onboard. New employees are assigned a mentor who introduces them to their colleagues and to practical aspects of the organization. There are also formal introduction training programs to learn about company-wide quality and health and safety measures. New hires have an informal meeting with the executives and are given more personalized training and development plans by their managers.



Japanese culture workshop

JSR Micro's parent company is Japanese and at any time ten colleagues or more from Japan may be working at our offices. So, most of our employees have opportunities to learn about the Japanese way of life and working. Our Japanese colleagues also get confronted with our Western customs. To improve that contact and to have everyone benefit from that diversity, we run nuanced workshops that seek to inspire and cultivate a deeper understanding of each other's culture.



Jan Hechtermans: For a multicultural company to be successful it is essential that people literally and figuratively speak and read the same language. This holds for what is said explicitly, but even more for what is expressed between the lines. This training, which includes a deeper look into Japanese culture and history, is invaluable in developing that understanding.



Our Southeast Asian office in Singapore



JSR Micro has a branch office in Singapore, located within the offices of our local distributor, that is staffed by two colleagues who maintain relationships with semiconductor customers in Southeast Asia. Andy and Niall are responsible for sales, technical support and quality issues, as well as with maintaining compliance.

Like their colleagues in Belgium, Andy and Niall have been working mainly from home since the start of the pandemic in abidance with JSR Micro and Singapore policies. Meetings with customers have been held online. Because this satellite is thousands of miles away, the support of the home office is crucial to its success and our colleagues attest that their connection with Leuven improved during the second half of the reporting period. With all meetings online, they are now routinely included in gatherings, even the informal ones. This new inter-connectedness has undoubtedly boosted their morale, but they still look forward to a visit to Leuven and its beer and chocolate.

Our personnel club – connecting, caring, relaxing

JSR Micro has an active group of employees called The Personnel Club that organizes casual get-togethers and fundraising events throughout the year. Their goal is to encourage all employees to get to know each other outside of the work context. Although the club was able to organize a string of successful events during the first half of the reporting period, in-person activities were unfortunately paused during 2020 because of the pandemic.



Some 2019 highlights:

As in previous years we participated in 'De Warmste Week', a charity event in which people throughout Flanders raise funds for a wide range of charitable causes. Instead of having just one event, we decided to organize four: a BBQ, a pancake festival, a delicious lunch, and a bacon and eggs breakfast. In total we raised €2,465 that was donated in full to De Eglantier, an organization that provides day care and support for children and young people with developmental, behavioral, and mental delays.

In July 2019, three JSR Micro teams (and their loyal supporters) participated in a beach volleyball competition in the historic center of Leuven. The day shone with a festive atmosphere, formidable and dedicated players, and enthusiastic support from the sidelines. Although we didn't win the tournament, one of our teams made it to the semi-finals and, even more importantly, we had a great time!

To close the year, we organized a benefit dance event for 'Rode Neuzendag', a yearly campaign to support vitality and mental health throughout the world. The 2019 focus was to fund projects that strengthen the resilience of young people.

Because we could not meet in person in 2020, The Personnel Club organized an online quiz. Needless to say, we can't wait to start organizing live events again.



A culture of care for our employees



Company growth

	2017	2018	2019	2020
Employees (total headcount)	160	179	195	202
% female	39%	39%	36%	35%



New hires and turnovers

New hire rate in 2019	17%
New hire rate in 2020	11%



Contract type

	2019	2020
Total HC	195	202
Part-time employees	18%	18%
Employees working outside the Leuven facility	4%	4%
Temporary employees (FTE)	6	10

Turnover rate in 2019	9%
Turnover rate in 2020	7%

Average hours of training per year per employee

41	48
in 2019	in 2020

Age (HC)

	2019		2020	
Under 30	28	14	25	10
30-50	70	45	73	44
Over 50	26	12	33	17

Nationality (HC)

	2019		2020	
Belgian	119	64	122	63
European (Belgium excl.)	3	3	8	6
Asian	1	3	0	2
American	1	0	1	0
African	0	1	0	0



Making mobility more comfortable and sustainable



Mobility is a major concern for our employees. Road traffic increases every year and, therefore, so do the travel times between work and home. Not only are current employees affected, but increased travel times also reduce our recruiting radius. JSR Micro shares these concerns and we have started looking for greener methods to help simplify and reduce employees' commutes. Besides that, we are committed to lowering our collective environmental footprint and these are the measures we have undertaken during this reporting period—for today and tomorrow.



Promoting bikes

To support the goal of having fewer cars on the road, JSR Micro offers a bicycle to everyone who cycles to work regularly.

The company covers the full lease for three years, and the employee has the option to purchase the bike after that period for a small fee. Naturally, e-bikes may be charged at the offices.



New car policy

In 2020, we restricted our company car policy to include only vehicles that are either fully electric or are hybrid plug-ins that have a maximum emission of 50g CO₂/km. Our long term goal is for our company car fleet to be 100% electric. To this end, our parking lot is equipped with vehicle charging stations, providing green electricity, and we have a company-owned electric car that employees can share for business purposes.



Promoting public transport

JSR Micro employees who commute by bus or train are offered a significant travel reimbursement.



The pandemic: working from home

As the second half of this reporting period was during the COVID pandemic, most of our employees were working from home.

Our sales associates, among others, conducted their meetings online instead of traveling to face-to-face client meetings. Both of these changes have had a significant positive impact on our mobility footprint during this time.



Going forward: a new balance

The COVID pandemic not only disrupted our routines in the short term but will have lasting effects on our working lives going forward. We will certainly need to continue balancing home vs. office work and online vs. face-to-face meetings. As a result, much of the gain in our mobility footprint during the pandemic will prove to be long-lasting.

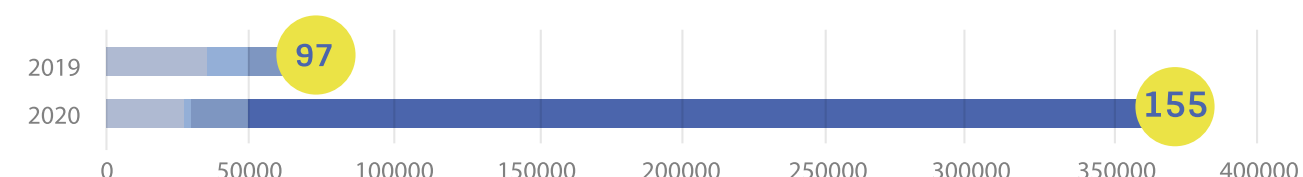
Saving commute CO₂: I Kyoto

I Kyoto is a yearly tradition at JSR Micro. During the spring and summer months, we track all kilometers that employees commute either by using sustainable transport—bike, public transport, or carpooling—or by teleworking.



In 2019, 97 participants commuted 69,041 sustainable kilometers, saving 9,631 kg CO₂. In 2020, 155 employees collected 369,989 sustainable kilometers, thereby preventing an impressive 61,081kg CO₂ from entering the atmosphere.

The 2019 participants were all celebrated with an extensive breakfast and, additionally, those who had participated ten days or more, were presented with air plants. We are still looking for ways to celebrate the 2020 participants.



Ensuring employees' health and safety



Because of the nature of JSR Micro's operations, some of our employees work with industrial equipment and potentially hazardous materials. Other employees spend significant amounts of time sitting at their computers. In both categories, it is of prime importance that they are presented with the skills, knowledge, and support that are necessary to do their work safely and in good health.

Central to this effort is JSR Micro's Environment, Health and Safety (EHS) department. EHS provides training, carries out inspection rounds, performs safety assessments for products and processes, analyzes safety risks, and organizes awareness campaigns. These are all managed through our ISO 45001 certified management system for Occupational Health & Safety.

Committee for prevention and protection at work

All Belgian companies with 50 or more employees are required to form a committee for injury prevention and protection at work. JSR Micro's committee members are elected every four years and include both managers and employees.

The committee meets each month to discuss health and safety issues at JSR Micro and conduct safety inspection rounds. As part of these, employees will review departments other than their own, ensuring that they can assess safety and propose preventive measures with fresh eyes.

From May 2021 onwards, employees will be able to reach out to two trained colleagues who will serve as trusted spokespersons for matters of harassment or safety in the workplace. We previously hired an external service for these services.



Bart Vanherp: During the pandemic, we have made a conscious choice to put the health of our employees first. We followed developments very closely and implemented measures earlier, and in some cases more strictly, than what was recommended. Although they weren't always comfortable, having these measures in place helped give our people a sense of safety. To date, and as result of these measures, we have not had any COVID outbreaks at JSR Micro.



EHS steps up during the COVID pandemic

EHS efforts were increased during the second half of the reporting period with the onset of the COVID pandemic.

- We worked closely with a medical doctor to establish the necessary measures for preventing any potential outbreak, and subsequent spread of the disease in our teams. Frequently, our precautions were more stringent than the official guidelines. We also chose to maintain these measures for longer than recommended.
- All employees who could work from home had to do so. They were given a package to set up their home office, taking into account which tools were needed to maintain ergonomic working conditions.
- JSR Micro reorganized safety procedures for on-site employees who were responsible for production processes. In consultation with a medical doctor, all potential physical contact points were examined and adapted where needed. Ongoing weekly meetings with these employees have helped to ensure that potential issues are discussed and resolved.
- This period was mentally taxing for many employees and we have prioritized mental healthcare. This was achieved through regular communication, informal online meetings, as well as access to MindLab, an online tool with questionnaires, contacts, and helpful suggestions for coping with mental and social challenges.

Sodium hydroxide loop

Some of our production processes use sodium hydroxide (NaOH), which may be harmful in higher concentrations or if spilled. To mitigate these hazards, we have built a closed-loop system that transports NaOH safely through our facilities.



100% of employees are represented in the Committee for Prevention and Protection.

100% of the products JSR Micro works with are assessed for health and safety.



JSR Micro is ISO 45001:2018 certified. ISO 45001 is an ISO standard for management systems of occupational health and safety.

Looking forward

Remaining attuned to the mental and physical health of our employees is a key focal point for JSR Micro. We are planning modifications that will improve ergonomic working conditions in the production processes, to help avoid the potential strain that repetitive handling of larger volumes can cause.



Excelling in quality



Quality is the hallmark of our semiconductor and life sciences products. We know that the slightest change in purity per example has a direct impact on our customers' product quality and yield. We refuse, therefore, to compromise on our high standards for quality and we work consistently to raise the bar for our products.

Quality and Corporate Social Responsibility

Our certified quality management system helps us to guarantee consistent product quality. It also helps us run continuous, data-driven improvement cycles that result in a more efficient use of energy and resources. In this way, our quality system is also central to our CSR efforts, enabling responsible and efficient production.



ISO 9001 as a foundation

JSR Micro manages the quality of its operations and products using the ISO 9001:2015 standard. Further, our customers in both the semiconductor and the life sciences domains implement additional standards and requirements that are pertinent to their businesses. To ensure that we meet these, our quality management system also includes elements of the IATF standard, which is the quality standard for the automotive industry. Additionally, and where applicable, we incorporate features from Good Manufacturing Practice (GMP), the guidelines for the pharmaceutical production industry.



Mathieu Vanden Bulcke: Our products are used in the fabrication of today's most powerful chips. The quality that we deliver is crucial for the yield of our customers' chip production. It is essential to be able to deliver a dependably consistent product, one where the only change can be an improvement

that is validated by the customer.

Customer recognition

In the end, it is our customers who determine whether we have succeeded in our mission to deliver quality products and services and so we are proud to report that Infineon honored us with their Best of the best Supplier Award in 2019.



Worldwide collaboration succesful

Last year, the implementation of EUV photolithography at our semiconductor customers accelerated significantly. Both the team at our Yokkaichi plant in Japan and the team in Belgium put a lot of extra effort in rolling out the necessary capacity. This was done in a sample of great team work across our sites and in close collaboration with our customers. The latter often praised the approach but also internally, our Officer and General Manager, Electronic Materials Division Mr Takahashi gave the teams an award for this accomplishment.

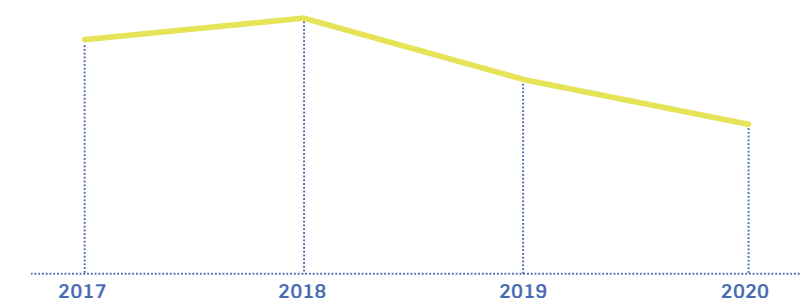
For the future

JSR Micro is working towards integration of its digital platforms. Automated batch reports, for example, would be able to assemble, and then distribute, all of the quality parameters used for a given production batch. A Laboratory Information Management System (LIMS) could then stream data from production batches to our quality management system, thereby eliminating tedious and error-prone manual work.

Tracking the number of complaints

One way to consistently improve product quality is through tracking and following up on customer feedback and complaints. By investing in precautionary methods, we work to keep the number of complaints as low as possible. We attribute the rise in the number of complaints at the end of the previous reporting period to the significant growth in the number of projects and the volumes of shipped products.

Evolution number of complaints



* Change in indicator for Quality: The previous indicator, Cost of Quality, was only covering Semi business. It was a complicated indicator to calculate and it did not easily lead to opportunities for improvement.

Maureen Moerenhout: Our Life Sciences products are meant to improve the yield of drug research and manufacturing. To that goal, these materials must be produced according to the pharmaceutical industry's strictest manufacturing standards. Only with this level of vigilance will it be possible for our customers to produce drugs that are effective and safe.



Based on continuous innovation

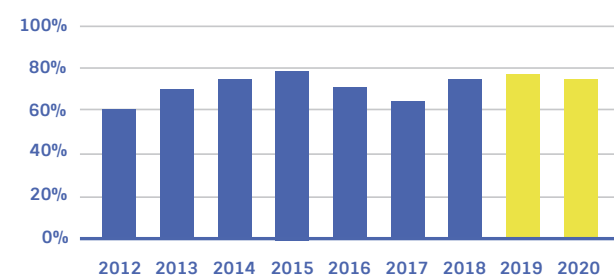


We constantly strive to improve our products in collaboration with our customers' R&D efforts. By generating methods to maintain and improve our already high quality standards and by developing new, commercially-relevant products, we can guarantee the continued success of JSR Micro.

Our efforts are guided by our parent company JSR Corporation's mission statement:

"We create value through materials to enrich society, people, and the environment."

Progress on business development



Xavier Buch: Our photoresists are essential materials in the manufacture of chips used in medical ventilators and so it was vitally important that we be able to maintain production to continue supplying our products. Even during the peak of the pandemic we were able to keep pace with this demand, and we can proudly say that we played a role in battling COVID-19 and keeping people alive. “

Chip industry

Following Moore's Law—that the number of transistors on a microprocessor chip will double every two years—the chip industry is constantly developing more powerful chips. As production nears the limits of what is physically possible, however, the innovation and R&D efforts that are required to keep up the pace are formidable. Encouragingly, a breakthrough generation of EUV lithography tools has come online during the reporting period. JSR Micro has developed, and is now supplying, matching photoresists and will continue working to improve their quality and reduce the number of defects on the chips themselves. Additionally, we are already looking to the next generations of photoresists while working to further improve our traditional i-line, ArF and KRF resists.



At the heart of chip R&D

Close to the JSR Micro EU headquarters is imec, one the world's premier R&D centers in semiconductor technology. Imec has a 300mm cleanroom where all the major tool suppliers have set up their advanced equipment to refine next-generation processes in a vendor-neutral hub.

With imec, we have set up a joint venture: EUV RMQC (EUV Resist Manufacturing and Qualification Center). This allows us to perform product quality control of our products on the exact same lithography machines that will be used by our customers. If the customer needs to make 22nm lines, we can test the quality of 22nm lines that are made with our resist. Given the capital expenditure and environment needed to buy and set up these tools, this is a unique opportunity that gives us a real advantage in terms of R&D and quality control.

Additionally, we are working with imec to create an ecosystem for the industry to jointly address the process challenges for the next generation of high-NA lithography tools to come into production in five years. Luc Van den hove, CEO of imec, on the collaboration: "Our R&D together with JSR has been instrumental in bringing the number of defects in EUV lithography down to an acceptable level. This way, they helped to enable this long-awaited breakthrough in chip production. We are now gearing up to work on yet another breakthrough, the high-NA lithography. And again, JSR is poised to play an important role."



COMBINING
PRODUCTIVITY WITH
COST EFFICIENCY

AMSPHERE™ A3

Life Sciences

Our main product, Amsphere™ A3, aids in the efficient separation of valuable therapeutic antibodies from a biological mixture, potentially helping to produce more affordable drugs. Further, we have successfully packaged Amsphere™ A3 in a modular cassette with assorted chemicals to enable pharmaceutical processes that are even faster and use fewer chemicals.

Better batteries

Binders, which form a small fraction of the weight of today's Lithium-ion batteries, are essential in the fabrication of battery cells. JSR's binders offer significant improvements in safety, performance, and manufacturing cost compared to traditional binders. Most importantly, they are water-based, thus allowing for a cheaper, more environmentally-friendly battery production.



Product stewardship and compliance



Our baseline goal at JSR Micro is that all products that we source and manufacture adhere to established regulations and that they are produced with methods that respect the environment. We achieve this by complying with the European regulations and also by employing a proactive and precautionary approach. We take pride in meeting our high standards, knowing that these principles are essential to our credibility with customers and regulators.

Compliance – our license to operate

REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) is an EU regulation that mandates the world's most stringent chemicals manufacturing legislation. JSR Micro is committed to compliance—we report all of our products, materials, and suppliers and, when needed, undertake additional research and data collection. Our database and our guidance are highly valued within the larger JSR group.

A proactive stance – protecting our customers

Our customers depend on our products and we know that, once our materials are incorporated within their manufacturing processes, they cannot be replaced without great cost. Therefore, we exclude ingredients that might become an issue in the future (even if they are permitted by current regulations). We also take into account our customers' lists of unacceptable ingredients, adjusting our formulations when possible.

Precaution – an obligation towards our stakeholders

Because of the specialized nature of our products, we are often one of only a few companies that source or use specific materials. In these cases, there may not be enough test data available for a thorough assessment. With precaution as our guide, our toxicologists will do a structural analysis of the material—incorporating computer models where possible—by matching it to similar materials for which there is more information. These results then form the basis for our toxicological advice.

Going forward

The EU Chemicals Strategy for Sustainability, an ambitious first step towards a zero-pollution and toxin-free environment, was announced as part of the European Green Deal in October 2020. JSR Micro fully embraces this important goal and pledges active participation in future discussions.

One instance of non-compliance

It was discovered during a routine inspection that the supplier for a raw material ingredient had been changed. The previous source of this material was European and was, therefore, registered in Europe. The new supplier was non-European and the material needed to be registered. This supplier change had been approved in our quality system but was not communicated to the regulatory affairs department that is responsible for registrations. Importing the material from the new source constituted a non-compliance with REACH regulations. In addressing this oversight to regulators, we pleaded that we had acted in good faith, had subsequently verified that no other similar cases had occurred, and that we had modified our management system to prevent similar future lapses. The administration accepted our plea.

One administrative non-compliance during the reporting period, which was resolved resulting again in 100% compliance with:
Chemical regulation | Environmental regulation | Labeling requirements

Business continuity and risk management



JSR Micro operates in a complex global environment, one that may be easily disrupted by political decisions, accidents, or natural disasters. This was brought home in this reporting period by several black swan upheavals, none of which was more disruptive than the COVID pandemic that started at the beginning of 2020. This unexpected turn of events constituted a real-life test of the business continuity and recovery plan we had in place. A test, we are thrilled to convey, that we passed with flying colors.

Local risk management

Effective Business Continuity Planning (BCP) seeks to identify business' potential risks and eliminate these or, if not possible mitigate the resulting consequences. At JSR Micro, we do a yearly in-depth evaluation that takes into account potential risks as fire, explosion, terrorist attack, pandemic, or extreme weather event and many other. Based on our yearly analysis, we can take precautionary measures and plan for business continuity.

Global coordination of BCP

JSR is a global company and BCP is a shared effort between our sites in the US, Asia, and Europe. Based on risk analyses, the company's composite sites have developed various scenarios which are regularly tested in drills and whose results are then used to optimize the future BCP schemes.



Xavier Buch:

Many of our customers have had supplier issues during the COVID pandemic. Our products form a small, but often essential, link in their production chain. It

was necessary, therefore, that we be able to effectively manage supply continuity. Through the way we managed the pandemic, we proved to be a reliable partner for our customers.



Managing and lowering our environmental impact



At JSR Micro, we are aware that our high-quality production comes at an environmental cost. And, because maintaining a small ecological footprint is one of our business tenets, we are continually looking for opportunities to help us achieve that goal through consistent monitoring and truthful data. This is all managed in our Environmental Management System (EMS), which accounts for JSR Micro's energy and water use, greenhouse gas (GHG) emissions, and waste products. Our EMS is ISO 14001:2015 certified.

Monitoring energy and sourcing green electricity

We have established an extensive energy monitoring system which will allow us to see how much electricity, gas, and water are used at each phase of our operations. In the future, we will use the data to develop an intelligent energy management system to make our use of energy even more efficient. Additionally, we are sourcing all our electricity from sustainable sources since January 2021 and we are now running our operations on 100% renewable electricity.

Recovering heat from tools

We replaced our outdated air compressors with new state-of-the-art equipment that, in addition to using electricity more efficiently, have the added benefit of being able to recover the heat generated during operation. We have been redirecting this heat to control the temperature of the warehouses since September 2020. Once we replace one of our two main cooling units, we will be able to redirect the recovered energy to heat water in our buildings, thus reducing our need for natural gas.

Reduce GHG emissions in transportation

Previously, we prepared and sold a highly diluted product to one of our European customers. The side effect was that we were transporting millions of liters of water over long distances. We worked with that company to help them install their own dilution facility. As a result, we are now shipping them a concentrated product, resulting in reduced pollution, GHG emissions and transport needs and costs.

Building a plant for water treatment and reuse

Our production processes, particularly the Life Sciences lines, use large quantities of water. Currently, the resulting wastewater is collected and transported offsite for processing. In an effort to reduce redundancy, we will soon begin construction of an on-site wastewater processing facility. Not only will this effort serve to shorten the wastewater processing cycle and reduce our transport footprint, but it will also allow us to reuse up to 70% of the wastewater. This is an important step in water conservation and our becoming self-sufficient in this regard will benefit both the environment and our business.

Creating a biodiversity garden

The garden in front of our offices had previously been monocultural and it suffered from the recent hot, dry summers. At the beginning of this year we redesigned the garden to include a wide variety of plants, increasing biodiversity and building resiliency against climate change. The layout is such that we will have blooming plants year-round.



Lowering footprint per produced gallon

During this reporting period, and likely into the next, we have started scaling up our production of EUV resists. While this increase will eventually result in more energy-efficient chips, it currently produces growth in our eco-footprint. Going forward, our goal is to continue developing the innovations that will serve to keep the per-liter-impact on products as low as possible.

Giving equipment and materials a 2nd life

In our effort to obtain the highest possible production quality, we must regularly upgrade our analytical equipment. We realize, however, that while this equipment may be obsolete for our purposes, it is often still useful in other capacities. In 2021 we were able to give a second life to a valuable tool by donating it to a university where it will be used in a lab as an exercise and practice tool for students. Similarly, we are looking at methods for recovering used, but still relatively pure, solvents. This will entail separating the various waste solvents, identifying which can be reused, and working with our suppliers to develop a new schedule for their future use.

Environmental performance

Non-hazardous waste

Total		
111 metric ton in 2019	129 metric ton in 2020	
Incineration & Recovery	Recycling	
81% 2019	19% 2019	
81% 2020	19% 2020	

Hazardous waste

Total		Incineration	
2963 metric ton in 2019	2959 metric ton in 2020	2% 2019	2% 2020
Recycling		Recovery	
1% 2019	1% 2020	97% 2019	97% 2020

Energy use

Electricity	Gas
24,119 GJ in 2019	27,181 GJ in 2019
23,638 GJ in 2020	24,875 GJ in 2020

GHG EMISSIONS

Scope 1 in metric ton CO ₂	Scope 2 in metric ton CO ₂
1,388 in 2019	0 in 2019
1,544 in 2020	2,626 in 2020

Water consumption

26.0 K m ³ in 2019	23.2 K m ³ in 2020
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Water reuse

19.3 % in 2019	19.4 % in 2020
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Responsible supply chain management



We believe in doing business with respect for people and the environment and we ask the same of our suppliers. Our key supplier network includes producers and distributors of raw materials, equipment, packaging materials, logistics, waste treatment, and providers of interim labor. A portion of our raw materials is sourced from our corporate parent in Japan. Our material suppliers mostly operate in high-tech business environments and follow their strict sector regulations. Their compliance greatly reduces the risk for violations against labor laws and human ethics and helps to maintain respect for the environment. Additionally, we ask that our key suppliers sign the Responsible Business Alliance (RBA) Code of Conduct, a guideline for topics such as ethics, labor, health and safety, and the environment.

RBA Compliance assessment

In the last reporting period, we requested that our key suppliers complete a questionnaire about the RBA Code of Conduct. Their overwhelming response demonstrated their commitment to CSR and, as a next step, we plan to review the results together to find further opportunities for improvement.

Supplier audit

We audit our material suppliers every three years. While quality is the main focus of our questions, as it directly impacts our products, we also investigate safety and environmental risks.

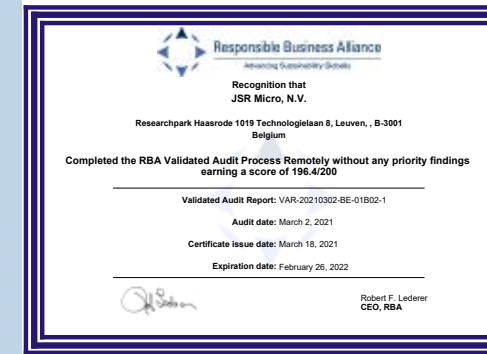
Supply chain and risk management

Although the COVID pandemic significantly disrupted global supply chains, we managed to keep our production lines running. Looking forward, we continue to use our expertise to mitigate risk by adding flexibility, removing bottlenecks, and maintaining sufficient inventories.

Supply chain performance

88 percent of critical suppliers have signed the RBA code of conduct or have shared their own codes of conduct.
14 audits were performed during the reporting period.

Validated by the Responsible Business Alliance (RBA)



JSR Micro was audited according to the RBA Validated Assessment Program (RBA VAP) during the reporting period. After the initial audit, and our subsequent corrective actions, we obtained a Gold recognition.

The Responsible Business Alliance (RBA) is the world's largest industry coalition dedicated to corporate social responsibility in global supply chains. Its members are leading companies, mainly in the electronics domain. They have all signed the RBA Code of Conduct and urge their suppliers to do the same. This way, responsible business practices trickle down through the whole supplier network.

The RBA Code of Conduct is a set of social, environmental, and ethical industry standards. These reference international norms and standards including the Universal Declaration of Human Rights, ILO International Labor Standards, OECD Guidelines for Multinational Enterprises, and ISO and SA standards. While the Code of Conduct originated with the electronics industry in mind, it is applicable to many other industries.

The initial 2020 audit indicated that JSR Micro already largely adhered to the required responsible practices. Some of the findings showed, for example, that our labor management is well governed by Belgian regulations, but RBA requires these to be explicitly mentioned in company policies. We have since corrected these and other findings.



2021 GRI Content Index

General disclosures				
GRI Standard	Disclo- sure #	Disclosure description	Page number and/or URL(s)	Direct answer / Reason for omission
GRI 102: General Disclo- sures 2016	102-1	Name of the organization	Message from the President, page 2	JSR Micro N.V.
	102-2	Activities, brands, products, and services	JSR Micro, enabling in high-tech and healthcare, page 3 Based on continuous innovation, page 17	https://www.jsrmicro.be/electronic-materials https://www.jsrmicro.be/life-sciences https://www.jsrmicro.be/emerging-technologies
	102-3	Location of headquarters		JSR Micro N.V. Researchpark Haasrode Technologielaan 8 B-3001 Leuven Belgium
	102-4	Location of operations		Leuven, Belgium
	102-5	Nature of ownership and legal form		Privately held corporation.
	102-6	Markets served	JSR Micro, enabling in high-tech and healthcare, page 3	JSR Micro's product are sold worldwide. We focus on the semiconductor, healthcare, and battery sectors. Our main customers are semiconductor (chip) manufacturers, healthcare and pharmaceutical companies, biopharma companies, universities, battery manufacturers and battery R&D
	102-7	Scale of the organization	Caring for the well-being of our employees, page 6	Total workforce is the head count excluding contractors and expats. Partial disclosure. Financial and production information has been omitted because it is confidential. Our parent company JSR Corporation publishes an annual report that includes JSR Micro's performance: http://www.jsr.co.jp/jsr_e/ir/annual_csr_report.shtml .
	102-8	Information on employees and other workers	Caring for the well-being of our employees, page 6	The data were compiled in our payroll system. In principle, the organization's activities are performed by JSR Micro's permanent employees. If we do occasionally have temporary employees, they have either interim contracts or are job students. During the summer holiday, we employ students to fill in for permanent employees, using temporary contracts.
	102-9	Supply chain	Responsible supply chain management, page 23	

General disclosures				
GRI Standard	Disclo- sure #	Disclosure description	Page number and/or URL(s)	Direct answer / Reason for omission
	102-10	Significant changes to the organization and its supply chain	JSR Micro, enabling in high-tech and healthcare, page 3	During the reporting period, EUV lithography came into commercial use within the semiconductor processing. Our production of EUV resist soared and continues to do so, as did our sourcing of the required raw materials.
	102-11	Precautionary principle	Product stewardship and compliance, page 19	
	102-12	External initiatives	Governance and ethics + Managing Corporate Social Responsibility (CSR), page 5	JSR Micro has obtained the following external certifications: ISO9001:2015, ISO14001:2015, ISO45001:2018. JSR Micro completed the RBA Validated Audit Process remotely with no priority findings
	102-13	Membership of associations		Essenscia (Belgian Federation of the chemical and life sciences industry) Agoria (Federation of technological industry) VOKA (Chambers of Commerce and Industry) Etion (Engaged businesses)
	102-14	Statement from senior decision-maker	Message from the President, page 2	
	102-16	Values, principles, standards, and norms of behavior	Governance and ethics, page 5 JSR Micro, enabling in high-tech and healthcare, page 3	JSR Micro is following the JSR Group Principles of Corporate Ethics. https://www.jsrmicro.be/about-jsr/corporate-social-responsibility/corporate-code-conduct . In addition, we have six core company values, which are communicated during onboarding, training and regular updates.
	102-18	Governance structure	Governance and ethics, page 5	The Executive Committee was expanded from 6 to 8 members during the reporting period.
	102-40	List of stakeholder groups	Our stakeholders' main interests, page 5	Employees, customers, business partners, industry associations, government agencies, neighbors, suppliers, shareholders.
	102-41	Collective bargaining agreements	Caring for the well-being of our employees, page 6	100% of employees are covered by collective bargaining agreements
	102-42 102-43	Identifying and selecting stakeholders Approach to stakeholder engagement	Our stakeholders' main interests, page 5	Interactions with stakeholders are an integral part of daily business operations. We engage proactively and continuously with stakeholders who critically influence our success: employees, customers, business partners, industry associations, and government agencies. In addition, we are always responsive to the requests that we receive from stakeholder groups with which we have less frequent contact, like neighbors and NGOs.
	102-44	Key topics and concerns raised	Our stakeholders' main interests, page 5	
	102-45	Entities included in the consolidated financial statements		JSR Micro N.V.
	102-46	Defining report content and topic Boundaries	Our stakeholders' main interests, page 5	The boundary for all aspects of CSR, except for supply chain management, is JSR Micro N.V. This is where most of our impacts occur, and where we have most control to influence impacts. The supply chain falls outside of our boundaries though we do try to influence CSR behavior through our supplier relations.

General disclosures				
GRI Standard	Disclo- sure #	Disclosure description	Page number and/or URL(s)	Direct answer / Reason for omission
	102-47	List of material topics	Our stakeholders' main interests, page 5	
	102-48	Restatements of information		none
	102-49	Changes in reporting		The previous indicator for quality (cost of quality) was replaced by the number of customer complaints. The cost of quality only referred to the semiconductor part of our business and proved difficult to use for process improvement.
	102-50	Reporting period		April 1, 2019, to March 31, 2021
	102-51	Date of most recent report		August 2019
	102-52	Reporting cycle		Every two years
	102-53	Contact point for questions regarding the report		Katleen Gorissen Email: CSR@jsrmicro.be
	102-54	Claims of reporting in accordance with the GRI Standards	About this report, page 1	
	102-55	GRI content index	2021 GRI content index, page 25-30	
	102-56	External assurance		JSR Micro has no policy that requires it to seek external assurance for this report and has not sought such assurance.
Quality				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Excelling in quality, page 15 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for an explanation of how the topic boundaries are determined. Management policy and oversight: ISO9001:2015
Company-specific indicator	Number of customer		Excelling in quality, page 15	The previous indicator for quality (cost of quality) was replaced by the number of customer complaints. The cost of quality only referred to the semiconductor segment of our business and proved difficult to use for process improvement.
Innovation				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Based on continuous innovation, page 17 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for an explanation of how the topic boundaries are determined.
Company-specific indicator	Progress on business development		Based on continuous innovation, page 17	

General disclosures				
GRI Standard	Disclo- sure #	Disclosure description	Page number and/or URL(s)	Direct answer / Reason for omission
Health and Safety				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Ensuring employees' health and safety, page 13 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for an explanation of how the topic boundaries are determined. Management policy and oversight: ISO45001:2018
GRI 403: occupational health and safety 2018	403-1	Occupational health and safety management system	Ensuring a good health and safety, page 13	a. i. It is a requirement of the SEVESO III legislation for JSR Micro to have a health and safety management system. ii. The certified ISO45001:2018 standard is used to implement the management system. b. All workers, workplaces and activities are covered by the management system.
GRI 416: customer health and safety 2016	416-1	Assessment of the health and safety impacts of product and service categories	Ensuring employees' health and safety, page 13 Product Stewardship and compliance, page 19	100% of JSR Micro products are assessed for health and safety impact. We work to lower the health and safety impact wherever possible.
GRI 417: marketing and labeling 2016	417-1	Requirements for product and service information and labeling	Ensuring employees' health and safety, page 13 Product Stewardship and compliance, page 19	All significant products and services include information on sourcing of components, content and its environmental impact and safe use.
BCP and risk				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Business continuity and risk management, page 20 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for a general explanation of how the topic boundaries are determined.
Company-specific indicator	Annual risk review		Business continuity and risk management, page 20	
Employee Engagement				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Caring for the well-being of our employees, page 6 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for an explanation of how the topic boundaries are determined.
GRI 401: Employment 2016	401-1	New hires and turnover	Caring for the well-being of our employees, page 6	

General disclosures				
GRI Standard	Disclo-sure #	Disclosure description	Page number and/or URL(s)	Direct answer / Reason for omission
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	Caring for the well-being of our employees, page 6	
	404-3	Performance and career development reviews	Caring for the well-being of our employees, page 6	
Environment				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Managing and lowering our environmental impact, page 21 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for an explanation of how the topic boundaries are determined. Management policy and oversight: ISO14001:2015
Waste				
GRI 306 (2016): Effluents and Waste	306-2	Waste by type and disposal method	Managing and lowering our environmental impact, page 21	The waste disposal method was determined in co-operation with the waste contractor and following legal requirements. Recovery: waste is incinerated with recovery of energy
	306-3	Significant spills		There were no significant spills during the reporting period.
Emissions				
GRI 305(2016): Emissions	305-1	Direct (Scope 1) GHG emissions	Managing and lowering our environmental impact, page 21	Conversion factors from Indea, consultants in energy management. Greenhouse gas emissions include gas, electricity and HFCs. Other emissions were not included because we did not track them during the reporting period. However, the use of gas and electricity account for most of our GHG emissions.
	305-2	Energy indirect (Scope 2) GHG emissions	Managing and lowering our environmental impact, page 21	Conversion factors from Indea, consultants in energy management. Greenhouse gas emissions include gas electricity and HFCs. Other emissions were not included because we did not track them during the reporting period. However, we are convinced that gas and electricity use account for most of our GHG emissions.
Energy				
GRI 302 (2016): Energy	302-1	Energy consumption within the organization	Managing and lowering our environmental impact, page 21	Data (kWh consumption) was retrieved from the invoices. Energy use reported include gas and electricity. Other emissions were not included because they were not tracked during the reporting period. However, we are convinced that gas and electricity use account for most of our GHG emissions.

General disclosures				
GRI Standard	Disclo-sure #	Disclosure description	Page number and/or URL(s)	Direct answer / Reason for omission
Water				
GRI 303: Water 2016	303-1	Water withdrawal by source	Managing and lowering our environmental impact, page 21	All water withdrawn is third-party freshwater from our municipality. All water is withdrawn from an area with water stress, as Belgium is indicated as a water stressed area: https://www.eea.europa.eu/data-and-maps/figures/water-stress-in-europe-2000-and-2030
Compliance				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Product stewardship and compliance, page 19 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for an explanation of how the topic boundaries are determined.
GRI 307: Environmental Compliance 2016	307-1	Non-compliance with environmental laws and regulations	Product stewardship and compliance, page 19	During the reporting period, there was one non-compliance penalty (see page #). There were no other breaches of regulations.
GRI 416: Customer Health and Safety 2016	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Product stewardship and compliance, page 19	During the reporting period, JSR Micro experienced no regulatory or non-regulatory health and safety compliance issues for any of our products.
GRI 417: Marketing and Labeling 2016	417-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Product stewardship and compliance, page 19	During the reporting period, there were no chemical label or SDS noncompliance violations.
Supply Chain Management				
GRI 103: Management Approach 2016	103-1 103-2 103-3	Management approach to material topic	Responsible supply chain management, page 23 JSR Micro, enabling in high-tech and healthcare, page 3	See disclosure 102-46 for an explanation of how the topic boundaries are determined.
Company-specific indicator	% of key suppliers that have signed the RBA code of conduct, or have shared their own code of conduct		Responsible supply chain management, page 23	



Photo credits to JSR Micro employees: Nadia Decoster, Els Roels, Mathieu Vanden Bulcke and Katleen Gorissen

Questions or suggestions about this CSR report?

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