

E L A S T O M E R S

# Europrene Lattice<sup>®</sup>



versalis

# Europrene Lattice®

## BACKGROUND

Versalis is one of the major producers of Emulsion SBR Latices. The production facilities are situated in Ravenna, Italy. The SBR Latex plant has been on stream since 1962 and has a nominal capacity of 25 KT per year of Europrene Lattice®.

The Carboxylated Styrene-Butadiene Latex (XSBR) plant has been on stream since 1981, with improvements in 1997 and 2005 and now has a capacity of 35 KT per year. Acrylonitrile-Butadiene (NBR) Latex are also produced here.

## PROCESS

Europrene Styrene - Butadiene Latex is made by the “cold” polymerization process. Styrene and Butadiene monomers are polymerized in water in the presence of an emulsifier (fatty or rosin acid soaps), an initiator and a modifier. The initiator generates radicals via redox decomposition during the reaction between chelated iron/organic hydroperoxide and a reducing agent. The molecular weight and polymer structure is primarily controlled by the addition of a chain transfer agent. When the desired conversion is reached, the polymerization is terminated by the addition of a shortstop. Residual Butadiene and Styrene are then removed from the latex. For High solids Latex (HSL), the Latex is then agglomerated and concentrated to give a Solids content of 66%. For Low Solids Latex (LSL) the solids content is adjusted to 41% or 52%.

## SUSTAINABILITY

All grades in portfolio are available with ISCC Plus Certification: “Bio Attributed (BA)” and “Bio-Circular Attributed (BCA)” products made from bio naphtha, and “Circular Attributed (CA)” made with a “recycled oil” (r-Oil), a pyrolysis oil obtained from the chemical recycling process of mixed plastic waste.

BA, BCA and CA raw materials can be used in production processes together with traditional raw materials. In order to attribute sustainability characteristics to the final product, Versalis applies the Mass Balance approach, an acknowledged methodology that ensures that the sustainability characteristics of the alternative raw material, mixed with traditional naphtha, correspond to those of the final product.

They guarantee identical performance, quality and properties, as they do not differ in chemical composition and physical-mechanical performance from standard products.



## MAIN PROPERTIES

High and Low Solid (HSL and LSL) Europrene Latice® are random copolymers of Styrene and Butadiene and cover a wide range of stiffness (from very soft to very stiff). The residual double bonds enable vulcanization with sulphur and accelerator. The polymer Tg, processability and mechanical properties, increase with styrene content, while the abrasion resistance of the finished compound is slightly decreased.

NBR latex is an acrylonitrile-butadiene latex with a low solid content (35%) and shows very good oil resistance. The XSBR latices (50% solid content) are random copolymers of styrene, butadiene and carboxylic agents. Different grades of lattices are obtained by changing the monomers content and the other ingredients.

The particle size is a key parameter for latex performance during use. This is especially true in the paper industry, where the particle size affects most of the characteristics of the coatings.

## GRADE SELECTION

The HSL, NBR and XSBR latices produced in Ravenna, Italy, are called Europrene Latice®.

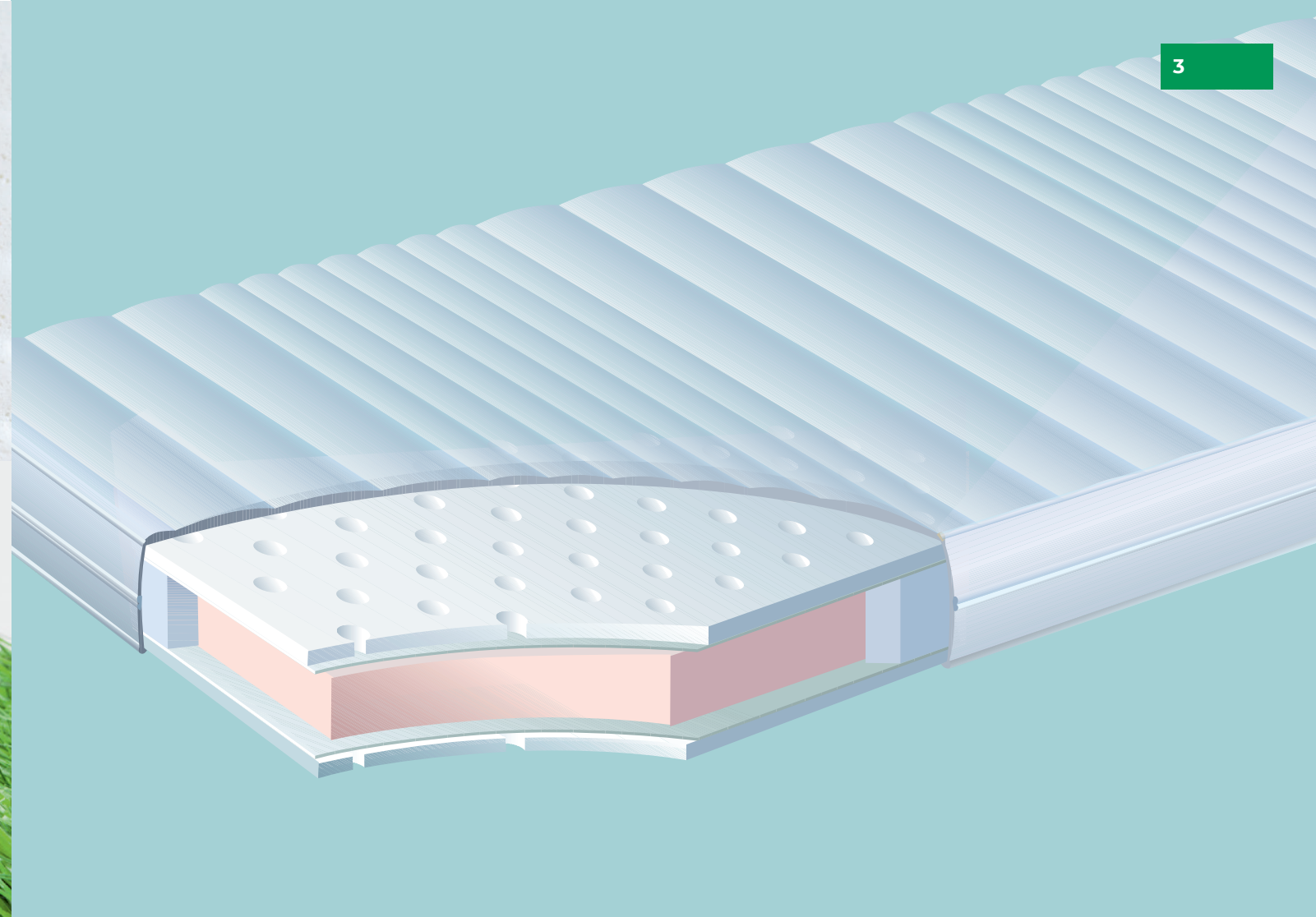
HSL Europrene Latice® are used for the production of moulded foams (pillows, mattresses, toppers), carpet foams, adhesives and bitumen modification, the desired stiffness being related to the Styrene content. LSL Europrene Latice® B 010 is characterised by very high Styrene content and can be used as a reinforcing additive of the other latices, or alone in specific application such as fiber saturation for footwear. Europrene Latice® 084 is used in cord dipping applications for tyre typically together with VPL.

NBR Europrene Latice® 2620 is used in beater addition processes to obtain articles used in oil resistant applications. XSBR Europrene Latice® are used in paper and board coating, paper saturation, adhesives, carpet backing, textile and needle felt impregnation.

On the basis of final application the latex characteristics to be taken into account are styrene content, carboxylic agent content and particle size.

## STORAGE AND PACKAGING

Europrene Latice® is a polymer emulsion, dispatched in bulk or Intermediate bulk container (IBC) of 1 wet Ton. Europrene Latice® has to be stored in vented tanks or covered place in sealed packaging, away from sunlight and heat sources, at temperatures between +5 and 30°C. The shelf life is 6 months.



## GRADE LIST

### Styrene - butadiene latex

MEDIUM STIFFNESS MOULDED	TOTAL SOLIDS %WT	PH	BROOKFIELD VISCOSITY 20 RPM 25°C MPa.S	EMULSIFIER <sup>(1)</sup>	BOUND STYRENE %WT	MAIN APPLICATIONS
Europrene® Latice 5570	66	10.5	800	FA	26	Soft moulded foams applications, adhesives, bitumen modification
Europrene® Latice 5577	66	10.5	800	FA	30	Medium stiffness moulded foams, footwear in-soles, gel and no-gel carpet foams
Europrene® Latice 2430	67	10.5	1100	FA	35	High stiffness moulded foams, footwear in-soles, gel and no-gel carpet foams
Europrene® Latice B 010	51	11	25	FA	82	Reinforcing latex to increase stiffness of soft latex including natural latex
Europrene® Latice 084	41	11.0	50	FA	24	Fabric impregnation in blend with VPL or natural latex

(1) FA = Fatty acid



## Carboxylated styrene - butadiene latex

GRADE	TOTAL SOLIDS %WT	PH	BROOKFIELD VISCOSITY 20 RPM 25°C MPA.S	EMULSIFIER <sup>(1)</sup>	BOUND STYRENE %WT	ANTIOXIDANT	MAIN APPLICATIONS
Europrene® Latice 405	50	8	300	SA	40	Non staining	Paper saturation, adhesives
Europrene® Latice 406	50	8	300	SA	40	Non staining	Paper saturation
Europrene® Latice 440	50	8	300	SA	60	Non staining	Low odour water based adhesives
Europrene® Latice 440 AF	50	8	300	SA	30	Non staining	Adhesives
Europrene® Latice 455	50	8	300	SA	47	Non staining	Paper saturation
Europrene® Latice 5583	50	8	300	SA	40	Non staining	Soft handle textile impregnation
Europrene® Latice 5584	50	8	400	SA	60	Non staining	Medium -firm handle carpet backsizeing and textile impregnation
Europrene® Latice 5585	50	8	300	SA	47	Non staining	Soft handle primary and secondary backings
Europrene® Latice 5587	50	7.5	600	SA	75	Non staining	Very firm handle textile applications
Europrene® Latice 5588	51	7.8	350	SA	50	Non staining	Soft handle primary backings, anchor coatings and secondary backings
Europrene® Latice 8435	50	7.5	600	SA	69	Non staining	Very firm handle carpet backsizeing and needlefelt impregnation
Europrene® Latice 8487	50	7.5	500	SA	67	Non staining	Firm handle carpet backsizeing and needlefelt impregnation
Europrene® Latice 1152	50	6.2	120	SA	-	-	Offset, web offset and board coating
Europrene® Latice 1253	51	8	<700	SA	55	-	Synthetic grass backing and coatings

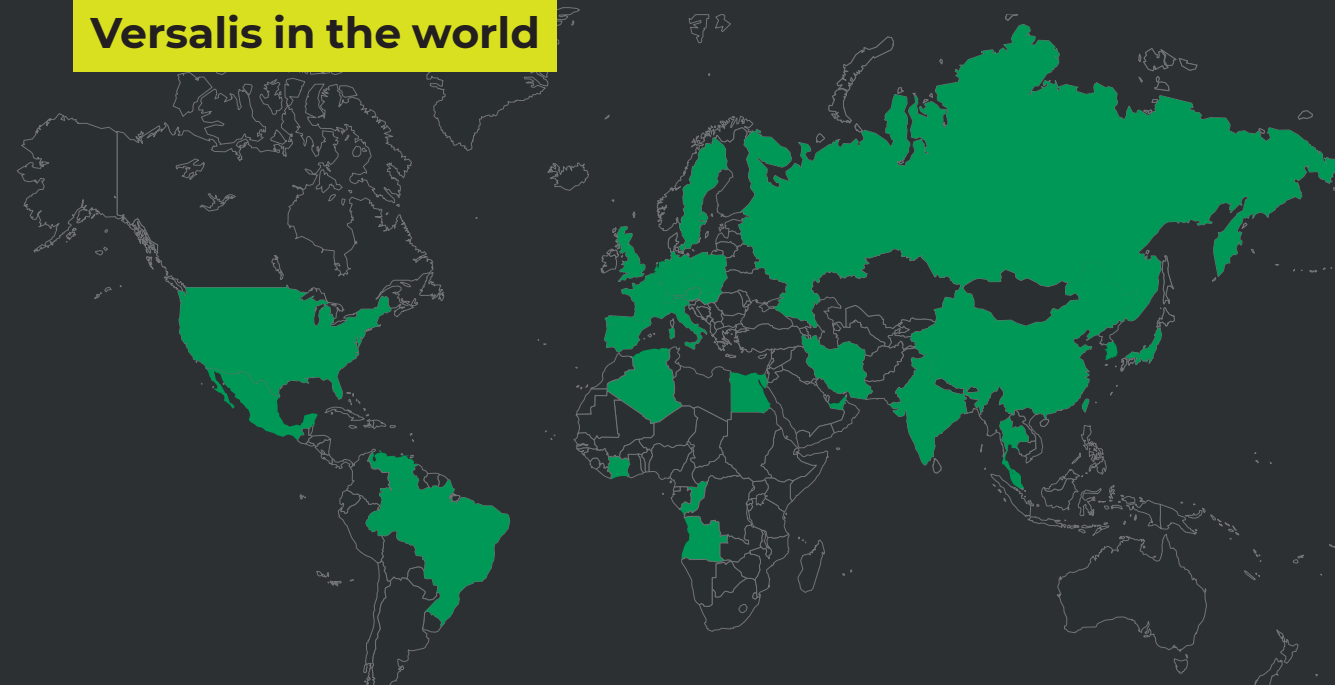
(1) SA = Synthetic anionic

## Acrylonitrile - butadiene latex

GRADE	TOTAL SOLIDS %WT	PH	BROOKFIELD VISCOSITY 20 RPM 25°C MPA.S	EMULSIFIER <sup>(1)</sup>	BOUND ACN %WT	ANTIOXIDANT	MAIN APPLICATIONS
Europrene® Latice 2620	34	10.5	30	RA	38	Non staining	Solvent resistant articles Specifically designed for beater addition process

(1) RA = Rosin acid

## Versalis in the world



Versalis is focused on establishing itself as a solution provider, offering a range of increasingly market-oriented products at an international level. The company is present in the APAC region through its Shanghai-based subsidiary, Versalis Pacific Trading; in Mumbai, India; in Singapore; and in South Korea through LVE, a joint venture with Lotte Chemical.

Versalis can also count on subsidiaries Versalis Americas – with offices in Houston, Texas – and Versalis Mexico. Furthermore, Versalis serves the oil and gas industry with offices in Ghana and in Congo, with its portfolio of oilfield chemicals. Thanks to a widespread sales network, distributors and sales agents, Versalis can serve all markets worldwide.

### HEADQUARTERS

San Donato Milanese, Milan (Italy)

### LICENSING

Algeria  
Brazil  
China  
Egypt  
India  
Iran  
Japan  
Malaysia  
Portugal  
Qatar  
Romania  
Russian Federation  
Slovak Republic  
South Korea  
Spain  
Taiwan  
USA  
Venezuela

### R&D

ITALY  
Ferrara  
Mantua  
Novara  
Porto Torres  
Ravenna  
Rivalta Scrivia

### SALES NETWORK

Austria  
Belgium  
China  
Congo  
Czech Republic  
Denmark  
France  
Germany  
Ghana  
Greece  
Hungary  
India  
Italy  
Mexico  
Poland  
Portugal  
Romania  
Russian Federation  
Singapore  
Slovak Republic  
South Korea  
Spain  
Switzerland  
Sweden  
Turkey  
United Arab Emirates (VPM, a joint venture with Petrochem/Mazrui Energy Services)  
UK  
USA

### PLANTS

ITALY  
Brindisi:  
- Steam cracking  
- Aromatics  
- Polyethylene

Crescentino:  
- Bio-ethanol

Ferrara:  
- Elastomers  
- Polyethylene

Mantua:  
- Intermediates  
- Styrene  
- Styrenics

Porto Marghera:  
- Recycled polymers

Porto Torres:  
- Elastomers  
- Renewable chemistry

Priolo:  
- Steam cracking  
- Aromatics

Ragusa:  
- Polyethylene EVA  
- Butadiene

Ravenna:  
- Elastomers

UK  
Grangemouth:  
- Elastomers

FRANCE  
Dunkerque:  
- Steam cracking  
- Polyethylene EVA

GERMANY  
Oberhausen:  
- Polyethylene EVA

HUNGARY  
Százhalombatta:  
- Styrenics

SOUTH KOREA  
Yeosu (LVE, a joint venture with Lotte Chemical):  
- Elastomers



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