

The background of the entire image is a close-up photograph of a dark, textured rock on the left and a piece of dark, pebbled leather-like material on the right. The LIBA logo is prominently displayed in the upper left, with the letters in a bold, white, sans-serif font. A registered trademark symbol (®) is located to the upper right of the 'A'.

LIBA[®]

**SMART
BIO
EASY
RECYCLE**

LIBA[®]
IMPROVING WHAT'S
ALREADY GOOD



OUR PRODUCT RANGE IS SUITABLE FOR ALL NEEDS AND DEMANDS

To make things last longer. Creating sustainability with smart, functional, and durable materials is our vision.

Inspired by nature, we have developed a collection of TPU-based protective films tailored for various purposes and applications. With durability and extended product lifespan as our primary focus, our materials incorporate biobased content or up to 50% recycled materials. The functionality and durability are customized to meet our customers' diverse needs and requirements across different industries.

The result is LIBA® products that are suitable whether you want to create sustainable products that last for generations or lighter and more elegant products with reduced environmental impact. There is a LIBA® product for every need.

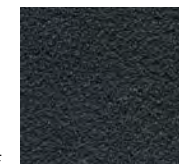
Welcome to the world of LIBA®.
We make what is already good even better.

- Technical
- Advanced
- High performing
- Improving
- Resistant
- Versatile
- Recyclable
- Durable
- Innovative
- Resistant
- Functional



DESIGNING FOR MAXIMUM VISIBILITY
Brands may choose among nine standard colors. This range facilitates many functional, decorative design opportunities inside and outside products. LIBA® Smart comes in anthracite, beige, black, light grey, navy, orange, red, dk olive green, and white.
Colors may also be customized to match a brand; here, delivery takes a little longer, and start-up cost is added.

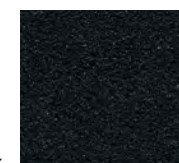
ANTHRACITE



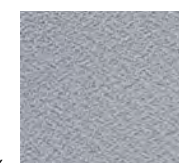
BEIGE



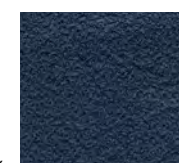
BLACK



LIGHT GREY



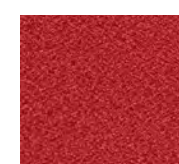
NAVY



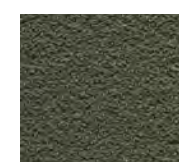
ORANGE



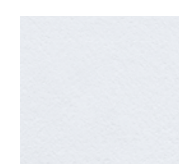
RED



DK OLIVE GREEN



WHITE

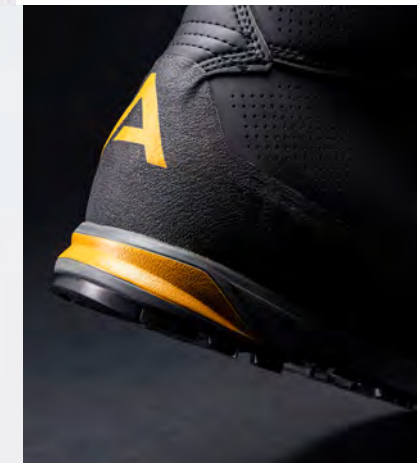


HIGH-PERFORMING FUNCTIONALITY

Many brands put rigorous demands on environmentally friendly material with high functionality and good design. Consequently, they increasingly use LIBA® Smart because it's 100% recyclable, light weight, flexible, strong, UV resistant, waterproof, and ozone resistant. And LIBA® Smart outperforms rubber.

SUSTAINING: 100% RECYCLABLE – 0 WASTE

LIBA® contains up to 50% recycled material. The finished product is 100% recyclable, and all European customers are entitled to free waste-material collection. Consequently, no residual material remains in the production.



USAGE FLEXIBILITY

Unique, easy-to-use LIBA® Smart is exceptionally durable, light weight, and flexible. The perfect choice for shoes, gloves, bags, and many other items – products in which exposed surfaces can be improved and thus extend product life.

0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0

ENDLESS POSSIBILITIES – NUMEROUS VARIATIONS

Apart from the standard thicknesses 1.0 and 1.5mm the options for customization are ranging from 0.8 – 2.0mm. Consequently, manufacturers can easily select degrees of strength and flexibility to adapt the material to their products with their unique properties.



LIBA[®] SMART

The environments we encounter in nature can have vastly different characteristics. They can be rolling hills, gentle paths, or rocky and sharp cliffs. Adapting to nature is the only way to go. To meet the demands it places on us.

Our original material, LIBA[®] SMART, is unmatched in durability and versatility of applications. We can proudly say that we belong to one of the market's best materials for extending the lifespan of a product.

Where you demand the highest quality, durability, and performance, only one option exists.



- The original LIBA[®] Product
- One of the market's best durability
- 100% recyclable
- 10-15% recycled raw materials
- Flexible applications
- Produced in Europe
- Manufactured in an ISO Certified factory powered by green solar energy
- Optional thickness: 0.8 - 2.0 mm
- Width: 78 / 44 cm



MATERIAL	RECYCLED CONTENT	BIOBASED CONTENT	RECYCLABLE	CO2 IMPACT/1KG
LIBA [®] smart	10-15%	0%	100%	n/a
LIBA [®] bio	0%	25%	100%	n/a
LIBA [®] easy	10%	0%	100%	n/a
LIBA [®] recycle	50%	0%	100%	n/a

LIBA[®] BIO

The unique ability of nature to regenerate and create new life with the help of the sun and water is truly amazing. To incorporate renewable raw materials into our LIBA[®] BIO has been a long-standing goal, and now we've made progress.

LIBA[®] BIO is the only TPU film on the market containing biobased raw material from cornstarch blended with our original product, LIBA[®] SMART. The result is a more environmentally friendly product with the same excellent properties as our original material, and it fits perfectly within the same wide range of applications.



- Lower environmental impact
- World-unique innovation
- 25% biobased raw material
- 100% recyclable
- Highly durable
- Produced in Europe
- Manufactured in an ISO Certified factory powered by green solar energy
- Optional thickness: 1.0 - 2.0 mm
- Width: 78 / 44 cm

MATERIAL	RECYCLED CONTENT	BIOBASED CONTENT	RECYCLABLE	CO2 IMPACT/1KG
LIBA [®] smart	10-15%	0%	100%	n/a
LIBA [®] bio	0%	25%	100%	n/a
LIBA [®] easy	10%	0%	100%	n/a
LIBA [®] recycle	50%	0%	100%	n/a

LIBA® EASY

Nature has ways of doing things, a carefully calculated system where various elements work together to create optimal conditions for life and development.

At LIBA®, we are inspired by nature, and our new EASY collection is designed for applications where the combination of excellent durability and easy handling of the material in production makes EASY the straightforward choice.

New production techniques also allow us to maintain a slightly lower price point, enabling broader applications where cost might otherwise dictate the choice of material.

- Our newest addition to the LIBA® family
- Suitable for sports products
- 10% recycled material
- 100% recyclable
- Smooth and soft to handle
- Competitive pricing
- Produced in Europe
- Manufactured in an ISO Certified factory powered by green solar energy
- Optional thickness: 0.8 - 2.0 mm
- Width: 78 / 44 cm



MATERIAL	RECYCLED CONTENT	BIOBASED CONTENT	RECYCLABLE	CO2 IMPACT/1KG
LIBA®smart	10-15%	0%	100%	n/a
LIBA®bio	0%	25%	100%	n/a
LIBA®easy	10 %	0%	100%	n/a
LIBA®recycle	50%	0%	100%	n/a

LIBA® RECYCLE

Our planet's resources are limited. We know that now. The water we drink and swim in also sustains all life and operates in an endless cycle.

For us, recycling as much of our material as possible is a given. We've taken another significant step towards conserving resources with our LIBA® RECYCLE. Here, we collect material from our customers through our "Recycle Service Program" and materials from our own production.

The goal is to minimize resources and produce as little new material as possible.



- 50% recycled material from our "Recycling Program" and waste from our own production.
- Minimized use of resources in Manufacturing
- 100% recyclable
- Highly durable
- Produced in Europe
- Manufactured in an ISO Certified factory powered by green solar energy
- Optional thickness: 1.0 - 2.0 mm
- Width: 78 / 44 cm

The availability of recycled materials will govern the volume of LIBA® Recycle. Therefore, the number of customers joining our recycling program will be crucial for the availability of the recycled materials needed in the manufacturing of LIBA® Recycle.

MATERIAL	RECYCLED CONTENT	BIOBASED CONTENT	RECYCLABLE	CO2 IMPACT/1KG
LIBA®smart	10-15%	0%	100%	n/a
LIBA®bio	0%	25%	100%	n/a
LIBA®easy	10%	0%	100%	n/a
LIBA®recycle	50%	0%	100%	n/a



TEST RESULTS ABOVE THE REST

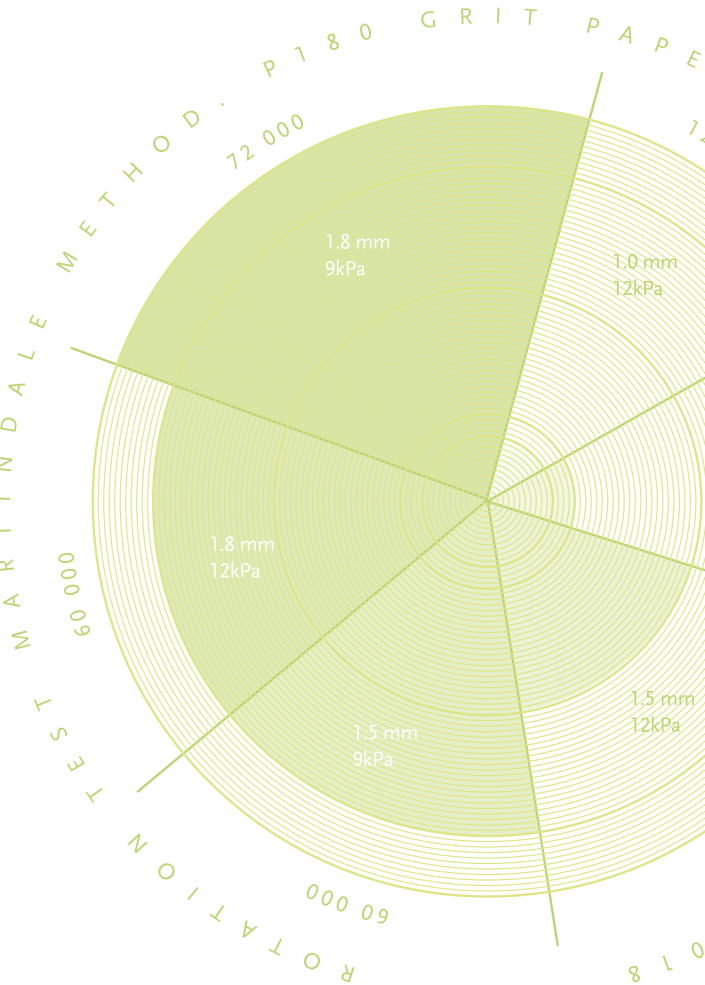
We used the Martindale method to test our LIBA® products for wear-and-tear in textiles and outer materials. LIBA® withstood the process so well that we added much harder tests, which are done for gloves, i.e., sandpaper is rubbed against the material during the test. Also then, our LIBA® product range demonstrated extremely high results.

FACTS

Article	LIBA®
Formulation	Based on TPU
Widths	44 or 78 cm rolls
Thickness range	0.8 – 2.0 mm
Service temperature	-50° to +100° celsius
Colors	Black. Other colors on request
Waterproof/Hydrolysis	Excellent
Ozone/UV-resistance	Excellent
Recycling	100% recyclable
Recycled content	10 – 50%
Biobased content	Up to 25%
Shrinkage	0.8 – 2.0% depending on temp and design
Chemical resistance	As TPU
Hardness (ASTM D 2240)	70+/- 5 shore A
Density	0.6 g/cm3

CHEMICAL TESTS

Follows REACH chemical requirements.
Tested in accordance with the Restricted Chemical Substance (RCS)
List Version 2.0. Several other tests are also made, please ask if you have any further questions.



PROPERTIES	TEST	METHOD	UNIT	ADDITIONAL TEST INFO	LIBA SMART 1.0MM	1.5MM	LIBA BIO 1.0 MM	1.5 MM	LIBA RECYCLE 1.0 MM	1.5 MM	LIBA EASY 1.0 MM	1.5 MM	REC.VALUE
ABRASION RESISTANCE	Scuff resistance Chisel method	TM140:2021		Tested to 800 revolutions	Slight damage at 800 revs	Slight damage at 800 revs	N/A	N/A	N/A	N/A	N/A	N/A	400 revs for excellent scuff resistance
	Martindale	SATRA TM 31:2003	Martindale	51.200 cycles dry 51.200 cycles wet	Very slight wear Very slight wear	Very slight wear Very slight wear	Very slight wear Very slight wear	Very slight wear Very slight wear	Very slight wear Very slight wear	Very slight wear Very slight wear	Very slight wear Very slight wear	Very slight wear Very slight wear	Moderate wear 12800 revs (Mw) L1 = 100 revs (L4 = 8000 revs) L4 = 8 000 revs Highest level
	Abradant Protective gloves ...	EN ISO 20345:5.5.2 SATRA TM 31:2021 ISO 23388 2018	38 mm dia Martindale	Abrasion resistance of insocks P180 Grit Paper, Load:9kPa P180 Grit Paper, Load:12kPa	44 445 20 412	63 000 54 435	32 307 21 541	96 000 63 000	88 500 46 000	106 000 63 014		62 000 53 300	
	Drum snag	SATRA TM95:2014	Scale 1-3+A,B	Tumbled in granite stones for 2h		1A Excellent		N/A		N/A		N/A	2B Good
TENSILE PROPERTIES	Breaking Strength	SATRA TM 29:17/19	N / mm	Along Across	10,7 11,7	16,4 15,2	8,2 11,1	12,2 13,8	13,7 15,8	14,9 18,2		10 11	10N/mm for heavy use
	Extention at break		%	Along Across	483,9 512,9	522,8 506,1	510,4 566,7	559,8 576,4	511,6 548,2	496,2 575,2		440 442	
	Extension at break	SATRA TM137: 1995	%	Along Across	614 617	675 788	662 738	599 670	573 775	694 680			500 for TPU Outsoles

PROPERTIES	TEST	METHOD	UNIT	ADDITIONAL TEST INFO	LIBA SMART 1.5MM	LIBA BIO 1,5 MM	LIBA RECYCLE 1,5 MM	LIBA EASY 1,5 MM	REC VALUE
RESISTANCE TO FLEXING	Hydrolysis flex	SATRA TM344:1995 (SATRA TM 25)	1 000 000 flexes before + 1000 000 after hydrolysis	Hydrolysis for 14 days in 20°C and 65% relativ humidity	No cracking	No cracking	No cracking	N/A	No more than slight cracking
	Vamp flex resistance	SATRA TM 25:2020	100 000 flexes dry/wet	-20°C	No effect like creasing or piping observed	No effect like creasing or piping observed	No effect like creasing or piping observed	N/A	No more than slight N/A cracking in -5°C
	Flex test in water (bally penetrometer)	EN ISO 20344:2021:6.13 EN ISO 5403-1		15% compression clamp stroke 6mm (higher level of testing)	No water penetration is observed	No water penetration is observed	No water penetration is observed	N/A	
	Water penetration	EN ISO 20344:2021:6.13 EN ISO 5403-1 + Vamp flex		16 h Bally penetrometer +100 000 flex – Vamp +16 h Bally Penetrometer	No water penetration is observed	No water penetration is observed	No water penetration is observed	N/A	

Right now, some of the world's best and most innovative shoe manufacturers use LIBA® Smart, and we collaborate closely with several to customize and develop new variations.

CLIENTS WITH RIGOROUS DEMANDS

LIBA®
IMPROVING WHAT'S ALREADY GOOD



A COMPANY WITH A HISTORY

1905

AB H Brunner was founded.

1905 – 1950

Sweden's shoe industry gained momentum and flourished. Brunner delivered machines to more than 400 shoe factories in Sweden.

1950 – 2000

The footwear market opened up. The import of shoes increased, and Sweden's shoe industry experienced tough times. Brunner then focused more on materials and other shoe components.

2003

Brunner developed new business areas in orthopedics, technical textiles, and other materials. The company expanded on the international market.

2007

R&D was launched for new technologies and abrasion-resistant material. LIBA® Smart was tested under harsh conditions on an expedition to Mount Everest.

2010

LIBA® Smart was fully developed – our own thermoplastic polyurethane-based material.

2014

Several world-leading shoe brands have started using LIBA® Smart in their products.

2019

The company launched a partnership with Italy's SPAC/Vegam company – a strong collaborator on the southern European market.

2020

LIBA® Smart reduces cutting waste – thanks to a newly developed 80 cm wide material.

2022

Integrating circularity – to close the loop and reduce the waste, we encourage all customers to collect their cutting scraps. We bring all scrap material back to life in the LIBA® Smart production.

2023

Introducing a new bio-based tpu-mix with a lower c20 emission. Increasing the amount of recycled content in one of our LIBA TPU-film to 50%



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