SILICONE ELASTOMERS FOR RUBBER INDUSTRIES

Rhodorsil® and Silbione®
General guide

BLUESTAR SILICONES

Rhodorsil® and Silbione®
Silicone Elastomers for rubber industries

> Why choosing Silicone Elastomers?

■ Macromolecules with unlimited structural possibilities

Silicones (or polyorgano-siloxanes) have a chemical structure based on alternating units of silicon and oxygen. The originality of silicones compared with natural silica, lies in the organic, carbon-containing groups that are included in their molecular framework.
According to the type of organic groups attached in this way, and the production and compounding methods used, a great variety of products can be obtained: their final texture can be free flowing, viscous or paste-like, elastomeric or even rigid.

■ A mineral - plastic hybrid

The difference between silicones and other organic polymers (i.e. plastics) lies in the fact that they contain a semi-inorganic element, silicon bonded to oxygen atoms with Si-O- bonds.
The bonds formed between the silicon and oxygen atoms go to make up the macromolecular framework and are exceptionally stable. They are much more difficult to break than the carbon-carbon bonds found in organic polymers.

■ Stable, high performance polymers

Silicones outperform most other polymers: Silicones have remarkable spreading capability coupled with outstanding resistance to extreme temperatures, UV and IR radiation as well as to attack from a multitude of other external agents. Without question, means that silicones rank among the very highest performance polymers.

■ A wide range of applications

Silicone elastomers, outstanding properties are used for many different industrial applications: piping in fluid circuitry and sealing (joints for building construction and aeronautical application, automotive gasket, boots and hoses), electrical protection (office equipment, safety cables and insulators for electrotechnical applications, spark plug boots, cables and connectors for automotive application). Food, pharmaceutical and biomedical applications (tubes, profiled sections) are made using heat cure elastomers from the Silbione range, which are specially formulated to comply with European and American regulations.

Main outstanding properties of silicone elastomers

▶ Heat stability in continuous use from - 50 to 200 °C (can be increased up to 300 °C using specific additives).

▶ Exceptional ageing resistance (even under extreme conditions).

▶ Great versatility of use.

▶ High innocuity due to the inorganic Si-O-Si chain.

▶ A wide range of color masterbatches available and possibility to produce transparent products.

> Trust Bluestar Silicones for Silicone Elastomers

■ Recognized expertise

With more than 50 years experience in silicone rubber, Bluestar Silicones puts at your disposal a wide range of specialized products having application domains like the transformation of technical parts, medical applications, food contact or electric applications (see Electrical Industries brochure). Bluestar Silicones works closer with you to define your specific requirements for the research and development of new products right through to the development of exclusive solutions.

■ A worldwide presence

With production sites in all the continents and a worldwide logistics chain, Bluestar Silicones can supply quality products and services consistent in terms of performance level and adaptable to each specific use throughout the world.

■ Technical service: specialized teams in elastomers technology

At Bluestar Silicones, Rubber industry segment is managed by specialists who have an in depth knowledge of Silicone elastomers and their applications and many years of experience. Upon request, they are supporting customers for specific applications and guidance. Rubber industry teams are coordinated and supported by Tech Service Laboratory and its resources in Research, data-base and performance evaluation.

■ Analytical capabilities and approved industry sector tests

With state-of-the-art equipment and unique know-how, our teams are able to select the best solutions in the laboratory before testing on-site. This helps to determine, with your team, the optimal solution for your needs.

■ Regulatory assistance adapted to the most demanding markets

Our specialists have detailed knowledge of the evolution of standards and current regulations. They are capable of guiding you in terms of legislation as well as giving you regulatory assurance for all the most demanding applications.

BLUESTAR SILICONES Mix & Fix CENTER®

Bluestar Silicones Mix & Fix Centers® network

In order to be closer to your needs, Bluestar Silicones has specialized formulation and packaging units: the Mix & Fix Centers®.

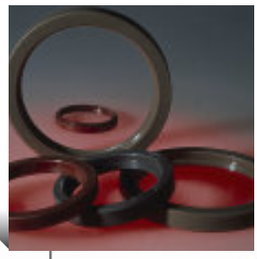
Specialized in heat curing silicone rubbers (HCR), the Mix & Fix Centers® are located at the center of major rubber and elastomer converter regions. Besides selling master batches and other products, these centers develop, within extremely short lead times, products according to your specifications and your equipments.

The Rhodorsil® HCR range can be utilized to

■ **Make up your own silicone elastomer batches**

■ **Call your Mix & Flix Center® to**

> Propose batch formulations.
> Prepare samples.
> Deliver ready-to-use compounds in the colors, presentation, and curing system of your choice.
> Formulate compounds containing some exclusive additives and catalysts (such as platinum catalyst).



General purpose

- Rhodorsil® HCR

Silbione

- Silbione® HCR
- Silbione® LSR

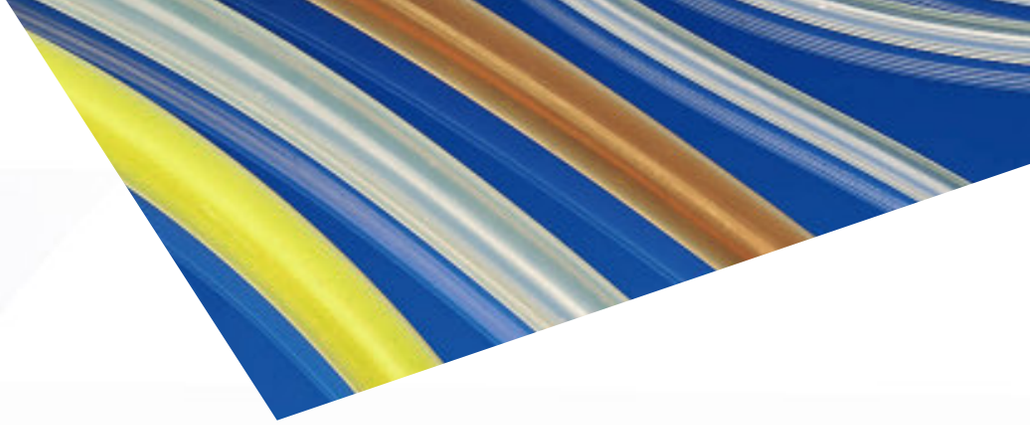
Specialties

- Rhodorsil® HCR

Polyaddition

- Rhodorsil® FIM

Additives & Colors



Bluestar Silicones offers a complete range of silicone elastomers for the rubber industry including numerous different technologies.

Rhodorsil® HCR

Heat cure silicone elastomers are basically made from reactive silicone gums and specific silica fillers. Rhodorsil® HCR have outstanding properties and are far superior to conventional organic elastomers. They exhibit exceptional mechanical strength at temperatures ranging from - 50 °C up to + 300 °C. The aging resistance of these elastomers highlights fundamental qualities such as the fact they are chemically inert, photo-oxidative stable and are absent of residual reactive groups once cured.
A wide range of colors is available.
HCRs are available as rubbery breads and supplied in two forms: master batches (without incorporated catalyst) or as ready to use compounds (through Bluestar Silicones' Mix & Fix Centers®).

Rhodorsil® FIM

Rhodorsil® FIM Polyaddition HCR (Fast Cure Injection Molding) is a range of platinum catalyzed HCR silicones. The polyaddition crosslinking reaction is much quicker than that initiated by peroxides and does not generate any toxic by-products. This is why Rhodorsil® FIM allows improved productivity and represents an excellent combination between mechanical properties, respect for the environment and improved working conditions. Rhodorsil® FIM is easily processed using mold and injection presses already used in the rubber industry, without further investment.

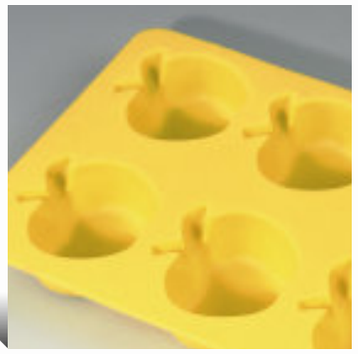
Silbione® HCR and LSR

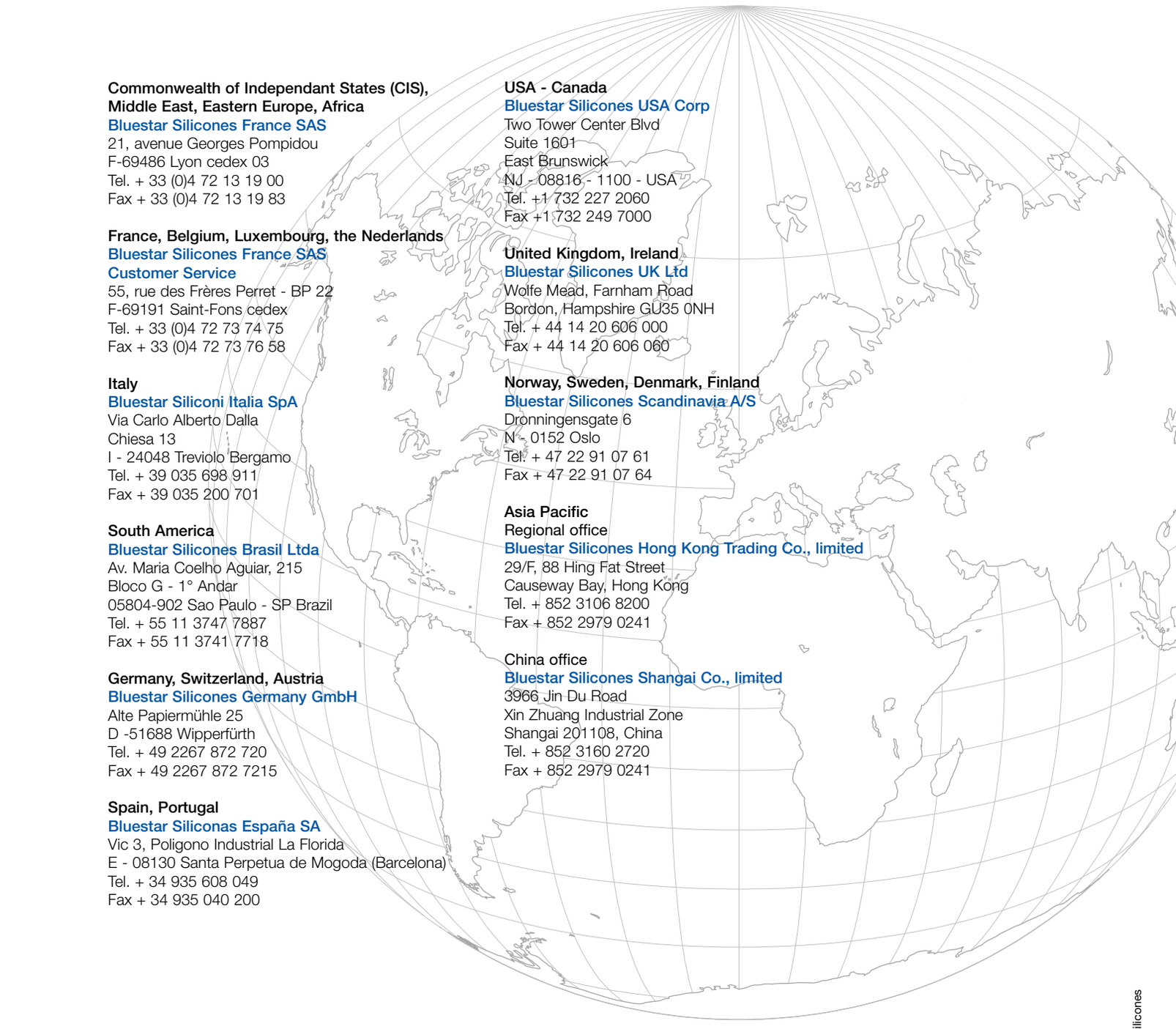
Silbione® LSR are two-component systems in which viscosities are generally between 10 000 and approximately 10^6 mPas. This type of formulation forms an elastomeric network thanks to reactions of polyaddition in the presence of a platinum catalyst. The processing and product performance advantages of liquid silicon rubber (LSR) are utilized in many existing and new applications. This type of rubber can associate essential properties of silicone polymers and easy injection molding processing. After mixing A and B parts in a static or dynamic mixer, the largest means of transformation are: injection-molding machines working at medium or high pressures, or pumps directly feeding a mold at ambient pressure. These mixtures are vulcanizable from 60 °C to around 150 °C.
Silbione® are a range of silicone elastomers dedicated to food contact, pharmaceutical and biomedical applications. Silbiones are HTR or LSR whose raw materials are in accordance with regulations (ie: positive lists). They are manufactured, then controlled according to a specific process protocol. With the Silbione range you are certain to implement only elastomers in conformity with the regulations in place.

Bluestar Silicones has developed a complete range of Additives and Color Master batches.

Additives & Colors

> **Additives:** they can be used in all HCR master batches and are distributed in two categories: Processing enhancing additives and Performance enhancing additives.
> **Color Master batches:** many different colors.





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