



GLOBALPRENE 990 I

LCY Elastomers

A global producer of SBS, SIS, SEBS and SEP polymers.

Globalprene GP-9901

Globalprene GP-9901 is an SEBS polymer grafted with ~1.5% maleic anhydride. Grafting maleic anhydride on SEBS adds polarity to the elastic polymer and enables usage of SEBS in previously incompatible applications. The hydrogenated polymer also maintains excellent thermal and UV stability and is resistant to salt and common corrosive agents. Applications for GP-9901 include soft-touch overmolding, polymer impact modification, compatibilizing polymers and fillers in blends, tie layers for multilayer films, and specialty coatings.

Typical Properties

Polystyrene Content	30%
Specific Gravity	0.91
Hardness (Shore A)	75
Tensile Strength (MPa)	14.2
Ultimate Elongation (%)	600
Melt Flow (230°C/5kg)	>20
Solution Viscosity (cP @25°C, 25% in toluene)	4700
Bound Maleic Anhydride	1.5%

Soft-touch Overmolding

Overmolding involves injection molding a different material over an existing structure, allowing synergy between two types of material, variation in color and properties, as well as low-cost assembly of parts. Thermoplastic elastomers provide an excellent soft-touch feel and adds improved flexibility, making it a good candidate for overmolding onto engineering plastics, which are often hard and rigid. Due to their non-polar structures, SEBS polymers are not compatible with many engineering plastics as well as other polar substrates. GP-9901 can be used as part of the formulation to improve compatibility and increase adhesion between the soft-touch overmold material and the polar substrate. The higher melt flow of GP-9901 also provides better wettability with the substrate and further enhances the adhesion.



Impact Modification of Engineering Plastics

Styrene-ethylene/butylene-styrene (SEBS) polymers are often used as impact modifiers for polypropylenes due to their low T_g and good compatibility with PP. As a maleic anhydride modified SEBS polymer, GP-9901 can be used as an impact modifier for engineering plastics. One classical application is the impact modification of different polyamides. Adding GP-9901 to polyamides results in improvement of impact strength at room temperature and under low temperatures as well. Performance can be further optimized by replacing part of GP-9901 with conventional SEBS polymers.

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Another emerging application is the modification of biopolymer such as polylactic acid (PLA) and polyhydroxyalkanoate (PHA). These materials are attractive due to their derivation from renewable sources and their biodegradability. Blending maleated SEBS polymers with PLA or PHA can increase elongation and impact strength.

Compatibilizing Dissimilar Materials

Compounders and resin manufacturers often combine different plastics and resins together to achieve optimal properties. When two dissimilar materials are compounded together, a compatibilizer is

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often needed to achieve best performance. GP-9901 can serve as a compatibilizer between polar and non-polar plastics and resins. For example, when SEBS polymers are compounded with TPU or copolyester, adding GP-9901 can prevent phase separation (delayering) during molding or extrusion.

Adding GP-9901 can also improve toughness of blends of recycled plastics, which are often mixtures of many different materials from post-industrial or post-consumer wastes. Similarly, it can also be added to improve coupling between polymer matrix and reinforcing materials such as fillers, glass fibers, or natural fibers. Polymer composites based on natural fillers like wood and glass fibers have gained traction due to the drive for sustainability. The addition of such fibers also lowers the cost while improving stiffness of the blend. Maleated SEBS can once again be used as a compatibilizer between the polymers and fibers for improved performance.

Finally, GP-9901 can also be used as part of the tie layer material in multi-layer films to compatibilize polyolefins with polyamide or EVOH layers.

Specialty Coatings

Styrenic-block-copolymers (SBCs) are flexible and tough materials. They can be dissolved in solvents and applied as a coating for applications that require good resistance against water and chemicals. SEBS polymers are often used in cases where excellent weatherability and UV resistance is needed. Coatings based on maleated SEBS can exhibit good adhesion on metal and polar substrates. They offer excellent durability and corrosion resistance, making them suitable for coating parts and devices, concrete, pipes, and other structural applications.

PROCESSING AND USAGE

GP-9901 can be melt processed or dissolved in compatible solvents for different applications. GP-9901 may absorb moisture during storage. The moisture content may affect processing or the performance of the polymer. Drying the polymer in a desiccant dryer below 80°C before use is strongly recommended.



LCY CHEMICAL CORP.



1 LCY Elastomers LP

Tel: +1-281-424-6100 Fax: +1-281-424-6340
4803 Decker Drive, Baytown, Texas 77520, USA

2 Huizhou LCY Elastomers Corp.

Tel: +86-752-5599000 Fax: +86-752-5599002
299 Shihua Dadaozhong, Dayawan Economic & Technological Development Zone, Huizhou, Guangdong, 516082, P.R.C.

3 LCY GRIT CORP. (Xiaogang)

Tel: +886-7-8712268 Fax: +886-7-8712296
No.16, Zhonglin Rd., Xiaogang Dist., Kaohsiung City 812, Taiwan



LCY GRIT CORP. (Taipei)

Tel: +886-2-27631611 Fax: +886-2-27482661

3F., No. 85, Sec. 4, Bade Rd., Songshan Dist., Taipei City 105, Taiwan