







Polyurethane Systems



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Soles & Slippers

The polyurethane systems by Elachem® are fully customised to develop the products you require, matching all the characteristics that your final goods need. Compatibility with polyurethane machines and high productivity, lightness and quality, durability and fast delivery time are just some of our strengths. ISO 9001 certification provides a further guarantee of the excellence of our processes.

Insole System 

Specialities 

Super-Light Slippers 

Intermediate Systems 

Elaxtreme® 

Hard System 

Insole System

Polyether and Polyester systems for the production of all types of insoles (including covered ones) with hardness ratings in the range of 10 ÷ 40 ShA and very low density, without compromising physical properties. All the required quality range available, including the Elacat® BIO family ranging between 20 and 70% of renewable BIO content.



		INSOLE	
ET = polyether based // ES = polyester based		ET	ES
TECHNICAL CHARACTERISTIC	STANDARD		
Mould Density [g/cm ³]	ISO 845:2006	0,22-0,28	0,22-0,30
Hardness [ShA]	DIN 53505	18÷40	18÷40
FRD [g/cm ³]	---	0,12-0,16	0,12-0,16
Elongation [%]	DIN 53504	>200	>300
Flex behaviour [Kcycles]	DIN 53522	---	---
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	---	---
Hydrolysis performance [days]	DIN 53504	>35	>14
Abrasion [mg]	DIN 53516	---	---
Rebound [%]	ASTM D7121-05	---	---
Electrical Resistance	EN ISO 20344	✓	✓
ESD norm	ESD CEI EN 61340-5-1	✓	✓
Elacat® BIO	ISO 16620-4	---	★★★★

Specialities

ET = polyether based // ES = polyester based

SPECIALITIES

TECHNICAL CHARACTERISTIC	STANDARD	ET	ES	ES	ES
Mould Density [g/cm ³]	ISO 845:2006	0,22-0,35	0,22-0,30	0,22-0,30	0,32-0,38
Hardness [ShA]	DIN 53505	25÷45	20÷40	20÷40	35÷55
FRD [g/cm ³]	---	0,12-0,20	0,15-0,22	0,15-0,22	0,15-0,20
Elongation [%]	DIN 53504	>300	>300	>400	>300
Flex behaviour [Kcycles]	DIN 53522	---	---	---	100
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	---	---	---	50
Hydrolysis performance [days]	DIN 53504	>35	>28	>35	>21
Abrasion [mg]	DIN 53516	---	---	---	<100
Rebound [%]	ASTM D7121-05	>50%	>40%	>60%	---
Electrical Resistance	EN ISO 20344	---	✓	✓	✓
ESD norm	ESD CEI EN 61340-5-1	---	✓	✓	✓
Elacat® BIO	ISO 16620-4	---	★★★★	★★★★	★★★★
Note		Moda Midsole	Sport Midsole	PU insert	Full PU

The footwear market is always on the move and Elachem® is in pole position to fulfil customer requests. From innovative ET systems, light and with high cushioning already appreciated and used by most of the top brands, especially in the fashion industry, to special ES products for running shoes, every material is designed to last for a long time and with fatigue recovery in mind. Focusing on the trend of elasticity, we have successfully introduced our new elastic insert/midsole designed for high-performance shoes. And let's not forget the full PU for medical or outdoor applications. All the ES products are available in the Elacat® BIO option, ranging between 20% and 70% of BIO content.



Super-Light Slippers

Elapol and Lightel® are products for extremely light midsoles and slippers, with a wide range of hardness and density down to 0.22 g/cm³. These systems are particularly suitable for manufacturers that focus on high productivity and lightness of their products for entry level shoe markets, maybe combining Elachem® PU with outsoles in TPU, modified TPU, Rubber, PVC or TR.

SLIPPERS

ET = polyether based // ES = polyester based

ES

Lightel®

TECHNICAL CHARACTERISTIC	STANDARD		
Mould Density [g/cm ³]	ISO 845:2006	0,25-0,28	0,22-0,25
Hardness [ShA]	DIN 53505	35÷65	45÷60
FRD [g/cm ³]	---	0,13-0,17	0,12-0,16
Elongation [%]	DIN 53504	>200	>300
Flex behaviour [Kcycles]	DIN 53522	30	30
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	---	---
Hydrolysis performance [days]	DIN 53504	>10	>10
Abrasion [mg]	DIN 53516	<200	<200
Rebound [%]	ASTM D7121-05	>30%	>30%
Electrical Resistance	EN ISO 20344	---	---
ESD norm	ESD CEI EN 61340-5-1	---	---
Elacat® BIO	ISO 16620-4	---	---

Intermediate Systems

Targeted towards mid-range sole producers, not compromising on quality but with the market price in mind. In this family, you will find a great range of flexible and comfortable products, from softness typical of casual wear, to harder for high-end sandals. Available in Polyether (ET) and Polyester (ES) variants.

INTERMEDIATE

ET = polyether based // ES = polyester based

TECHNICAL CHARACTERISTIC	STANDARD	ET	ES
Mould Density [g/cm ³]	ISO 845:2006	0,40-0,48	0,38-0,44
Hardness [ShA]	DIN 53505	40÷75	40÷75
FRD [g/cm ³]	---	0,20-0,26	0,20-0,26
Elongation [%]	DIN 53504	>250	>350
Flex behaviour [Kcycles]	DIN 53522	50	50
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	30	30
Hydrolysis performance [days]	DIN 53504	>35	>14
Abrasion [mg]	DIN 53516	<120	<120
Rebound [%]	ASTM D7121-05	---	---
Electrical Resistance	EN ISO 20344	---	✓
ESD norm	ESD CEI EN 61340-5-1	---	✓
Elacat® BIO	ISO 16620-4	---	★★★★



Elaxtreme®

Are you looking for the absolute best? Here you will find your Heaven. Elapol, with excellent physical properties, low and high temperature performance, long-lasting hydrolysis endurance, outstanding rebound values, minimum abrasion. These Polyester (ES) and/or Polyether (ET) systems are particularly suitable for safety soles whether they are single or double density, but also ideal for trekking shoes and all other types of footwear requiring the best properties, including perfect bonding with other kinds of compounds. Available in the Elacat® BIO option, ranging between 20 and 70% of BIO content.



		ELAXTREME®			
ET = polyether based // ES = polyester based		(ET)	(ES)	(ES)	(ES)
TECHNICAL CHARACTERISTIC	STANDARD				
Mould Density [g/cm3]	ISO 845:2006	0,40-0,55	0,30-0,45	0,45-0,65	0,85-1,00
Hardness [ShA]	DIN 53505	40÷75	35÷55	45÷70	45÷70
FRD [g/cm3]	---	0,21-0,28	0,20-0,28	0,22-0,31	0,75-0,90
Elongation [%]	DIN 53504	>350	>400	>500	>800
Flex behaviour [Kcycles]	DIN 53522	100	---	100	100
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	50	---	50	50
Hydrolysis performance [days]	DIN 53504	>35	>28	>28	>28
Abrasion [mg]	DIN 53516	<120	---	<50	<30
Rebound [%]	ASTM D7121-05	---	>50%	---	---
Electrical Resistance	EN ISO 20344	---	✓	✓	✓
ESD norm	ESD CEI EN 61340-5-1	---	✓	✓	✓
Elacat® BIO	ISO 16620-4	---	★★★★	★★★★	★★★★
Note		Single density	Light Midsole	Single density	Outsole

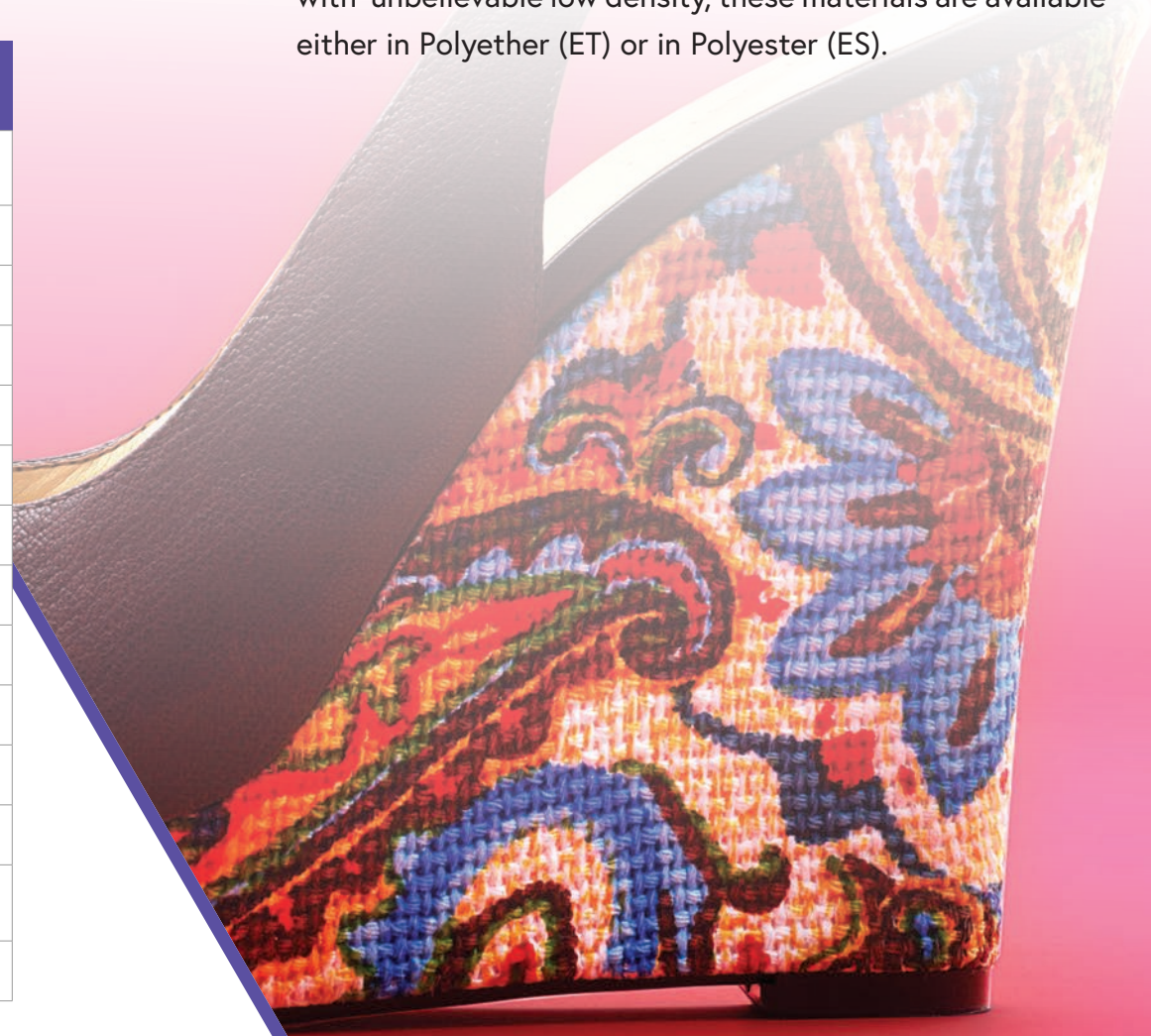
Hard System

Particularly suitable for wedge heels for women, with hardness ranging from 70 to 95 ShA. Excellent workability, unique paintability and short demoulding time in conjunction with unbelievable low density, these materials are available either in Polyether (ET) or in Polyester (ES).

HARD SOLES

ET = polyether based // ES = polyester based

TECHNICAL CHARACTERISTIC	STANDARD	ET	ES
Mould Density [g/cm ³]	ISO 845:2006	0,35-0,45	0,28-0,38
Hardness [ShA]	DIN 53505	70÷90	75÷98
FRD [g/cm ³]	---	0,19-0,24	0,15-0,22
Elongation [%]	DIN 53504	>200	>300
Flex behaviour [Kcycles]	DIN 53522	50	---
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	---	---
Hydrolysis performance [days]	DIN 53504	>35	>10
Abrasion [mg]	DIN 53516	<150	<200
Rebound [%]	ASTM D7121-05	---	---
Electrical Resistance	EN ISO 20344	---	---
ESD norm	ESD CEI EN 61340-5-1	---	---
Elacat® BIO	ISO 16620-4	---	---



Soles & Slippers

		INSOLE		SPECIALITIES				SLIPPERS		INTERMEDIATE		ELAXTREME®				HARD SOLES	
ET = polyether based // ES = polyester based		ET	ES	ET	ES	ES	ES	ES	Lightel®	ET	ES	ET	ES	ES	ES	ET	ES
TECHNICAL CHARACTERISTIC	STANDARD																
Mould Density [g/cm3]	ISO 845:2006	0,22-0,28	0,22-0,30	0,22-0,35	0,22-0,30	0,22-0,30	0,32-0,38	0,25-0,28	0,22-0,25	0,40-0,48	0,38-0,44	0,40-0,55	0,30-0,45	0,45-0,65	0,85-1,00	0,35-0,45	0,28-0,38
Hardness [ShA]	DIN 53505	18÷40	18÷40	25÷45	20÷40	20÷40	35÷55	35÷65	45÷60	40÷75	40÷75	40÷75	35÷55	45÷70	45÷70	70÷90	75÷98
FRD [g/cm3]	---	0,12-0,16	0,12-0,16	0,12-0,20	0,15-0,22	0,15-0,22	0,15-0,20	0,13-0,17	0,12-0,16	0,20-0,26	0,20-0,26	0,21-0,28	0,20-0,28	0,22-0,31	0,75-0,90	0,19-0,24	0,15-0,22
Elongation [%]	DIN 53504	>200	>300	>300	>300	>400	>300	>200	>300	>250	>350	>350	>400	>500	>800	>200	>300
Flex behaviour [Kcycles]	DIN 53522	---	---	---	---	---	100	30	30	50	50	100	---	100	100	50	---
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	---	---	---	---	---	50	---	---	30	30	50	---	50	50	---	---
Hydrolysis performance [days]	DIN 53504	>35	>14	>35	>28	>35	>21	>10	>10	>35	>14	>35	>28	>28	>28	>35	>10
Abrasion [mg]	DIN 53516	---	---	---	---	---	<100	<200	<200	<120	<120	<120	---	<50	<30	<150	<200
Rebound [%]	ASTM D7121-05	---	---	>50%	>40%	>60%	---	>30%	>30%	---	---	---	>50%	---	---	---	---
Electrical Resistance	EN ISO 20344	✓	✓	---	✓	✓	✓	---	---	---	✓	---	✓	✓	✓	---	---
ESD norm	ESD CEI EN 61340-5-1	✓	✓	---	✓	✓	✓	---	---	---	✓	---	✓	✓	✓	---	---
Elacat® BIO	ISO 16620-4	---	★★★★	---	★★★★	★★★★	★★★★	---	---	---	★★★★	---	★★★★	★★★★	★★★★	---	---
Note				Moda Midsole	Sport Midsole	PU insert	Full PU					Single density	Light Midsole	Single density	Outsole		



Footwear

Freedom in design, colourful, elasticity, safe, what else? Those are just some of the characteristics your footwear can enjoy from the features of polyurethane systems by Elachem®. Each application has its own peculiarity but we are still going to write the future together.

ISO 9001 certification provides a further guarantee of the excellence of our processes.

Polyurethane System
for Casual e Sport

Polyurethane System
for Safety & Trekking Shoes



Polyurethane System for Casual & Sport Shoes

Elapol® Casual grades
Elapol® Sport grades

Elapol® Casual grades:

durability and design freedom are just two of the main strengths of the successful casual shoes. Combine it with Elachem® grade such as GripPlus or Light Midsole to reach the next level of product. Slip resistance in wet and dry conditions won't be an issue anymore. Discover feather-like weight, extreme flexibility even at Arctic temperatures and much more. All of this can be produced with Elacat® BIO for a brighter future.

Elapol® Sport grades:

Elachem's newest development provides the energy and comfort that today's life demands. Extreme hydrolysis resistance, outstanding rebound and amazing low-density midsole of 0.25 gr/cm³ is what your feet need. Imagine the possibilities and let's realise them together... You can combine these outstanding properties with our bio raw material for the ultimate green solution.



		CASUAL GRADES				SPORT GRADES		
SD = single density - Mid = midsole - Out = outsole		SD	Mid	Out	GripPlus	Mid	SD	Mid
TECHNICAL CHARACTERISTIC	STANDARD							
Mould Density [g/cm3]	ISO 845:2006	0,48-0,55	0,35-0,38	0,90-1,00	0,55-0,70	0,35-0,38	0,48-0,55	0,25-0,30
Hardness [ShA]	DIN 53505	40÷75	35÷55	50÷80	45÷65	25÷45	40÷75	25÷45
FRD [g/cm3]	---	0,28-0,32	0,20-0,22	0,85-0,95	0,32-0,38	0,15-0,22	0,28-0,32	0,15-0,20
Elongation [%]	DIN 53504	>500	>350	>800	>800	>400	>600	>400
Flex behaviour [Kcycles]	DIN 53522	100	---	100	100	---	100	---
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	50	---	50	50	---	50	---
Hydrolysis performance [days]	DIN 53504	>14	>14	>14	>14	>35	>35	>28
Abrasion [mg]	DIN 53516	<100	---	<80	<80	---	<100	---
Rebound [%]	ASTM D7121-05	---	---	---	---	>60%	>60%	>50%
Slip resistance	---	✓	---	✓✓	✓✓✓	---	---	---
Elacat® BIO	ISO 16620-4	★★★★	★★★★	★★★★	★★★★	---	---	★★★★
Note						ET	ET	ES



Polyurethane System for Safety & Trekking Shoes

Elachem® is delighted to provide different product levels for all customer requirements.

EMERGING GRADES

Elachem® has developed a new series of products which combines the basic performance requested by the international standards for Safety & Trekking shoes with a special focus on costs. A great compromise for your aggressive products in the new developing markets. In addition, Elachem® can improve your grade with our EndRaise™ concept which begins with recycling your production scrap.

ELAPOL® GRADES

The historical and most appreciated products of our company, reliable in each application. Here you can find a great variety of hardness & density suitable for all equipment. It does not matter if you want a single density or TPU/PU or even combined with other material outsoles, Elachem® has the right solution for you.



ELAXTREME® GRADES

The newest development of Elachem® grade, including all the best features your shoes can require. From extreme hydrolysis resistance (> 4 weeks) to outstanding rebound (> 50%), from amazing low-density midsole (even 0,35 gr/cm³) to grippy light outsole and beyond. Imagine the possibilities for your feet; together we can realise them.

ELACAT® BIO ★★★ AND ★★★★★

Besides focusing on customer needs, another Elachem policy is caring greatly for the environment, as can be seen in our Elacat® BIO products (ISO 16620-4) which combine amazing physical properties, comparable if not better than traditional systems, with BIO raw materials. This family of products is based on vegetable raw materials, which, therefore, do not impact the food chain, with a total biocarbon content up to 70%.

Polyurethane System for Safety & Trekking Shoes

		EMERGING GRADES			ELAPOL GRADES			ELAXTREME® GRADES			ELACAT® BIO		
SD = single density - Mid = midsole - Out = outsole		SD	Mid	Out	SD	Mid	Out	SD	Mid	Out	SD	Mid	Out
TECHNICAL CHARACTERISTIC	STANDARD												
Mould Density [g/cm ³]	ISO 845:2006	0,50-0,55	0,42-0,45	1,00-1,10	0,48-0,55	0,40-0,43	1,00-1,10	0,45-0,50	0,35-0,38	0,90-1,00	0,48-0,55	0,42-0,45	1,00-1,10
Hardness [ShA]	DIN 53505	45÷75	35÷55	55÷80	40÷75	35÷55	55÷80	40÷75	35÷55	55÷80	40÷75	35÷55	55÷80
FRD [g/cm ³]	---	0,28-0,32	0,21-0,23	0,85-0,95	0,28-0,32	0,21-0,23	0,85-0,95	0,25-0,28	0,18-0,20	0,85-0,95	0,28-0,32	0,21-0,23	0,85-0,95
Elongation [%]	DIN 53504	>400	>250	>500	>550	>400	>650	>600	>350	>800	>550	>450	>750
Flex behaviour [Kcycles]	DIN 53522	30	---	30	50	---	50	100	---	100	50	---	50
Ross-flex @ -30°C [Kcycles]	ASTM1052/55	20	---	20	30	---	30	100	---	100	30	---	30
Hydrolysis performance [days]	DIN 53504	>10	>10	>10	>14	>14	>14	>28	>28	>28	>21	>21	>21
Abrasion [mg]	DIN 53516	<150	---	<150	<100	---	<100	<80	---	<50	<100	---	<80
Rebound [%]	ASTM D7121-05	---	---	---	---	>35%	---	---	>50%	---	---	>45%	---
BIO content	ISO 16620-4	---	---	---	---	---	---	---	---	---	★★★★	★★★★	★★★★

Boots

Boot Leg

Feel the softness at every temperature. Endurance in hard-working conditions and lightness are just some properties of the Elapol® grade for leg features.

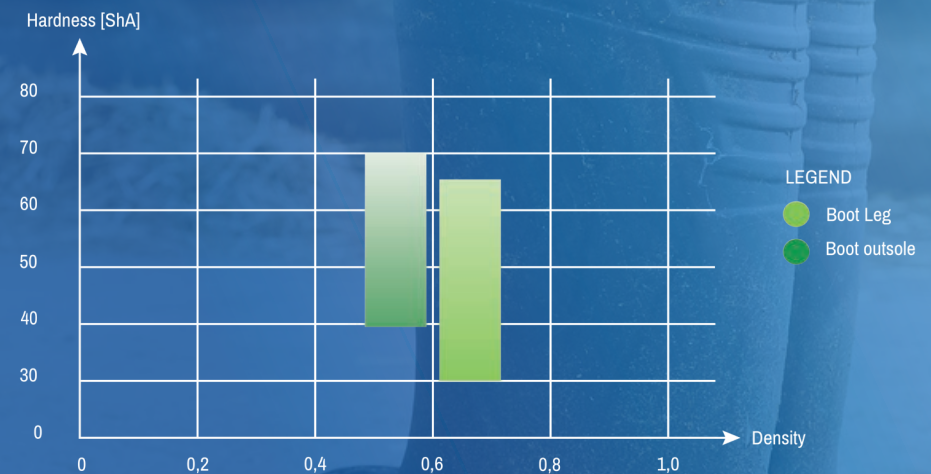
Boot Sole

Wide range of density and hardness is available for all your needs, excellent processability on all machines unite with hydrolysis resistance and high durability against microbial attack. This is our Elapol® grade.

Elacat® BIO

Grades are available for Leg and Sole boot systems

Over the last decade, polyurethane has spread its footwear applications further in each direction, thanks to unique processability and outstanding performance. Elachem®, always very attentive to market trends and demands, is providing different boot systems based on customer requirements.





Elachem was founded in Vigevano in 2001 and specialises in the production of polyurethane systems mainly for the footwear industry. Following the increase in the production of polyurethane systems and the need to be increasingly competitive on the market, Elachem S.p.a. has decided to integrate with a plant for the production of saturated polyester resins, designed according to individual requirements, and produced with the guarantee of a consolidated experience.

Our history has allowed us to become a market leader, with an annual production of 90,000 tons and satisfied business partners all over the world. The flagships of Elachem are its latest generation laboratories, thanks to which we execute the entire production process, from design to testing.

Certificazioni



Worldwide exporter of:

Saturated polyesters for various applications

TPU for various applications

Adhesives and coating

Polyureas and Primers

Sealant and Binders





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