

**STORAGE**

The Epaflex PU systems must be stored in a dry and covered area preferably at an ambient temperature around 20 °C and in any case not at an excessively high or low temperature. Ideally, they should be stored in a cool and ventilated area.

**PACKAGING**

The Epaflex PU systems are formed of three components. The polyols are available in metal drums weighing between 180 and 200 kg, the prepolymers (ISO) in metal drums weighing 240 kg and the catalysts in plastic drums weighing up to 50 kg.

# EPAFLEX

## POLYURETHANES

### POLYURETHANES FOR FOOTWEAR (PU systems)

The polyurethane systems by EPAFLEX are fully customised in order to obtain a product of the required characteristics and to ensure compatibility with any polyurethane machine, thereby optimising the production process.

The polyurethane systems by EPAFLEX are formulated to guarantee "trouble free" use, great tolerance and versatility.

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

The vast range of polyurethanes for footwear by Epaflex is available in six main families.



Epaflex was established in 1991 as a system house specialised in producing polyurethane systems for the footwear industry.

Over the years, Epaflex's business has expanded further and diversified, first with the second line of products, Thermoplastic polyurethane (TPU) granules and then with the production of Polyureas, Polyaspartates, Prepolymers and spray foams for insulation.

Along with Elachem S.p.A., Epaflex belongs to an industrial group that recently completed an important chemical plant for resin production.

All the polyesters used in Epaflex TPU are manufactured at Elachem so that the quality of the raw material can be carefully controlled, giving it a suitable level of competitiveness for market needs.

# EPAFLEX

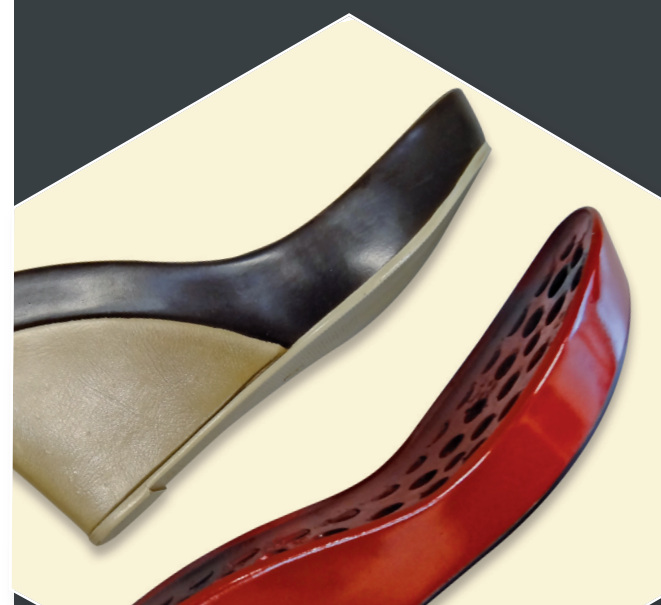
## POLYURETHANES

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- **Polyether systems:** For the production of soles for sandals and for very flexible men's and women's footwear with excellent physical/mechanical resistance with hardness ratings ranging from 45 to 85 Shore A and densities from 0.40 to 0.65 g/cm<sup>3</sup>.
- **Hard/semi-hard systems:** For the production of soles for sandals, particularly suitable for wedge heels for women, with hardness ranging from 55 to 75 Shore A and with densities from 0.24 to 0.40 g/cm<sup>3</sup>. Excellent workability and demoulding time. In order to meet certain needs, the systems can be set up for the production of soles that are particularly hard and rigid (85/95 Shore A).
- **Intermediate systems:** For the production of flexible, soft and light soles particularly suitable for city, casual and sports shoes with hardness ratings ranging from 40 to 60 Shore A and densities from 0.35 to 0.55 g/cm<sup>3</sup>. These systems provide excellent resistance to abrasion as well as great comfort.
- **Super-light systems:** For the production of particularly light intersoles with hardness ratings ranging from 35 to 45 Shore A and with densities from 0.22 to 0.34 g/cm<sup>3</sup>. These systems are particularly suitable for expanded intersoles on sports shoes combined with treads in compact PU, TPU or rubber. The great flexibility of these systems ensures excellent resistance to compression. Systems particularly suitable for the production of pool/beach sandals are also available.
- **Insole systems:** For the production of all types of insoles (including covered insoles) with hardness ratings ranging from 10 to 40 Shore A and densities from 0.22 to 0.32 g/cm<sup>3</sup>.
- **High quality systems:** Medium and high molecular weight systems for the production of soles with optimum resistance to multiple flexing at both low and very low temperatures with hardness ratings ranging from 50 to 60 Shore A and with densities from 0.45 to 0.65 g/cm<sup>3</sup>. These systems are particularly suitable for the soles on safety shoes whether they are single or double density. They are also ideal for trekking shoes and all other types of footwear requiring high resistance to flexing and hydrolysis.



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## POLYURETHANES for footwear (PU systems)

These are the six main families that make up the range of polyurethane systems for footwear by Epaflex.

Epaflex can tailor each product in these families to specific production and design needs.

TECHNICAL CHARACTERISTICS:	STANDARD	Insole		Soles		Hard/semi-hard			Intermediate		Super-light			High quality		
		ET ME 025/030	ET ME 030/035	ET ME 51/19	ES 123	ET ME 75	ES 350 M	ES 205	ET ME 41	ES 200/12	ES 200/18	ES 123 LM	LIGHTEL	ES 150	ES 145 MOD	ES 355/100
Ester/Ether		Ether	Ether	Ether	Ester	Ether	Ester	Ester	Ether	Ester	Ester	Ester	Ester	Ester	Ester	Ester
Free density	>>>>	0,14 - 0,16	0,19 - 0,21	0,25 - 0,27	0,25 - 0,27	0,20 - 0,22	0,19 - 0,21	0,20 - 0,2	0,22 - 0,23	0,22 - 0,23	0,18 - 0,20	0,17 - 0,19	0,13 - 0,14	0,31 - 0,33	0,27 - 0,29	0,27 - 0,29
Density in the mould g/cm <sup>3</sup>	ISO 845:2006	0,25 - 0,30	0,25 - 0,30	0,50 - 0,55	0,50 - 0,55	0,38 - 0,44	0,25 - 0,30	0,37 - 0,42	0,44 - 0,48	0,40 - 0,44	0,28 - 0,31	0,33 - 0,38	0,24 - 0,28	0,57 - 0,62	0,50 - 0,55	0,50 - 0,55
Hardness on the shore A scale	DIN 53505	25 + -3	30 + -3	58 + -3	60 + -3	70 +- 5	30 + -3	65 + -5	58 + -3	60 + -3	58 + -3	43 + -3	53 + -3	60 + -3	630 + -3	630 + -3
Load at break kN/m	DIN 53504	N/D	N/D	> 10,0	> 12,0	> 5,0	> 5,0	> 7,0	> 8,0	> 9,0	> 6,0	> 8,0	> 6,0	> 15,0	> 13,0	> 13,0
Elongation %	DIN 53504	N/D	N/D	> 350	> 450	> 300	> 300	> 350	> 350	> 350	> 300	> 350	> 350	> 550	> 500	> 500
"Bennewart" res. to cut growth	DIN 53522	N/D	N/D	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.	< 4 mm.
"Ross flex" res. room T+20°C 30,000 cycles	DIN 53543	N/D	N/D	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.
"Ross flex" res. cold T-20°C 30,000 cycles	EN ISO 7854	N/D	N/D	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.	< 6 mm.
Flex resistance after hydrolysis	EN ISO 7854	N/D	N/D	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000	150.000
Abrasion	DIN 53516	N/D	N/D	< 150 mg.	< 150 mg.	< 250 mg.	< 250 mg.	< 250 mg.	< 200 mg.	< 200 mg.	< 150 mg.	N/D	< 250 mg.	< 150 mg.	N/D	< 250 mg.
Antistatic	EN ISO 20347/EN ISO 20345	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL							OPTIONAL	OPTIONAL		OPTIONAL	OPTIONAL
Electrostatic discharge (ESD)	ESD CEI EN 61340-5-1	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL							OPTIONAL	OPTIONAL		OPTIONAL	OPTIONAL
Compression resistance	ISO 815 -1	< 15 %	< 15 %													
													< 20 mm.			
APPLICATIONS / TYPES:																
Soles				•	•	•	•	•	•	•			•	•	•	•
Sandal/Slipper									•	•	•		•			
Hard/Wedge heel							•	•								
Semi-hard						•	•	•								
Casual				•	•									•	•	•
Safety					•									•	•	•
Compact				•	•									•	•	•
Intersoles					•				•			•	•		•	•
Intermediate					•				•	•						
Super-light											•	•	•			
Boot					•										•	•

