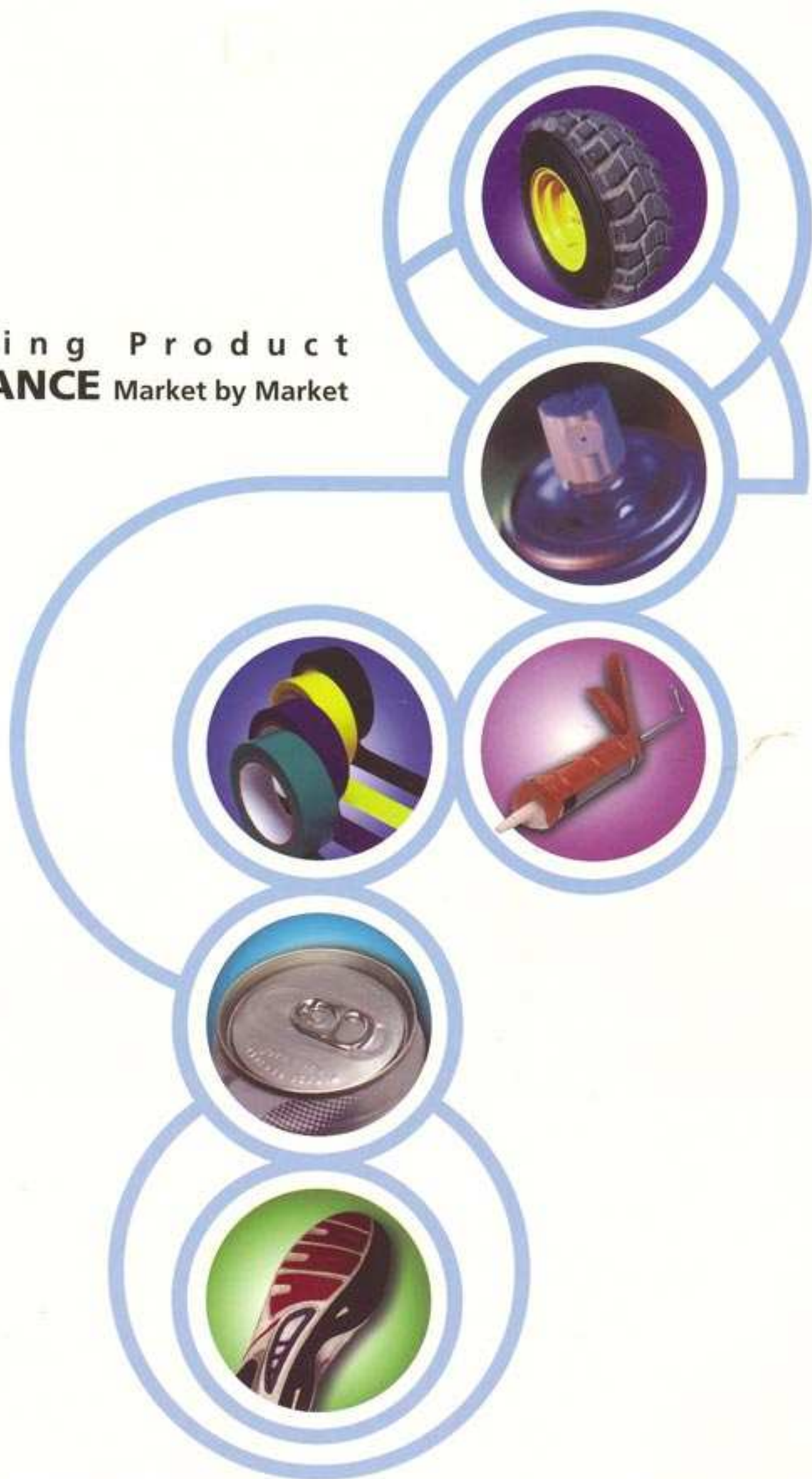




ELASTOMERS

Increasing Product
PERFORMANCE Market by Market

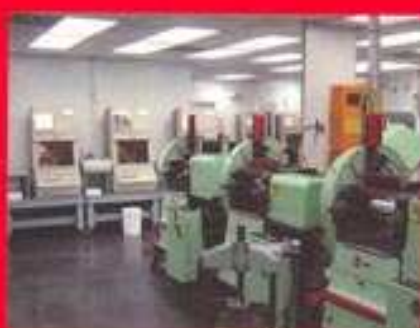


ISP Elastomers is a world leader in the manufacturing of emulsion styrene butadiene rubber (E-SBR). With over 60 years of experience, ISP Elastomers produces the world's broadest line of E-SBR for many different applications ranging from tires, adhesives to industrial rubber goods.

Our plant at Port Neches, Texas features highly efficient production facilities with timely supply to leading manufacturers around the world. With a capacity of 500 million pounds a year, the plant can produce E-SBR in a variety of grades including cold and hot type, oil-extended products and carbon black masterbatches.

At ISP we can tailor E-SBR to meet any commodity applications as well as a wide range of special elastomer grades required by rubber goods, adhesive and sealant producers.

ISP Elastomers products are available in the most convenient form for different processing requirements. From bale, pellets to crumbs, we know precisely how to save time and money for our customers.



Hot SBR Non-Crosslinked Polymers are used in the manufacture of a variety of adhesives and sealants. These linear, non-crosslinked polymers produce an excellent tack for bonding, coating and sealing applications. Product is available in several grades, providing a wide range of solubility, viscosity and green strength.

Hot SBR Crosslinked Polymers produce adhesives and sealants with a non-stringy, buttery consistency. They are particularly useful for caulking compounds, mastics and sprayable adhesives. Adhesives formulated from crosslinked polymers provide a clean breakaway when caulked or troweled and do not produce a cobweb effect when sprayed. When used with Non-Crosslinked polymers, a wide range of performance properties, including tack, cohesive strength and holding power can be achieved.

Besides the conventional bale form, several of these polymers are available in crumb form. These fast dissolving, low solution viscosity crumb polymers can help to reduce mixing time, use less solvent and coat faster.



Hot SBR Non-Crosslinked Polymers



High Styrene Masterbatches

Cold SBR



Cold SBR reinforce with carbon black



High Styrene Masterbatches are excellent for improving hardness and stiffness in floor tiles, shoe soles, rolls, sporting goods, extrusion and hard rubber compounds. They provide reinforcement for SBR in highly loaded and low specific gravity compounds, increasing its hardness, rigidity, abrasion and tear resistance.

Cold SBR is available in both non oil extended and oil extended types for tires and general rubber industry usage.

Cold SBR reinforce with carbon black provide good tensile properties, high abrasion resistance and smooth processing.

Specialty SBR Specification

Hot SBR Bale, Non-Crosslinked Grades

Grade	Emulsifier	Stabilizer	Coagulant	Bound Styrene %	Viscosity MML	CML	Tensile (psi)	Elongation	Modulus 300% (psi)	Spec. Grav.	Remarks
1006	FA	NS	SA	23.5	49	62	3100	325	2300	0.94	General Purpose/Laminating
1011AC	RA	NS	SA	23.5	54	*	-	-	-	0.94	Lower solution viscosity 1011
1011AE	RA	NS	SA	23.5	54	65	2750	450	1600	0.94	High tack - P.S. tape adhesive, tire bead
1012	FA	NS	SA	23.5	125	-	-	-	-	0.94	High viscosity 1006 type

* 1011AC solution viscosity cps 450-775 (4% in Toluene)

Hot SBR Bale, High Bound Styrene - Non-Crosslinked Grade

Grade	Emulsifier	Stabilizer	Coagulant	Bound Styrene %	Viscosity MML	CML	Tensile (psi)	Elongation	Modulus 300% (psi)	Spec. Grav.	Remarks
1012	FA	NS	A	43.5	45	54	3200	300	2600	0.94	Low water absorption - high bound styrene - high green strength

Hot SBR Bale, Crosslinked Grades

Grade	Emulsifier	Stabilizer	Coagulant	Bound Styrene %	Viscosity MML	CML	Tensile (psi)	Elongation	Modulus 300% (psi)	Spec. Grav.	Remarks
1009	FA	NS	SA	23.5	70	35	1600	250	1000	0.94	Adhesive grade
1009A	FA	NS	SA	23.5	-	103	1600	250	1100	0.94	Mechanical goods - control shrinkage, aerosol spray

Hot SBR Bale, High Bound Styrene - Crosslinked Grade

Grade	Emulsifier	Stabilizer	Coagulant	Bound Styrene %	Viscosity MML	CML	Tensile (psi)	Elongation	Modulus 300% (psi)	Spec. Grav.	Remarks
4503	RA	NS	SA	30	-	**	-	-	-	0.94	High bound styrene - improved green strength

**4503 solution viscosity cps 100-400 (4% in Toluene)

Hot SBR Crumb, Non-Crosslinked Grades

Grade	Emulsifier	Stabilizer	Coagulant	Bound Styrene %	Viscosity MML	cps	Tensile (psi)	Elongation	Modulus 300% (psi)	Spec. Grav.	Remarks
1006	FA	NS	SA	23.5	49	-	3100	325	2300	0.94	General Purpose/Laminating
1012	FA	NS	SA	23.5	125	*	-	-	-	0.99	High cohesive strength - binder for fibers
1013	FA	NS	SA	43.5	45	-	3200	300	2600	1.00	Use in blends with 1009 for higher strength

* 1012 - Aged 500 max (5% in Toluene)

Hot SBR Crumb, Crosslinked Grades

Grade	Emulsifier	Stabilizer	Coagulant	Bound Styrene %	Mill Shrinkage	Viscosity cps	Tensile (psi)	Elongation	Modulus 300% (psi)	Spec. Grav.	Remarks
1009	FA	NS	SA	23.5	35 Max	*	1600	250	1000	0.99	Pre-crosslinked type, construction and spray applications
1009A	FA	NS	SA	23.5	15 Max	*	1600	250	1100	0.99	For shrinkage control, aerosol adhesive
4503	RA	NS	SA	30	35 Max	*	-	-	-	0.99	Offers same properties as blending 1009 and 1013

*1009 - 120-400 (5% in Toluene), 4503 - 100-400 (4% in Toluene)

High Styrene Masterbatch

Grade	Base Polymer	Stabilizer	Coagulant	Resin/Rubber *	Viscosity MML	CML	Tensile (psi)	Elongation	Modulus 300% (psi)	Spec. Grav.	Remarks
1903	1502	NS	SA	52/48	45	-	-	-	-	0.99	Pellets
1904	1502	NS	SA	60/40	50	-	-	-	-	0.99	Pellets
4906	1502	NS	SA	40/60	31.5	-	-	-	-	0.99	Bale
8144	8107	NS	SA	20/80	21	-	-	-	-	0.92	Bale
8146	8107	NS	SA	23/77	24.5	36	2500	400	1700	0.92	Bale

*Ratio of base polymer to high styrene resin.

General SBR Specification

MICROBLACK MASTERBATCH TYPES				
	EMUL.	OIL TYPE/PARTS	BLACK TYPE/PARTS	CML1+4
UNEXTENDED - NS				
1605	FA	■	N550/50	60
1605L	FA	■	N550/50	50
4681	MA	■	N326/50	49
OIL EXTENDED - NS				
1805	MA	Naph/37.5	N330/75	49
1815	MA	Naph/50	N330/75	47
1821	MA	Naph/37.5	N550/80	43
OIL EXTENDED - S				
1606	RA	HiAr/10	N330/52	51
1847	MA	HiAr/50	N339/75	40
1848	MA	HiAr/62.5	N339/82.5	35
1850	MA	HiAr/50	N300/75	40
1851	MA	HiAr/62.5	N300/82.5	36
4684	MA	HiAr/10	N234/52	49
4689	MA	HiAr/12	N234/55	48
4776	MA	HiAr/50	N103/60	44

COLD TYPES				
	EMUL.	STABILIZER	BOUND STYRENE	MML1+4
1500	RA	S	23.5	52
1502	MA	NS	23.5	52
1503	FA	NS	23.5	51
1507	MA	NS	23.5	36
1510	FA	NS	23.5	32
1551	RA	NS	23.5	52
8107	FA	NS	5.5	22
8113	RA	NS	23.5	115

COLD OIL EXTENDED TYPES					
	EMUL.	STABILIZER	BOUND STYRENE	OIL TYPE/PARTS	MML1+4
1712L	MA	S	23.5	HiAr/37.5	35
1712	MA	S	23.5	HiAr/37.5	45
1712H	MA	S	23.5	HiAr/37.5	52
1713	MA	NS	23.5	Naph/50	41
1721	MA	S	40.5	HiAr/37.5	54
1778	MA	NS	23.5	Naph/37.5	53
8401	MA	S	39.5	Traxol/37.5	55

Typical Applications For ISP Elastomers

GENERAL APPLICATIONS					
	Hot SBR	Cold Oil Unextended	Cold Oil Extended	High Styrene Masterbatch	Black Masterbatch
Automotive					
Tire Treads		■			■
Sidewalls					■
Apex/Rim/Flange				■	
Bead	■	■			
Carcass		■	■		■
Retread		■	■		■
Racing Tires			■		
Mats		■	■	■	■
Miscellaneous					
Mechanical Goods	■	■	■	■	■
Rolls		■	■		■
Gaskets		■	■	■	■
Belts/Hose		■	■		■
Hard Rubber Goods		■		■	
Cove Base	■			■	
Floor Tiles	■	■	■	■	
Footwear		■	■	■	■
Sponge		■	■	■	
Wire and Cable (Low Ash)	■				■

Speciality SBR Applications

Adhesive and Sealant Applications

Adhesive Types	Non-Crosslinked				Crosslinked		
	1006*	1011	1012*	1013*	8113*	1009*	4503*
Tape & Label	■	■		■	■		
Caulking	■		■			■	
General Purpose	■	■		■	■		
Headliner Cement				■			
Laminating Adhesive	■			■	■		■
Mastic			■	■		■	■
Panel Adhesive			■	■		■	■
Pressure Sensitive	■	■		■	■		
Sealant	■		■			■	
Sprayable Adhesive						■	■
Wall Tie Adhesive				■		■	■
Window Putty	■			■		■	■
Can Sealant		■					

* Available in dated crumb form

Footwear Applications

	1006	1009	1903	1904	4906	8144
Sole, Calendered	■	■	■	■	■	■
Sole, Molded			■	■	■	■
Upper Friction			■	■	■	■
Foxing, Toe Cap, Toe Guard (Calendered)	■	■				
Foxing, Extruded	■	■				
Sponge Insole			■	■	■	■
Hard Insole			■	■	■	■
Cutting Board			■	■	■	■
Slippers, Sandals, Cellular Shoes			■	■	■	■



Typical Product Packaging

Elastomers Type	20 FT FCL		40 FT FCL		Unit Packaging		
	No of Skids	Net Wt / kg	No of Skids	Net Wt / kg	Type	Net Wt / Kg	Units per Skid
Hot SBR Bale	14	16,003	17	19,432	Bale	31.75	36
Hot SBR Crumb	8	7,620	18	17,146	Box	22.68	42
Cold Unextended	14	18,289	15	19,595	Bale	36.29	36
Cold Oil Extended	14	18,289	15	19,595	Bale	36.29	36
SBR Black Masterbatch	10	13,064	15	19,595	Bale	40.82	32
High Styrene Masterbatch Pellets	8	9,072	17	19,278	Bag	22.68	50
High Styrene Masterbatch Bales	14	18,289	15	19,595	Bale	36.29	36

* Consult us for more product applications and packaging options.



ISP Elastomers is committed to the production of high quality E-SBR using continuous improvement techniques. Towards this goal, we have achieved ISO 9001 Certification and use a Total Quality System throughout our facility. Our Quality Policy recognize the extreme importance of our customers to our business, and we dedicate all our resources towards constant improvement of our processes to ensure reliability of our products and services.

Because our products play a key role in many of our customers' applications, we are committed to working in partnership with them to improve product performance. We do this by harnessing our most valuable asset, ISP's people. Our dedicated team is always ready to assist customers in all stages of their production and to provide customized technical support.

Our commitment to be closer to customers' needs means that we are present in all major Asia Pacific markets with our own sales and distribution offices. We listen closely to our customer needs, ensuring our continuous expansion of our capabilities to meet their expectations.





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