



Discovering Bluestar Silicones

Bluestar Silicones. Delivering Your Potential.

BLUESTAR
SILICONES

A major international group



Fifty years' experience in silicones and a new lease of life in the BlueStar Group

BlueStar is the biggest subsidiary of CHEMCHINA Group (50% of turnover) and amongst the major global chemicals operators. BlueStar was founded in 1984 by the Group's current CEO, Mr Jianxin Ren.

Today it is an international company with over €4 billion turnover (of which 30% is outside China) with 2 subsidiaries listed on the Stock Exchange.

With its 25,000 employees worldwide, customers in over 90 countries, in-house technology development (5 research institutes) and the acquisition of western companies, BlueStar reports over 20% growth in turnover each year.

BlueStar's strategy is to accelerate development of the company in new materials, water treatment and animal nutrition by seeking to secure access to the major raw materials.

Keen to contribute to enhanced quality of life, BlueStar is committed day after day to respect the principles of sustainable development.

Bluestar Silicones: an alliance of technology and dynamism at the service of the world silicone industry

Created on February 1st 2007 through the acquisition of Rhodia Silicones by China National Bluestar Corporation, Bluestar Silicones combines know-how, gathered over more than 50 years, dynamism and determination to secure growth. It reports €600m turnover in 2008 and has manufacturing sites in Asia, Europe, North and South America. Its operational headquarters are in Lyon (France).

Bluestar Silicones favours partnerships with its major clients and strategic suppliers. In the silicon metal and methanol fields - raw materials that are crucial to the manufacture of silicones - Bluestar Silicones is following an integration policy with long-term agreements with external suppliers.

Bluestar Silicones has a strong presence in Europe and Asia, and today occupies several leadership positions on high added-value speciality product markets such as high-performance elastomers (aeronautics, paramedical and automotive industries, electrical insulation), coatings for paper and films (for self-adhesive stickers), textile coating (airbags, technical fabrics, lingerie), moulding and technical seals, (car engines, household appliances, etc.).

Silicones is a complex business requiring heavy and ongoing investment in its employees, chemical processes, technologies and production tools. Innovation and a full understanding of the markets served are crucial factors of success.

Strategic sites in Asia, Europe and America

Bluestar Silicones is present worldwide, with a strong industrial base in Europe and China. Its two major intermediates production sites for upstream applications (methylchlorosilanes and derivatives) in Roussillon in France and in Xinghuo in China, provide the group with two important geographical anchor-points.

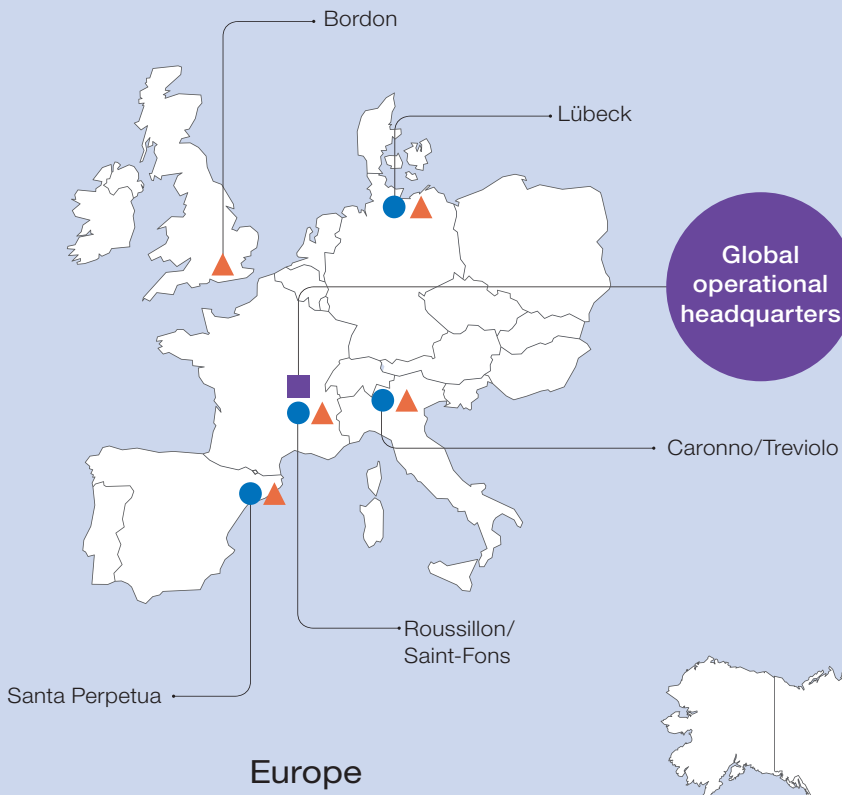
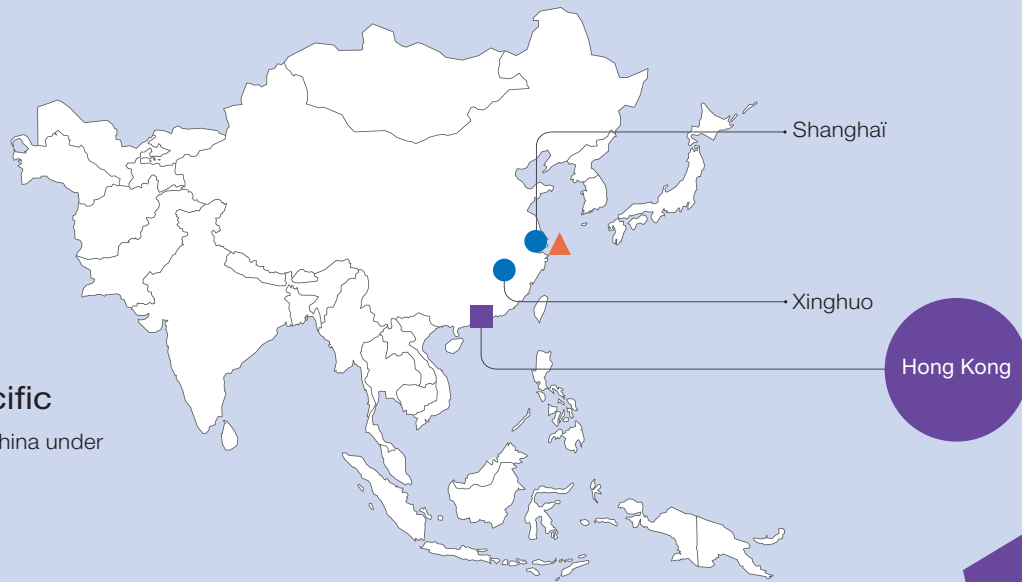
Its 9 downstream production units, deploying the Group's expertise in formulation and technical services (technical assistance to customers), are positioned close to final users on all continents.

An increase in capacity is planned for China on the upstream sector as well as major investments downstream in major intermediates and elastomers (EVC, sealants, etc.).

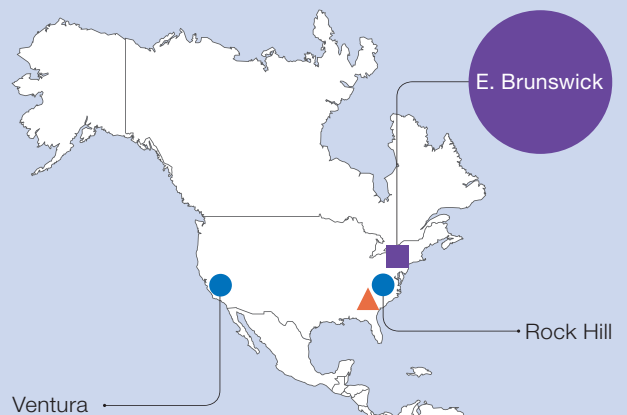
With over 50 years' experience in silicones, Bluestar Silicones offers a complete range of products for applications which include release coatings, specialty elastomers, health products, specialty fluids, emulsions, resins, etc.

Asia-Pacific

Third site in China under construction



Europe



North America / South America

- Regional headquarters
- Industrial sites
- R&D centres



Bluestar Silicones' values and ambitions

Bluestar Silicones has a dual ambition

With its partner customers, to become one of the major world actors in integrated silicones

To achieve this objective, the Group can rely on:

- Powerful, competitive integrated upstream production in localised units in France (Roussillon) and in China (Xinghuo and a new site under construction).
- A strong downstream activity with global leadership positions thanks to innovation, technical services and customer partners.
- Accelerated growth in geographical areas such as Asia, Eastern Europe, North America and Brazil.

To be recognised by its customers as a long-term actor investing continuously in its employees and its technologies

Contributing to profitable development whilst improving the quality of life of all through innovative solutions and commitment to a sustainable development ethos is a permanent priority for the whole Group.

Bluestar Silicones assiduously pursues its research and development effort whilst respecting man and his environment.

Key Bluestar Silicones figures

50: over 50 years' experience in silicones

4: industrial presence on 4 continents

90: commercial presence in over 90 countries

€600 m turnover

3,000 employees worldwide

11 production sites throughout the world

This ambition is present in the 4 values of Bluestar Silicones



Give priority to clients and quality

Supporting its clients daily, constantly seeking progress and respect for commitments made, all Bluestar Silicones' employees are aware of the need to put their skills, knowledge, know-how and motivation to daily use in order to offer suitable products and solutions with the aim of continuously improving quality and listening to their customers' needs.



Be at the forefront of Sustainable Development

Bluestar Silicones is committed to a Sustainable Development policy which favours the use of new, more environmentally-friendly technologies and the respect for people in their environment, for future generations.

It also means accepting our social responsibility, showing that we are a responsible chemical company with regard to the whole of society, the environment, local inhabitants, and our employees.



Develop a winning and open-minded

Bluestar Silicones, well-established throughout the world, has long had a duty to pursue its development policy, which has enabled it to become one of the largest industrial groups in its sector. More than ever, International development is now one of the company's success drivers, due to its values of respect, trust and knowledge of other cultures.

For Bluestar Silicones having an open-minded spirit also means ensuring that the different cultures making up the company join up and communicate with one another.



Deploy a results-driven culture

As with every industrial and commercial company, Bluestar Silicones has to supply products and services in a profitable and long-lasting way. Each and every employee is aware of the need for results in order to generate the necessary means of the company's future investment (including training, technology, teams, production means).

For us, Bluestar Silicones, encouraging results means offering innovative solutions to our customers and supporting their development as close as possible to their market. It also means, encouraging our employees to put forward innovative and constructive ideas in order to make gains in growth and profitability each day.

Health, Safety and Environment (HSE): a responsible approach to Sustainable Development



Key Bluestar Silicones Sustainable Development figures

February 1st 2007:
Total stoppage of use of landfill.

June 2007:
Launch of the “clean day” and the global HSE week initiative.

June 2008:
The company’s CEO signs the “responsible care” undertaking.

- Bluestar Silicones’ Shanghai plant was one of the first in China to obtain the “safe production” certificate in 2005 for chemical companies in China. The plant has renewed this certificate.



Bluestar Silicones is committed to a responsible policy to protect future generations and is constantly working towards the “zero accident” objective. First and foremost... prevention.

Analyses and safety studies on our processes are periodically carried out on all our facilities. Beyond conformance with existing regulations which apply to the numerous markets in which it is involved, Bluestar Silicones is keen only to launch products which are subject to risk limitation studies in respect of health of people and their environment from the design phase onwards. As part of its sustainable development and responsible industrial approach, Bluestar Silicones is implementing a worldwide HSE Policy requiring the same level of HSE standards on all its sites in the world. Bluestar Silicones has also developed a pro-active risk management formula with its customers for all of its product ranges containing SiH units so as to limit dangers linked to improper use.

HSE Policy is considered by Bluestar Silicones as one of the pillars of its industrial excellence. The company’s policy in this area is based on a dedicated management system which includes product transport, respect for the environment, health protection in the industrial environment, safety of products and respect for prevailing regulations.

Keen to push ahead in the HSE field, Bluestar Silicones applies continuous improvement loop principles. It has based its quality approach on PDCA (Plan, Do, Check, Act) which Bluestar Silicones has adapted to its management system for the apparatuses used.



Sustainable Development

Health, hygiene and safety in the workplace: an informative, pro-active, analytical awareness-raising policy around the workstation

Further to a health risk assessment, systematically carried out for all workstations, workstation notices are posted in the workshops and laboratories for each time operators and chemists who handle chemical agents. The notice informs them of the dangers of the products they are handling and reminds them of collective and individual protection rules that must be respected. Through the HSE management system, Bluestar Silicones is committed to a continuous improvement philosophy with commitments to sustainable development.

Respect of the Environment

The ambition of Bluestar Silicones is to reduce the environmental impact of its sites’ processes and waste and develop waste recovery. Bluestar Silicones is committed to treating all enquiries and to working closely with local populations around its industrial sites. This locally-publicised policy has resulted in major investments to reduce the environmental impact of our industrial activity; leading in particular to a substantial reduction in aqueous and atmospheric rejects over the past 5 years.

Bluestar Silicones and innovation: inventing products and processes for the future

Global R&D resources for enhanced performance...

For Bluestar Silicones, innovation is the basis of the development of new products and services, offering a competitive advantage to its partners and customers through a large range of technologies and applications. The idea is to respond effectively and rapidly to customers' needs:

- **A skill Centre in Lyon (France) interfaced with 7 R&D centres worldwide**, working in network format through collaborative tools which allow them to exchange results in real time.
- **Global experts in various processes and technologies** with the mission of coordinating actions within their area of competence.
- So as to support and develop internal and external communications and to give the right level of information, a similar organisation has been set up in all the R&D centres in the world.
- **Different levels of development have been defined:**
 - **Short term:** each customer need corresponds to one of our products: technical service will recommend the best solution. It will also help the customer to use the Bluestar Silicones product.

- **Medium term:** modifications or new formulations are prepared for existing products by Bluestar Silicones' design laboratories. The company defines specifications with the customer and identifies the shortest route to meet customers' needs.

- **Long term:** it is particularly through structured partnerships that Bluestar Silicones will co-develop and launch a new product with its customer and bring in major changes on the market in question.

- **Toxicology and ecotoxicology:**

Thanks to its HSE policy and respect of regulations, Bluestar Silicones can anticipate potential risks and modify formulations in order to offer products to its customers which coincide with its voluntary sustainable development policy.

- **Bluestar Silicones is open to the world of research and teaching.**

Its relationships with consultants and laboratories allow us, in a short space of time, to identify new technologies or new developments of an existing technology. These collaboration ventures play a key role in the company's long-term development and in its ambition to provide its customers with new solutions.



Bluestar Silicones' key innovation figures

20 new patents are registered each year

8 R&D centres throughout the world on 4 continents meeting new customer needs

20% of silicone products sold today did not exist 5 years ago

180 researchers throughout the world inventing products for the future



Bluestar Silicones certified

The company operates a global ISO 9001 certification policy on all sites with more specific certification according to product line and market in countries and zones and customers' particular local expectations:

- **ISO 9001:** all sites / plants in the world are certified
- **EN 9100:** aeronautics (French plants)
- **GMP accreditation for pharmacy** (excipients or active agents, in Spain)
- **ISO 13845:** dental products

Quality at every stage of silicone product manufacturing

After identifying customer needs, the project is converted into a precise specification by the research and development department: the physio-chemical characteristics and processes required to control the formulation and development are written, verified and rigorously tested, resulting in the chemical structure of a silicone product or formulation.

Integration of quality as far up the system as possible

In order to have a detailed and in-depth understanding of the characteristics and specifications of ingredients entering into the chemical chain of silicone formulation, quality control is active as high up the chain as possible in the product development process. Thus, the delivery or development of so-called application tests is necessary to ensure that the specificity of the market and/or customer is adhered to as closely as possible in terms of the in situ behaviour of the product through the silicone transformation process. The resulting control methods are then validated and become internal design standards. It is on the basis of those standards that the product enters into the industrial phase and is tested and controlled between each manufacturing process.

The second quality phase: a stable product

After this phase where the frame or reference for the “composite picture” is made, the objective of Bluestar Silicones is to propose a stable product to its customer. Reliability studies are carried out to ensure that the product formulation proposed will meet the customer’s technical specification and the demands market over the long term.

These studies have two themes:

1. Stability of key characteristics over time.
2. Robustness of the formula as to possible variations of ingredients in terms of quality and/or quantity used.

The second point is key for the following phase because it allows us to ensure a transition from

this stable situation when we have switched from the production launch phase via the process definition phase.

This process is archived in a documentary base called the “process book”. This is the manufacturing recipe and will be used as a basis for the transfer of the product from one site to the other, or from one piece of equipment to a new one for capacity growth.

The third quality phase: the same global manufacturing requirement

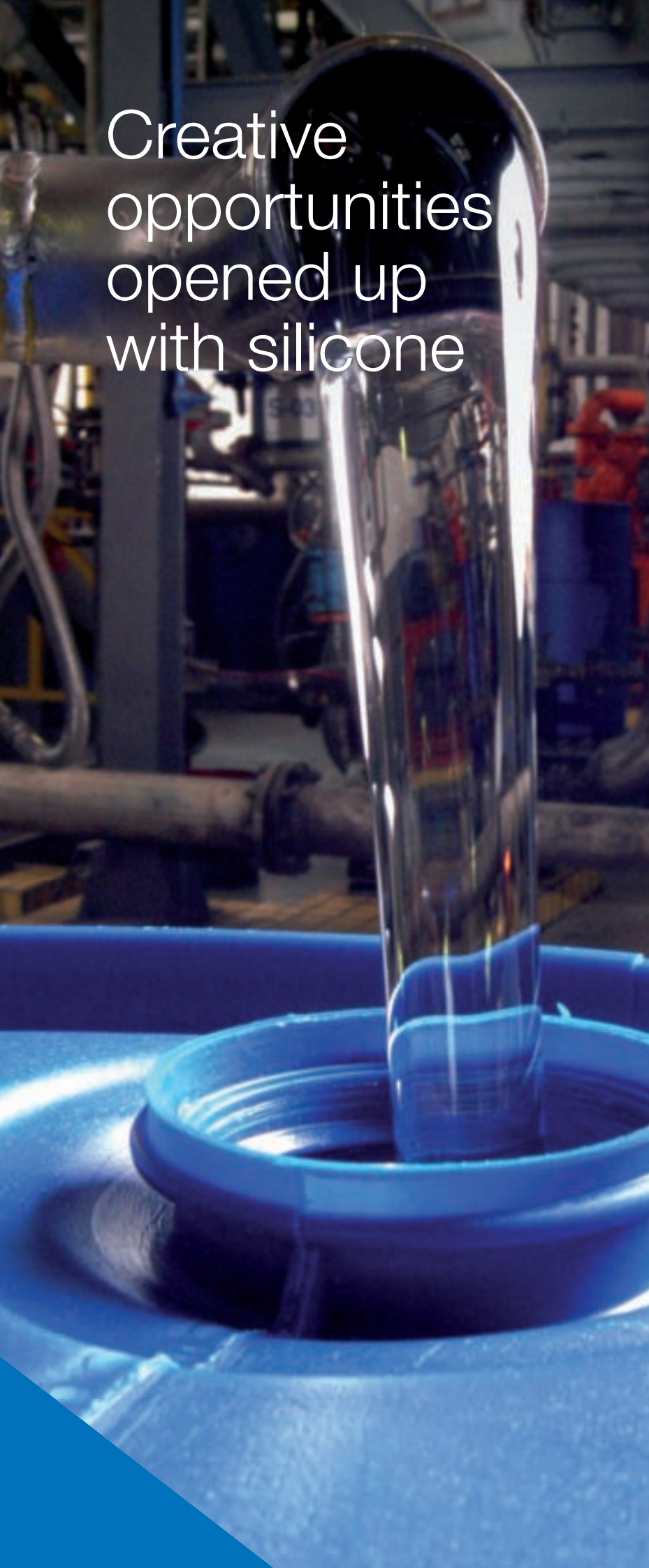
Bluestar Silicones’ global industrial system is strictly constructed so that every day manufacturing will always be the same on all sites without exception.

Manufacturing rigour and discipline are accompanied by a continuous improvement policy and corrective action to sustainably optimise design and the manufacturing process. These actions are led through PIG-type initiatives (Process Improvement Group), world class manufacturing or lean manufacturing, or via Six Sigma methodology depending on data variability. Corrections are then rolled out to all processes which run through all Bluestar Silicones’ operations. These planning, implementation and improvement verification loops followed by generalised deployment are perfectly in line with our ISO 9001 certification.

Service quality at the forefront

Customer satisfaction is at that heart of everything Bluestar Silicones does, for both product and service. The company has a global integrated information system which allows it to process customer orders and keep promises, particularly on delivery times. Periodically, manufacturing programme reviews are carried out so as to align the whole of the customer service chain with the company’s global production capacities.

This service also uses the R&D, technical assistance and commercial teams to guarantee that the whole of the organisation is engaged to delivering on Bluestar Silicones’ commitments.



Creative
opportunities
opened up
with silicone

Bluestar Silicones proposes a wide range of silicones technology

Silicon metal, the main raw material of silicones, is present in silica form or in siliceous rock, sand and aluminosilicates, which are basic raw materials for the building and glass industries. Silicon metal is chemically transformed into silicones through different production and transformation phases.

This adventure begins in the Bluestar Silicones' workshops in Roussillon and in Xinghuo where the silicon metal is ground, mixed with methyl chloride and then transformed through synthesis processes into chlorosilanes and then siloxanes. The siloxanes are then moved to the downstream units for transformation.

Several families of siloxane come out of this manufacturing process, each with multiple particularities and properties.

Depending on manufacturing and formulation conditions, the products obtained are extremely varied: their final texture can be fluid, viscous or mushy, elastomeric or rigid. The links that silicon metal creates with oxygen to form the frame of macro-molecules confer exceptional properties upon silicones and place them amongst the highest performing polymers.

Silicones at the heart of our day-to-day lives

Bluestar Silicones invents, manufactures and sells silicones in the form of fluids, elastomers, gels, foams, emulsions and oils for other industries which subsequently transform them. Once transformed, silicones are present in our day-to-day lives through the following applications.



Lifestyle and healthcare

- Cosmetic products
- Pharmaceutical products
- Dental impression products
- Medical items
- Agrochemicals
- Non-stick applications for food
- Food contact parts
- Processing of powders
- Healthcare and bodycare products
- Detergents
- Textile treatments



Construction

- Seals for building and industry
- Glass adherence
- Assembly and sealing works
- Waterproofing of construction materials
- Colourless treatment of outer walls
- Sanitation and restoration of buildings
- Solar panels



Industry

- Flexible moulds for decoration
- Reproduction of figurines
- Archaeological mouldings
- Scenery
- Industrial moulds
- Anti-foam:
 - Paper and paper pulp
 - Treatment of effluents



Energy, electronics

- Insulation and electrical protection
- Protection of cables and equipment
- Fire protection
- Heat resistance



Air and road transport

- Fluids and polymers
- Lubricants
- Engine seals
- Coating of air bags
- Demoulding of tyres



High-performance coatings

- Paints
- Varnishes
- Papers
- Textiles and leathers
- Adhesives

www.bluestarsilicones.com

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Printed on SATIMAT GREEN paper: 60% recycled fibres, 40% FSC fibres.

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