



Takhte Jamshid PetroChemical Co.

**Technical Data Sheet**  
**TJPC SPH Antioxidant - CAS# 61788-44-1**

### CHARACTERSTICS

TJPC SPH is a non-staining, non-discoloring, cost effective general purpose antioxidant for dry rubber & latex compounds. Having excellent color stability, it finds wide application in white & light colored latex and rubber applications such as flooring, sports goods, shoe soles, general mechanical goods, carpet backing etc. It is used as a stabilizer for Rubber and Plastics, Adhesives, Oils and Plasticizers & Lubricants.

TJPC SPH in synergy with other antioxidants is extensively used as a stabilizer in production of synthetic elastomers such as Styrene butadiene rubber (SBR) and Polybutadiene rubber (PBR).

### Application

TJPC SPH is used as an antioxidant in rubber, and as an intermediate in the production of surfactants (ethoxylates). These are used largely in the formulation of crop protection products, with minor uses as anti-static agents for wool and stabilizers for polyurethane foams. TJPC SPH is used in the manufacture of latex foam, latex sprays for coir treatment.

### Typical Properties

Typical Properties	Units	Values	Test method
<b>Appearance</b>	No unit	clear to amber	-----
<b>Gardner Color</b>	No unit	Max 8	ASTM D1544
<b>Clarity</b>	No unit	free of suspended	-----
<b>Specific Gravity (@25 °C)</b>	gr/cm <sup>3</sup>	1.08-1.085	Internal (C0104)
<b>Viscosity (@25 °C)</b>	Cp	3000-6000	Internal (C1773)
<b>Refractive index (@25 °C)</b>	No unit	1.5985-1.6012	DIN 51 423
<b>Distillation</b>	%	Max 25	Internal (C1771)
<b>Flash point</b>	°C	Min 180	Internal (C0108)
<b>GC Composition</b>			
1. Mono-Styrenated Phenol	%	≤ 15	Internal (C0111)
2. Di-Styrenated Phenol		39-51	
3. Tri-Styrenated Phenol		40-46	
<b>Extinction Coefficient</b>	No unit	8.3-8.8	Internal (C1775)

### PACKAGING

→ 206±2 Kg rolling channel drum.

### TRANSPORTATION

TJPC SPH is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC SPH is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight, away from radiant heating elements and the temperature should not exceed 30°C. keep in cool and dry environments.



# TJPC 1202

## High Cis Polybutadiene Rubber – (PBR)

### CHARACTERISTICS

High-Cis Polybutadiene rubber "TJPC 1202" is produced by a technology of solution polymerization based on Ziegler-Natta (Cobalt) catalyst. It has more than 96% of 1,4 Cis content and very low glass transition temperature. TJPC 1202 suitable for plastic modification and has a low gel content, low color value and consistency viscosity.

### APPLICATION

TJPC 1202 is appropriate for production HIPS.

### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Mooney viscosity (ML 1+4 @ 100 °C)	MU	40-50	ASTM D1646
Cis Content	wt%	MIN 96	Internal Method
Volatile Material	wt%	MAX 0.70	ASTM D1416
Ash Content	wt%	MAX 0.3	ASTM D1416
Solution Viscosity 5% in Styrene @ 25 °C	Cps	50-70	Internal Method
Gel Content	PPM	MAX 2000	Internal Method

<sup>1</sup> to each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polystyrene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC 1202 is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1202 is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C.



# TJPC 1220

## High Cis Polybutadiene Rubber – (PBR)

### CHARACTERISTICS

High-Cis Polybutadiene rubber "TJPC 1220" is produced by a technology of solution polymerization based on Ziegler-Natta (Cobalt) catalyst. It has more than 96% of 1,4 Cis content and very low glass transition temperature.

Cured "TJPC 1220" has excellent properties such as abrasion resistance, tear strength, resilience, weathering resistance and low rolling resistance (good fuel economy) due to its low glass transition temperature (T<sub>g</sub> typically <-90°C).

### APPLICATION

TJPC 1220 is appropriate for rubber compounds used in the production of tire, floor coverings, footwear, children toys, rubber hose, belts and golf balls.

#### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Mooney viscosity (ML 1+4 @ 100 °C)	MU	41-49	ASTM D1646
Cis Content	wt%	MIN 96	Internal Method
Volatile Material	wt%	MAX 0.75	ASTM D1416
Ash Content	wt%	MAX 0.3	ASTM D1416

<sup>1</sup> To each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

#### Typical Properties-Compounds<sup>2</sup>

Typical Properties	Units	Values	Test method
Compound Mooney Viscosity	MU	MAX 77	ASTM D - 1646
Tensile Strength(35 Min)	Kgf/cm <sup>3</sup>	MIN 150	ASTM D412
Elongation at Break (35 Min)	%	MIN 440	ASTM D412
<b>300% Modulus at 145 °C</b>			
25 Min	Kgf/cm <sup>3</sup>	68-108	ASTM D412
35 Min	Kgf/cm <sup>3</sup>	74-114	ASTM D412
50 Min	Kgf/cm <sup>3</sup>	74-114	ASTM D412

<sup>2</sup> Compounding formula according ASTM D-3189.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polyethylene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC 1220 is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1220 is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C.



# TJPC 1220C

## High Cis Polybutadiene Rubber – (PBR)

### CHARACTERISTICS

High-Cis Polybutadiene rubber "TJPC 1220C" is produced by a technology of solution polymerization based on Ziegler-Natta (Cobalt) catalyst. It has more than 96% of 1,4 Cis content and very low glass transition temperature.

Cured "TJPC 1220C" has excellent properties such as abrasion resistance, tear strength, resilience, weathering resistance and low rolling resistance (good fuel economy) due to its low glass transition temperature (Tg typically <-90°C).

### APPLICATION

TJPC 1220C is appropriate for rubber compounds used in the production of tire, floor coverings, footwear, children toys, rubber hose, belts and golf balls.

#### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Mooney viscosity (ML 1+4 @ 100 °C)	MU	43-53	ASTM D1646
Cis Content	wt%	MIN 96	Internal Method
Volatile Material	wt%	MAX 2	ASTM D1416
Ash Content	wt%	MAX 0.3	ASTM D1416

<sup>1</sup> To each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

#### Typical Properties-Compounds<sup>2</sup>

Typical Properties	Units	Values	Test method
Compound Mooney Viscosity	MU	MAX 77	ASTM D - 1646
Tensile Strength(35 Min)	Kgf/cm <sup>3</sup>	MIN 140	ASTM D412
Elongation at Break (35 Min)	%	MIN 420	ASTM D412
300% Modulus at 145 °C			
25 Min	Kgf/cm <sup>3</sup>	65-103	ASTM D412
35 Min	Kgf/cm <sup>3</sup>	70-105	ASTM D412
50 Min	Kgf/cm <sup>3</sup>	70-110	ASTM D412

<sup>2</sup> Compounding formula according ASTM D-3189.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polyethylene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC 1220C is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1220C is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C.



# TJPC 1500

## Cold Emulsion Styrene-Butadiene Rubber – (E-SBR)

### CHARACTERISTICS

Styrene-Butadiene Rubber "TJPC 1500" is produced by a technology of cold emulsion copolymerization based on soaps of rosin and fatty acids and contains 23.5% of chemically bonded styrene. It is coagulated by a system of acid and synthetic coagulant and stabilized by a staining antioxidant.

TJPC 1500 has very good properties such as process ability, abrasion resistance, and fewer tendencies to scorching.

### APPLICATION

TJPC 1500 is appropriate for rubber compounds used in the production of car tires, conveyor belts, footwear, cables, hoses and various technical rubber articles.

### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Raw Mooney viscosity	MU	46-58	ASTM D1646
Volatile Material	% wt	< 0.75	ASTM D5668
Ash Content	% wt	< 1.5	ASTM D5667
Organic acids	% wt	4.75 -7.5	ASTM D5774
Soaps	% wt	< 0.5	ASTM D5774
Bounded styrene	% wt	22.5-24.5	ASTM D5775
Compound Mooney viscosity <sup>2</sup>	MU	<84	ASTM D1646
Tensile strength (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	>250	ASTM D 412
Ultimate elongation (35 min cured) <sup>2</sup>	%	>470	ASTM D 412
300 % Modulus (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	119-159	ASTM D 412

<sup>1</sup> The above data is only a typical value and to each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

<sup>2</sup> Compounding formula according ASTM D-3182 & D-3185.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polyethylene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC1500 is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1500 is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C.



# TJPC 1502

## Cold Emulsion Styrene-Butadiene Rubber – (E-SBR)

### CHARACTERISTICS

Styrene-Butadiene Rubber "TJPC 1502" is produced by a technology of cold emulsion copolymerization based on soaps of rosin and fatty acids and contains 23.5% of chemically bonded styrene. It is coagulated by a system of acid and synthetic coagulant and stabilized by a non-staining antioxidant.

TJPC 1502 has very good properties such as processability, abrasion resistance, less tendency to scorching.

### APPLICATION

TJPC 1502 is appropriate for rubber compounds used in the production of tire sidewall, floor coverings, bicycle tires, footwear, children toys, cables, hosepipes and various rubber articles having light color shades.

### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Raw Mooney viscosity	MU	46-58	ASTM D1646
Volatile Material	% wt	< 0.75	ASTM D5668
Ash Content	% wt	< 1.0	ASTM D5667
Organic acids	% wt	4.75 -7	ASTM D5774
Soaps	% wt	< 0.5	ASTM D5774
Bounded styrene	% wt	22.5-24.5	ASTM D5775
Compound Mooney viscosity <sup>2</sup>	MU	<84	ASTM D1646
Tensile strength (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	>250	ASTM D 412
Ultimate elongation (35 min cured) <sup>2</sup>	%	>350	ASTM D 412
300 % Modulus (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	167-207	ASTM D 412

<sup>1</sup> The above data is only a typical value and to each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

<sup>2</sup> Compounding formula according ASTM D-3182 & D-3185.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polyethylene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC1502 is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1502 is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C.



# TJPC 1507

## Cold Emulsion Styrene-Butadiene Rubber – (E-SBR)

### CHARACTERISTICS

Styrene-Butadiene Rubber "TJPC 1507" is produced by a technology of cold emulsion copolymerization based on soaps of rosin and fatty acids and contains 23.5% of chemically bonded styrene. It is coagulated by a system of acid and synthetic coagulant and stabilized by a non-staining antioxidant.

TJPC 1507 has very good properties such as process ability, abrasion resistance, less tendency to scorching processing.

### APPLICATION

TJPC 1507 is appropriate for Light colored, translucent products such as sponge, industrial goods, rubberized fabric, and toys. In addition, black products requiring good process ability.

### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Raw Mooney viscosity	MU	32-42	ASTM D1646
Volatile Material	% wt	< 0.75	ASTM D5668
Ash Content	% wt	< 1	ASTM D5667
Organic acids	% wt	4.75 -7	ASTM D5774
Soaps	% wt	< 0.5	ASTM D5774
Bounded styrene	% wt	22.5-24.5	ASTM D5775
Compound Mooney viscosity <sup>2</sup>	MU	< 75	ASTM D1646
Tensile strength (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	>220	ASTM D 412
Ultimate elongation (35 min cured) <sup>2</sup>	%	Min 400	ASTM D 412
300 % Modulus (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	150 -190	ASTM D 412

<sup>1</sup> The above data is only a typical value and to each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

<sup>2</sup> Compounding formula according ASTM D-3182 & D-3185.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polyethylene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC1507 is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1507 is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C.



# TJPC 1712

## Cold Emulsion Oil Extended Styrene-Butadiene Rubber – (E-SBR)

### CHARACTERISTICS

Styrene-Butadiene Rubber "TJPC 1712" is produced by a technology of cold emulsion copolymerization based on soaps of rosin and fatty acids and contains 23.5% of chemically bonded styrene and extended with 37.5 parts highly aromatic oil. It is coagulated by a system of acid and synthetic coagulant. The rubber is protected by stabilizer system. Raw materials for this product are carefully chosen for the best physical properties.

TJPC 1712 has very good properties such as processability, abrasion resistance, less tendency to scorching processing.

### APPLICATION

Application possibilities for TJPC 1712 include tire and mechanical goods compounds where color and staining are not decisive factors.

### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Raw Mooney viscosity	MU	42-52	ASTM D1646
Volatile Material	% wt	< 0.75	ASTM D5668
Ash Content	% wt	<0.5	ASTM D5667
Organic acids	% wt	3.9 -5.7	ASTM D5774
Soaps	% wt	< 0.5	ASTM D5774
Bounded styrene	% wt	22.5-24.5	ASTM D5775
Oil Content	% wt	25.8-28.8	ASTM D5775
Compound Mooney viscosity <sup>2</sup>	MU	<62	ASTM D1646
Tensile strength (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	>200	ASTM D 412
Ultimate elongation (35 min cured) <sup>2</sup>	%	>530	ASTM D 412
300 % Modulus (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	79-109	ASTM D 412

<sup>1</sup> The above data is only a typical value and to each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

<sup>2</sup> Compounding according ASTM D-3182 & D-3185.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polyethylene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC1712 is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1712 is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C. Shelf time of SBR1712 product is for 2 years.

Revised Date: 2018





# TJPC 1723

## Cold Emulsion Oil Extended Styrene-Butadiene Rubber – (E-SBR)

### CHARACTERISTICS

TJPC 1723 is an emulsion styrene-butadiene rubber obtained by cold polymerization using mixture of rosin acid and fatty acid soaps as emulsifiers, contains 23.5% of chemically bonded styrene. It is plasticized with 37.5 parts of TDAE oil (extender oil with reduced content of polycyclic aromatics) which does comply with EU DIRECTIVE 2005/69/EC for use in tires within the EU. A phenolic antioxidant is added during the production process.

TJPC 1723 is a general purpose rubber characterized by good process ability, mechanical properties and abrasion resistance. Due to the lower oil  $T_g$ , it shows a slight advantage in rolling resistance performance compared to TJPC 1712.

### APPLICATION

The main application is tire production. It can be processed in all sectors of the tire and rubber industry.

### Typical Properties<sup>1</sup>

Typical Properties	Units	Values	Test method
Raw Mooney Viscosity	MU	42-52	ASTM D1646
Volatile Material	% wt	< 0.75	ASTM D5668
Ash Content	% wt	< 0.5	ASTM D5667
Organic acids	% wt	3.9 -5.7	ASTM D5774
Soaps	% wt	< 0.5	ASTM D5774
Bounded styrene	% wt	22.5-24.5	ASTM D5775
Oil Content	% wt	25.8-28.8	ASTM D5775
Compound Mooney viscosity <sup>2</sup>	MU	<62	ASTM D1646
Tensile strength (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	>200	ASTM D 412
Ultimate elongation (35 min cured) <sup>2</sup>	%	>530	ASTM D 412
300 % Modulus (35 min cured) <sup>2</sup>	kg/cm <sup>2</sup>	79-109	ASTM D 412

<sup>1</sup> The above data is only a typical value and to each shipping lot/delivery a quality certificate including data on properties of the product determined during release control is issued. Scope of the testing which is covered by the quality certificate is each time agreed upon in the sales contract.

<sup>2</sup> Compounding according ASTM D-3182 & D-3185.

### PACKAGING

- 35 ±0.5 KG bales wrapped with polyethylene film.
- 36 bales per crate (1260±18 KG).

### TRANSPORTATION

TJPC 1723 is typically transported in covered road trucks, in covered railway carriages and in standard shipping containers. TJPC 1723 is not a dangerous material to transport.

### STORAGE

Product should be stored in sheltered conditions away from direct sunlight away from radiant heating elements and the temperature should not exceed 30°C.

