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TIRE & SPECIALTY RUBBERS

ARLANXEO

ARLANXEO is a world-leading synthetic rubber company with a presence at 20 production sites in nine countries. ARLANXEO was established in April 2016 as a joint venture of LANXESS and Saudi Aramco. The two partners each hold a 50-percent interest in the joint venture. ARLANXEO's core business is the development, manufacturing and marketing of synthetic high-performance rubber for use in the automotive and tire industries, the construction industry, and the oil and gas industries.

Business Unit Tire & Specialty Rubbers

The Tire & Specialty Rubbers (TSR) business unit of ARLANXEO is one of the world's leading suppliers of high-quality synthetic rubbers for the tire industry and for other highly demanding industrial sectors. With a global production footprint, TSR has the scale needed to tackle supply driven opportunities throughout the entire supply chain. We offer a broad portfolio of versatile butyl and butadiene-based rubbers that are predominantly used in the production of tires. While our halogenated butyl rubber products are used for the air-tight innerliner layer of the tire, our solution styrene butadiene rubber and neodymium butadiene rubbers are used in treads, side walls and other elements of the tire. Also included in our portfolio are general purpose emulsion styrene butadiene rubbers. In addition, our products are the materials of choice for a wide-variety of specialty non-tire elastomer applications where purity, air impermeability and stringent requirements are called for including medical closures, golf balls, plastic modification, adhesives, and chewing gum.

Intensive Cooperation With Customers

As the inventor of synthetic rubber, we are still at the forefront of innovation and production. With research and development centers around the world, we are working closely with our customers to develop products, processes and solutions that meet their continually changing needs. This, coupled with our excellent reputation and our reliable deliveries, provides a solid basis for growing our strategic co-operations and our long-term personal contacts, while striving to establish excellent client relationships.

ARLANXEO Tire & Specialty Rubbers (TSR) Portfolio
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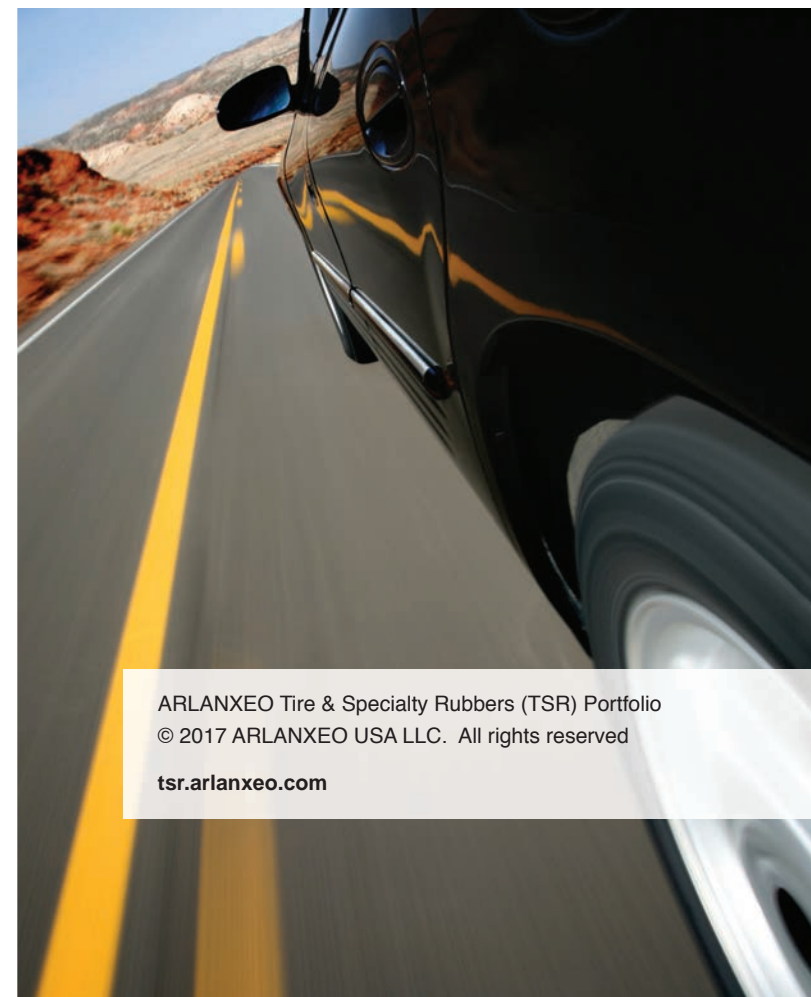
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The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.

Health and Safety Information: Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the ARLANXEO products mentioned in this publication. For materials mentioned which are not ARLANXEO products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., safety data sheets and product labels. Consult your ARLANXEO Corporation representative or contact the Product Safety and Regulatory Affairs Department.

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Note: The information contained in this publication is current as of May, 2017. Please contact ARLANXEO USA LLC to determine if this publication has been revised.



BUTYL AND HALOBUTYL RUBBER

Regular Butyl Rubber (IIR)

Name	Plant	Mooney ¹ (MU)	Unsaturation (mol%)
X_Butyl® RB 100	ZWI	33	0.9
X_Butyl® RB 301	SAR, ZWI, SGP	51	1.85
X_Butyl® RB 402	SAR, ZWI	33	2.25
X_Butyl® RB 101-3	SAR	51	1.75
X_Butyl® R1551 PG	SAR	51	1.5

Bromobutyl Rubber (BIIR)

Name	Plant	Mooney ¹ (MU)	Halogen Content (wt %)
X_Butyl® BB 2030	SAR, ZWI, SGP	32	1.8
X_Butyl® BB 2040	SAR	39	1.8
X_Butyl® BB X2	SAR, ZWI, SGP	46	1.8

Chlorobutyl Rubber (CIIR)

X_Butyl® CB 1240	SAR, ZWI	38	1.25
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¹ ML(1+8) @125°C

BUTADIENE RUBBER

High-Cis Neodymium Butadiene Rubber (Nd-BR)

Name	Plant	Mooney ² (MU)	Remark
Buna™ CB 21	tbd	73	highly linear
Buna™ CB 22	ORG, DOR, POJ, SGP, CAB	63	highly linear
Buna™ CB 24	ORG, DOR, POJ, SGP, CAB	44	linear
Buna™ CB 25	DOR	44	long chain branched
Buna™ CB 29 MES	DOR	37	MES-oil extended
Buna™ CB 29 TDAE	DOR	37	TDAE-oil extended
Buna™ Nd 22 EZ	DOR	63	modified & long chain branched
Buna™ Nd 24 EZ	DOR	44	modified & long chain branched

High-Cis Cobalt Butadiene Rubber (Co-BR)

Buna™ CB 1221	ORG	53	branched
Buna™ CB 1203	ORG	43	branched
Buna™ CB 1220	ORG	40	highly branched

Low-Cis Lithium Butadiene Rubber (Li-BR)

Buna™ CB 45	ORG, CAB	45	linear
Buna™ CB 60	POJ	60	star branched
Buna™ CB 55 NF	POJ	55	linear
Buna™ CB 70	CAB	70	linear
Buna™ CB 55 H	CAB	54	linear
Buna™ CB 55 L	CAB	51	linear

² ML(1+4) @100°C

BUTADIENE RUBBER FOR HIPS

Butadiene Rubber for HIPS (Anionic Process - Li-BR)

Name	Plant	Mooney ² (MU)	S.V. (mPas)
Buna™ CB 550	ORG	54	163
Buna™ CB 550 T	ORG	53	169
Buna™ CB 380	ORG	38	90
Buna™ CB 70 GPT	CAB	70	250
Buna™ CB 55 GPT	CAB	53	168
Buna™ CB 530 T	POJ	68	250
Buna™ CB 550 T	POJ	54	163
Buna™ CB 550 IP	POJ	54	163
Buna™ CB 565 T	POJ	60	44

Butadiene Rubber for HIPS (Ziegler Natta Catalyst – Nd-BR)

Buna™ CB 728 T	ORG	44	160
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² ML(1+4) @100°C

STYRENE BUTADIENE LATEX

Styrene Butadiene Latex

Name	Plant	Solids (%)	Brookfield Visc.	Styrene (%)
Taktene® Latex S62	CAX	68	800	24
Taktene® Latex S62F	CAX	68	800	24

STYRENE BUTADIENE RUBBER

NEW

Emulsion Styrene Butadiene Rubber (ESBR)

Name	Plant	Mooney ³ (MU)	Styrene (%)	Oil (phr)
Buna™ SE 1500	CAX	52	23.5	-
Buna™ SE 1502 H	TRI	53	23.5	-
Buna™ SE 1502 L	TRI	49	23.5	-
Buna™ SE 1712 TE	CAX	51	23.5	TRAE (37.5)
Buna™ SE 1721 TE	CAX	55	40	TRAE (37.5)
Buna™ SE 1783 TE	CAX	49	23.5	RAE (37.5)

Low Vinyl Styrene Butadiene Rubber (LV SSBR)

Name	Plant	Mooney ² (MU)	Styrene (%)	Oil (phr)
Buna™ SL 4525-0	CAB	45	25	-
Buna™ SL 4518-4	CAB	45	18	HN (37.5)
Buna™ SL 7518-4	CAB	75	18	HN (15.0)

High Vinyl Solution Styrene Butadiene Rubber (HV SSBR)

Name	Plant	Mooney ² (MU)	Vinyl (%)	Styrene (%)	TDAE (phr)
Buna™ VSL 5025-2 HM	POJ	62	50	25	37.5
Buna™ VSL 4526-2	POJ	50	44.5	26	37.5
Buna™ VSL 4526-2 HM	POJ	62	44.5	26	37.5
Buna™ VSL 5228-2*	POJ	50	52	28	37.5

High Styrene Solution Styrene Butadiene Rubber (HS SSBR)

Name	Plant	Mooney ² (MU)	Vinyl (%)	Styrene (%)	TDAE (phr)
Buna™ VSL 2538-2	POJ	50	25	38	37.5
Buna™ VSL 2438-2 HM	POJ	80	24	38	37.5
Buna™ VSL 3038-2 HM	POJ	80	30	38	37.5

Functionalized Solution Styrene Butadiene Rubber

Name	Plant	Mooney ² (MU)	Vinyl (%)	Styrene (%)	TDAE (phr)
Buna™ FX 5000	POJ	55	50	21	5
Buna™ FX 3234A-2	POJ	65	32	34	37.5
Buna™ FX 3234A-2 HM	POJ	80	32	34	37.5

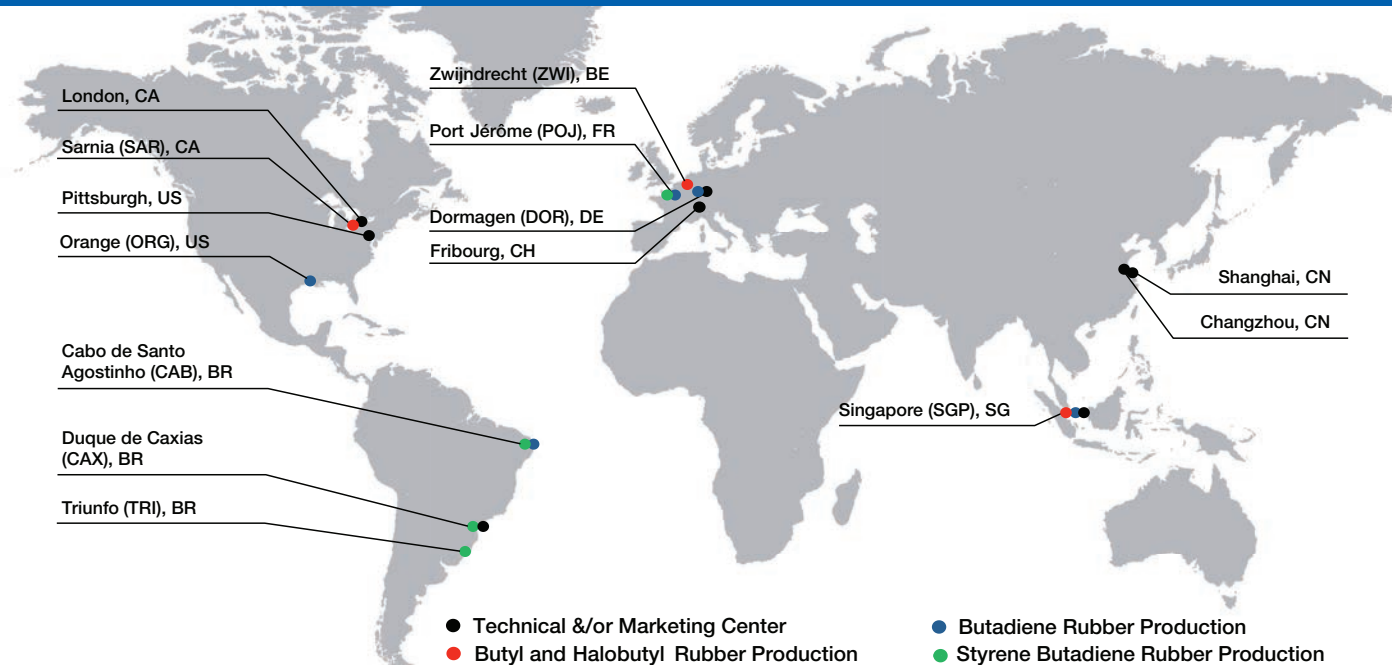
Block Styrene Butadiene Rubber (SB SSBR)

Name	Plant	Mooney ³ (MU)	Styrene (%)	Block Styrene (%)
Buna™ BL 30-4548	CAB	45	48	30
Buna™ BL XP 7409	CAB	50	48.5	34.5

² ML(1+4) @100°C

³ MML(1+4) @100°C

Tire & Specialty Rubbers Global Footprint



ARLANXEO TSR:

- has a true global footprint with state of the art production facilities and first class technical support in Europe, Asia and the Americas
- offers a comprehensive portfolio of (X)IIR, BR and SBR products
- has extensive and proven rubber know-how for tire and non-tire applications like adhesives, golf balls, and medical closures among others

X Butyl®

Buna™