

Nitrile Butadiene Rubber

DISCOVER OUR PRODUCT PORTFOLIO

Baymod® L Baymod® N Baypren® Buna® Keltan® Krynac® Levapren®

Levapren® Perbunan® Taktene® Therban® X Butyl®

ABOUT ARLANXEO

ARLANXEO is a world-leading synthetic elastomer company with its headquarters in The Hague, the Netherlands. Since December 31st, 2018, the company is a wholly-owned subsidiary of Saudi Aramco, a leading producer of energy and chemicals, based in Dhahran, Saudi Arabia. ARLANXEO develops, produces and markets high-performance elastomers that are used for a wide range of applications in the automotive and tire industry, building and construction, oil and gas industries as well as for consumer goods and the pharmaceutical sector.

Our production sites, research and development facilities and business offices span the globe to be close to our customers, maintain short transportation routes and assure high delivery reliability. Our world-scale plants produce efficiently, flexibly and sustainably – in Europe, Asia and North and South America.

As a competent and reliable partner of our customers, we deliver tailor-made solutions that reflect our high standards of quality, innovation, safety and sustainability. ARLANXEO offers a broad product lineup for highest requirements. We aim to create significant value for our customers and shareholders by applying best practices, using best-in class technologies and constantly striving for new and better solutions – for first-class products and services.

ABOUT ARLANXEO

GRADES CHARACTERISTICS & APPLICATIONS

KRYNAC®

PERBUNAN®

BAYMOD® N

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GRADES CHARACTERISTICS & APPLICATIONS

Krynac® Perbunan® Baymod® N

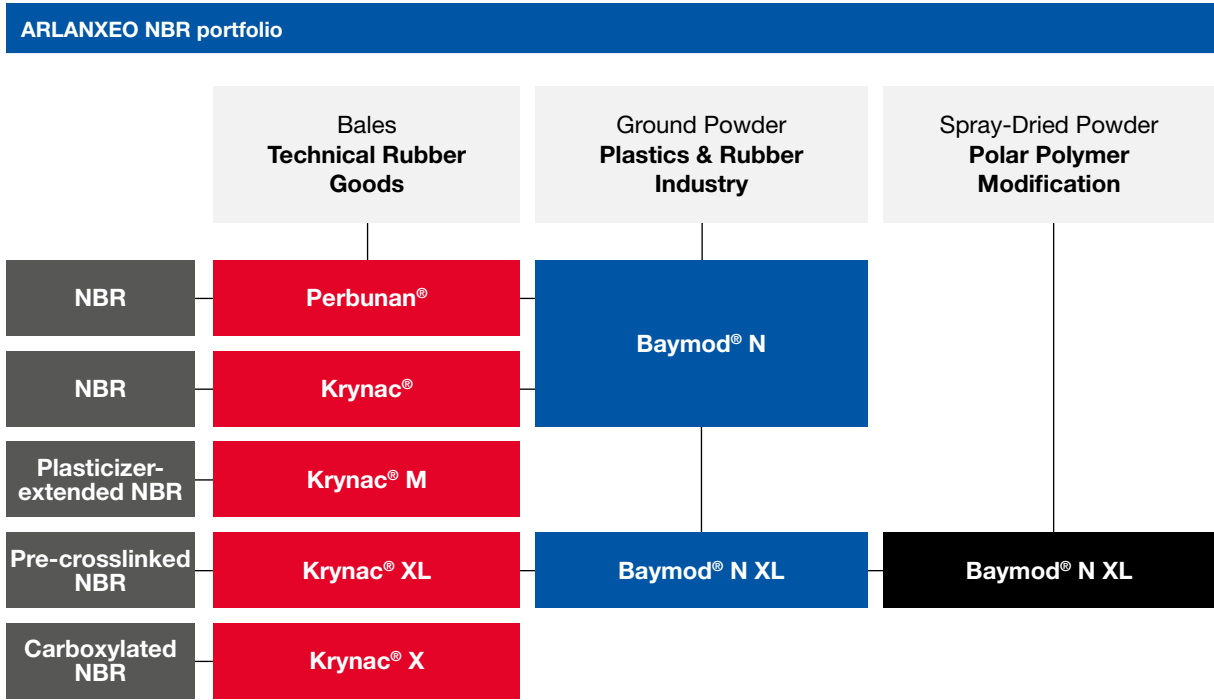
ARLANXEO is a leading global supplier of high quality nitrile butadiene rubber (NBR), offering an extensive portfolio over three brands: **Krynac®**, **Perbunan®** and **Baymod® N** which offer high performance NBR's covering a broad range of ratios between the non-polar butadiene monomer (50 % – 82 %) and the polar monomer, acrylonitrile (18 % – 50 %). ARLANXEO therefore meets your demands for both excellent low temperature flexibility and exceptional resistance to swelling in oils, fuels and greases.

ARLANXEO – Global Leader in NBR

- Largest NBR capacity producer
- Leading quality and technology position
- Global sales force and technical service

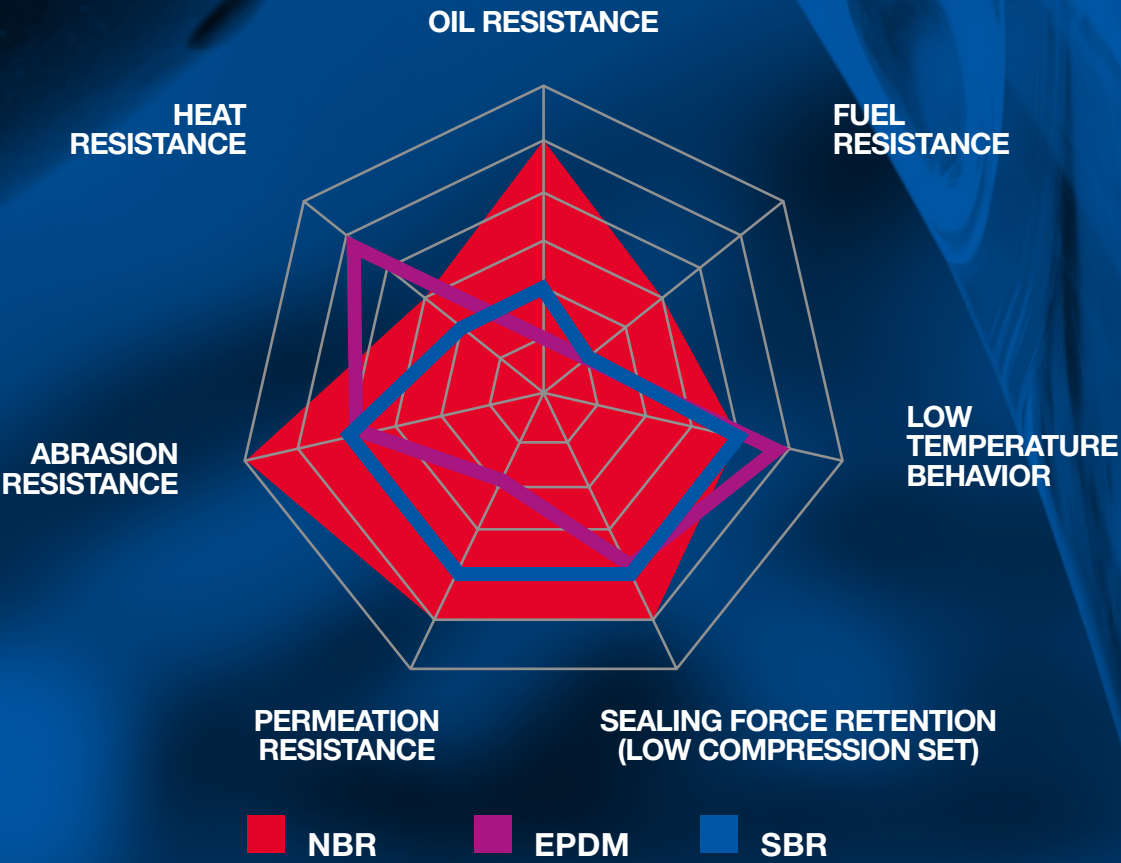
Philosophy of ARLANXEO

- Be the NBR partner of choice for our customers
- Design NBR for our customers
- Make our customers successful



SELECTED PROPERTIES OF NBR – COMPARISON WITH EPDM AND SBR

The diagram below provides an overview of the properties/performance of NBR compared to other broadly used elastomers. NBR surpasses these polymers in regard to its resistance to oils, fuels and greases but also to gas permeability, abrasion and wear. Its sealing force retention is better, too.



Krynac®

Oil resistant, multi-purpose polymer for technical rubber products

- Exceptional resistance to swelling in oils, fuels and greases
- Excellent low temperature flexibility and heat resistance
- Good processing safety
- Very good extrusion performance and extreme resistance to abrasion and wear

Krynac®s extreme resistance to oily liquids makes it suitable for a wide range of applications. Moreover, specially produced **Krynac®** grades feature pre-crosslinked, plasticizer extended and carboxylated types leading to very good extrusion performance, great processing safety and excellent resistance to abrasion and wear, respectively. Lastly, a **Krynac®** low-emission grade completes the portfolio.

APPLICATIONS

Krynac® is used in various industries including automotive and industrial machinery, footwear and flooring. Many of the applications where **Krynac®** is particularly suitable include hoses, seals and membranes as well as for roll covers, coated fabrics, sheets, thermal insulation tubes and shoe soles.



KRYNAC® FACT SHEET

- Multi-purpose polymer with medium-speed cure
- Scorch safety for improved processing behavior
- Special characteristics provided by pre-crosslinked, carboxylated, plasticizer extended and low-emission grades
- Various applications for the automotive, industrial equipment & machinery industries, also shoe soles, flooring and oil & gas

Perbunan®

Oil resistant, fast-curing polymers for technical rubber products

- Exceptional resistance to swelling in oils, fuels and greases
- Excellent low temperature flexibility and heat resistance
- Quick processing - very short molding cycles Reduced tendency toward mold fouling and corrosion
- Low migration and extraction level in food applications

Perbunan® is a fast-curing NBR rubber enabling very quick molding cycles. Besides their extreme oil resistance, vulcanizates are characterized by a high modulus and a good sealing force retention. The clean **Perbunan®** grades are – among other properties – designed for molding applications with a reduced tendency toward mold fouling. In addition they are suitable for food and potable water applications.

APPLICATIONS

Perbunan® is suitable for a wide range of applications, and particularly for molded rubber parts such as seals, membranes, vibration dampers, and pump stators. Furthermore it is also suitable for rubberized fabrics, hoses, roll covers, sheets, conveyor and transmission belts and shoe soles, among other applications.



PERBUNAN® FACT SHEET

- Special fast-curing polymer
- High modulus and good sealing force retention
- Clean grades designed for injection molding
- Ideal for products in automotive, construction and machinery industries as well as for food contact applications

Baymod® N

Powdered nitrile butadiene rubber serving as a non extractable and 'ready to use' modifier

- Excellent chemical, oil and hydrolysis resistance
- Doesn't migrate from compound
- Enables permanently flexible, elastic and impact resistant compounds
- Good low-temperature flexibility and low fatigue
- Improved coefficient of friction in brake applications

Baymod® N serves as a powdered modifier in thermoplastic resins, and improves resistance of the final product to oils, fuels and greases. Its free flowability allows automatic metering and processing. It is highly compatible with other polar base polymers such as PVC and Phenolic Resins. Thermoplastics modified with **Baymod® N** remain permanently flexible and elastic (**Baymod® N** being non-extractable) while also being impact-resistant.



APPLICATIONS

Pre-crosslinked **Baymod® N** grades provide excellent dimensional stability in extruded soft PVC profiles. In friction materials, they serve as an excellent binder for both fillers and fibers and improve the coefficient of friction. Linear **Baymod® N** grades are soluble in wet processes and are therefore used by the rubber industry for gaskets manufactured using a solution process. Additionally, they are used for wet processes in the friction industry as a binder that gives improved impact resistance. In the plastic industry **Baymod® N** is also well suited for soft PVC in injection molding processes.

BAYMOD® N FACT SHEET

- Free flowing powder ensures automatic processing
- Highly compatible with different polar base polymers (PVC, Phenolic Resin)
- Pre-crosslinked grades provide dimensional stability and serve as an excellent binder
- Linear grades are soluble and hence used in wet solution processes.



ARLANXEO NBR BALE PORTFOLIO

					Characteristics									Applications (preference selection)												
					Acrylonitrile Content (%)	Mooney Viscosity ²⁾ ML (1+4) 100 °C	Density (g/cm ³)	Low Mold Fouling Low Migration	High Oil & Fuel Resistance	Low Temperature Flexibility	Best Dynamical Properties	High Modulus	Easy Processing Smooth Extrusion	High Abrasion Resistance	Hoses	Seals	Gaskets	NBR / PVC	Belts	Roll Cover	Sponge	Oil & Gas	Footwear	Cots	Best for Food and Potable water*	Flooring
Krynac®		2850	F	Medium Cure	27.5	48	0.97			■						✓	✓	✓	✓	✓						
Krynac®		2865	F	Medium Cure	28	65	0.97			■					■	✓	✓	✓	✓	✓	✓					
Krynac®		3330	F	Medium Cure	33	30	0.97							■ ■		✓	✓	✓	✓	✓	✓		✓			
Krynac®		3344	VP ¹⁾	Low VOC	33	44	0.97							■		✓	✓	✓	✓	✓	✓		✓		✓	
Krynac®		3345	F	Medium Cure	33	45	0.97							■		✓	✓	✓	✓	✓	✓		✓			
Krynac®		3370	F	Medium Cure	33	70	0.97			■					■	✓	✓	✓	✓	✓	✓	✓				
Perbunan®		2845	F	Fast Cure	28	45	0.96			■		■		■		✓	✓	✓	✓	✓						
Perbunan®		2870	F	Fast Cure	28	70	0.96			■		■		■		✓	✓	✓	✓	✓						
Perbunan®		3430	F	Fast Cure	34	32	0.97					■		■ ■		✓	✓	✓	✓	✓	✓		✓			
Perbunan®		3445	F	Fast Cure	34	45	0.97					■		■		✓	✓	✓	✓	✓	✓		✓			
Perbunan®		3470	F	Fast Cure	34	70	0.97			■		■		■		✓	✓	✓	✓	✓	✓	✓				
Perbunan®		3945	F	Fast Cure	39	45	0.99		■			■		■		✓	✓	✓	✓	✓			✓			
Perbunan®		3965	F	Fast Cure	39	65	0.99		■			■			■ ■	✓	✓	✓	✓	✓			✓			
Perbunan®		1846	F	Low ACN	18	45	0.93	■ ■ ■		■ ■ ■		■		■		✓	✓			✓				✓		
Perbunan®		2255	F	Low ACN	22	52	0.94			■ ■		■				✓	✓		✓	✓						
Perbunan®		2831	F	Fast Cure Clean	28.6	30	0.96	■ ■ ■		■		■		■ ■		✓	✓	✓	✓	✓				✓		
Perbunan®		2846	F	Fast Cure Clean	28.6	42	0.96	■ ■ ■		■		■		■ ■		✓	✓	✓	✓	✓				✓		
Perbunan®		3436	VP ¹⁾	Fast Cure Clean	34.7	34	0.98	■ ■ ■				■		■ ■		✓	✓	✓	✓	✓			✓		✓	
Perbunan®		3446	F	Fast Cure Clean	34.7	42	0.97	■ ■ ■				■		■		✓	✓	✓	✓	✓			✓		✓	
Perbunan®		3481	F	Fast Cure Clean	34.7	78	0.97	■ ■ ■			■ ■	■			■ ■	✓	✓	✓		✓	✓	✓		✓		
Perbunan®		4456	F	High ACN	44	55	1.01	■ ■ ■		■ ■		■				✓	✓	✓		✓				✓		
Krynac®		4450	F	High ACN	43.5	50	1.00			■ ■		■				✓	✓	✓	✓	✓			✓			
Krynac®		4955	VP ¹⁾	High ACN	48.5	55	1.01			■ ■ ■		■				✓	✓			✓			✓			
Krynac®		4975	F	High ACN	48.5	75	1.01			■ ■ ■					■ ■	✓	✓		✓	✓			✓			
Perbunan®		2895	F	High Mooney	28	95	0.96			■		■ ■		■						✓						
Perbunan®		28120	F	High Mooney	28	120	0.96			■		■ ■ ■		■						✓						
Krynac®		33110	F	High Mooney	33	110	0.97					■ ■ ■		■ ■						✓						
Krynac®	M	3340	F ⁴⁾	Plast. Extended	22	33	0.98					■ ■		■ ■					✓				✓			
Krynac®	XL	3355		Pre-Crosslinked	33	55 ³⁾	1.00						■ ■ ■		✓				✓					✓		
Krynac®	XL	3375	VP ¹⁾	Pre-Crosslinked	33	75 ³⁾	1.00						■ ■ ■	■	✓				✓					✓		
Krynac®	X	146		Carboxylated	32.5	45	0.97							■ ■ ■	✓				✓	✓				✓		
Krynac®	X	160		Carboxylated	32.5	58	0.97							■ ■ ■	✓				✓	✓				✓		
Krynac®	X	740		Carboxylated	26.5	38	0.99							■ ■ ■	✓				✓	✓			✓	✓		
Krynac®	X	750		Carboxylated	27	47	0.99							■ ■ ■	✓				✓	✓			✓	✓		

ARLANXEO NBR POWDER PORTFOLIO

				Characteristics								Applications (preference selection)							
				Acrylonitrile Content (%) ^a	Mooney Viscosity ²⁾ ML (1+4) 100 °C	Density (g/cm ³)	Average Particle Size (mm)	Partitioning Agent	Solution Process	Extrusion	Good Dispersion in Polar Matrices	Rubber Articles	PVC Modification	Other Plastics Modification	Friction Parts	Fiber Gaskets	Adhesives	Sealants	Best for Food and Potable Water*
Baymod® N		34.52		Ground	33	45	0.98	0.50	Ca-Stearate	■ ■ ■	■		✓	✓			✓	✓	✓
Baymod® N		34.82		Ground	33	70	0.98	0.50	Ca-Stearate	■ ■ ■			✓	✓			✓	✓	✓
Baymod® N	XL	33.61		Ground	33	55 ³⁾	1.01	0.30	PVC		■ ■ ■	■		✓				✓	✓
Baymod® N	XL	33.64		Ground	33	55 ³⁾	1.01	0.30	Silica		■ ■ ■				✓			✓	✓
Baymod® N	XL	37.53 VP ¹⁾		Spray	37	47 ³⁾	1.04	0.12	CaCO ₃		■ ■ ■		✓		✓				✓
Baymod® N	XL	38.43		Spray	38	115 ³⁾	1.01	0.08	CaCO ₃		■	■ ■ ■			✓	✓			✓

Perbunan® and Krynac® nomenclature

Perbunan® 3445F

Brand —
ACN % content —
Mooney Viscosity —
Country of Origin —
F = France

Krynac® X 740
Krynac® XL 3355
Krynac® M 3340F

Key property 1 —
X = Carboxylated
7 = 7% carboxylic acid
XL = Pre-crosslinked
M = Mesamoll extended

Baymod® N nomenclature

Baymod® N WWXX.YZ

Brand —
Special Property: —
XL = pre-crosslinked
blank space = linear
ACN % content —
base polymer —
Mooney Viscosity —
Partitioning Agent —
5 = 50
6 = 60
8 = 80
1 = PVC
2 = Calcium Stearate
3 = CaCO₃
4 = Silica

* Information concerning food and potable water compliance is available upon request.

Packaging: Bale wrapped in dispersible PE film (VICAT point 85 °C), wood and cardboard.
Packaging Powder: Cardboard boxes and wooden base pallet.

¹⁾ Trial product (VP = Versuchsprodukt)
²⁾ Unmassed (ISO 289-1)
³⁾ Massed (ISO 289-1)
⁴⁾ Plasticizer extended
⁵⁾ Base polymer

APAC

ARLANXEO Singapore Pte. Ltd.
3A International Business Park #07-14/17
ICON@IBP Tower B Singapore 609935

CHINA

ARLANXEO High Performance Elastomers
(Changzhou) Co. Ltd. Shanghai Branch
Shanghai, P.R. China

EMEA

ARLANXEO Emulsion Rubber
France S.A.S.
La Wantzenau, France

LATAM

ARLANXEO Brasil S.A.
São Paulo, Brazil

NORAM

ARLANXEO USA LLC
Pittsburgh PA, USA

WWW.ARLANXEO.COM

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Trial Product:

(VP = Versuchsprodukt = trial product). The information contained herein is merely preliminary. Testing as to properties and applications is not final. Further information, including data which could change or add hazards with use, may be developed by the manufacturer, the user or a third-party institute. Such information may be needed to properly evaluate or use this product. Use is undertaken at the sole risk of the user.

Quality & Environmental Management:

All ARLANXEO products are produced under strict control regarding safety, environmental protection and quality. The whole supply chain, from production to customer service, is covered by ISO 9001 and ISO 14001 certification.

Product Safety:

Relevant safety data and references as well as the possibly necessary warning labels are to be found in the corresponding safety data sheets.

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., material safety data sheets and product labels. Consult us through your ARLANXEO representative.

Regulatory Compliance Information:

Some of the end uses of the products described in this publication must comply with applicable regulations, such as the FDA, BfR, NSF, USDA and CPSC. If you have any questions on the regulatory status of these products, contact your ARLANXEO representative.

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, is beyond our control.

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