

SBR Rubber Introduction 2

By [styrene butadiene rubber sheets](#) - www.dongrubber.com, sales@dongrubber.com, Date: Jun.18.06

Part 3 Main Categories of [SBR Rubber](#)

1. High temperature emulsion poly styrene butadiene rubber (HSBR)

HSBR is the oldest variety of styrene butadiene rubber, polymerization temperature is 50 °C, due to have a higher conversion rate in the polymerization process, crosslinked polymer latex particles generate gel, with many branched chains, low relative molecular mass of copolymer content is large, with poor mechanical properties. Since adopting low-temperature copolymerization, the branched copolymerization reaction reduced, also reduce the degree of crosslinking, thus make its relative molecular mass at high level and relative molecular mass distribution is relatively narrow, rubber quality has greatly improved, the high temperature copolymerization was washed out gradually, now it is used only as a certain special purpose products. Its main characteristic is:

- (1) Even and pure quality, less impurities mixed in.
- (2) Thermoplastic is lower than natural rubber.
- (3) The strength of pure vulcanized rubber is low, which needs to add active reinforcing agent.
- (4) The cure rate is low, but the cure flatness is good, difficult to sulfide.
- (5) The ageing resistance, heat resistance, abrasion resistance and other excellent performance better than natural rubber.
- (6) More trans-1, 4 structure content, irregular structure, hotter than the natural rubber.
- (7) Elastic inferior to natural rubber and elastic hysteresis loss, high heat.
- (8) Viscosity worse than natural rubber.

2. Low temperature emulsion poly styrene butadiene rubber (CSBR)

Emulsion styrenebutadiene rubber at low temperature is one of the largest production synthetic rubber varieties synthetic rubber varieties, widely used in tires and other rubber products. As the polymerization methods continue to improve, the variety of styrene butadiene rubber is increasing, quality has been improved. These varieties have different characteristics and its main characteristics as follows:

- (1) Pure and even quality of rubber, less impurity mixed in.
- (2) Low vulcanization rate, good flatness, sulfide is safe.
- (3) The ageing resistance, good heat resistance and abrasion resistance better than natural rubber.
- (4) The workability, mechanical properties have good comprehensive balance cost.
- (5) High thermal processing, contraction deformation is large, the surface is not smooth.
- (6) Can be used with natural rubber, butadiene rubber to improve the processability and physical properties.
- (7) Elasticity is lower than natural rubber, large hysteresis loss, high heat vulcanized rubber.
- (8) Viscosity and self-viscosity poor.

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(9) To make the compound dispersion good, needs to add oil operation, more commonly used is aromatic oil.

3. The low temperature styrene butadiene rubber carbon black mixing rubber Before the styrene-butadiene rubber latex coagulation, adding a certain amount of carbon black, which was dispersed evenly into the latex, by precipitate into carbon black rubber mixing. This kind of rubber mixing is characterized by mechanical performance, more stable, good process performance, and thus shorten the mixing cycle, ease of application. But it is only applicable to black rubber products. Its main characteristic is:

(1) Mixing time shorten and mixing with less heat production, high mixing efficiency, less energy consumption.

(2) Cooperate with weighing when simplified, production increases.

(3) The carbon black dispersed evenly, cooperate agent is easy to mix, and scattered.

(4) Easy processing, rubber performance can be improved.

(5) Mixing environment greatly improved.

(6) For mixing time is shorter, rubber mooney viscosity a little higher, you can use delayed promoter to improve the coke burning phenomenon.

(7) Vulcanizate rubber has good mechanical properties, and increase abrasion resistance.

4. The low temperature oil filling [styrene butadiene rubber](#)

In order to improve the processing performance of [styrene-butadiene rubber sheet](#) and reduce costs, in the process of polymerization, can add mineral oil to the latex (e.g., naphthenic oil, aromatic oil). Under latex coagulation, the absorption of a large number of mineral oil and become oil filled styrene-butadiene rubber mixing. Compared with non oil-extended styrene butadiene rubber, it has good process performance, rubber shrinkage small, smooth surface, no coke burning phenomenon, processing rubber in multiple deformations when the heat is less, so correspondingly it extended the service life of [SBR rubber sheet](#). Its main characteristic is:

(1) Low temperature filling oil styrene butadiene rubber, because filling quite a amount oil, improved the processing performance, and keep the original mechanical properties of polymers.

(2) Vulcanized heating small, less hysteresis loss, good abrasion resistance.

(3) Has the superior traction performance, the sliding resistance is good.

(4) Low temperature flexible long service life.

(5) By filling a quantity of oil, costs are lower.

(6) Viscosity is bad, and can migration or spread in the use of the CPC, made viscosity drops.

(7) More used with butadiene rubber or natural rubber.