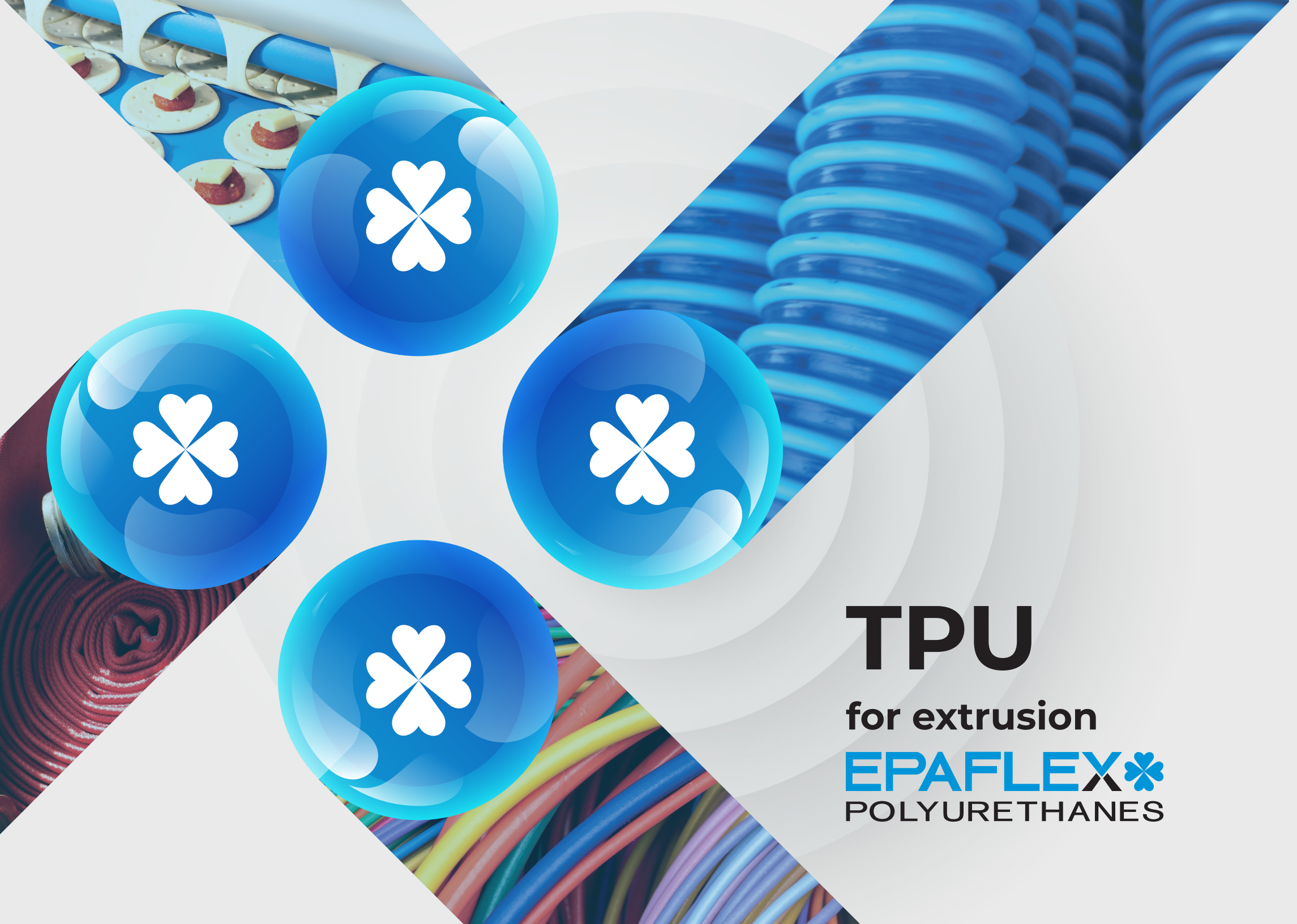




TPU

for extrusion

EPAFLEX 
POLYURETHANES



The Company

EPAFLEX Polyurethanes® was founded in 1991 in Cassolnovo, Italy as a manufacturer and supplier of polyurethane systems to the footwear industry.

Over the years, EPAFLEX has grown and expanded the product line to better address our customers' needs by adding production of thermoplastic polyurethane (TPU) and polyurethane products for use in coatings, adhesives, sealants, and elastomer (CASE) applications. Together with the parent company, ELACHEM® which is located in Vigevano, Italy, EPAFLEX is a vertically integrated industrial group with state-of-the-art manufacturing.

In 2023, Epaflex has furthered expanded their scope into the Americas by launching EPAFLEX Americas - a wholly owned subsidiary of Epaflex intended to service the North American market. Epaflex proudly offers, on top of our branded products, contract manufacturing services that leverage the quality and the reliability of the industrial assets and the R&D facilities available in Italy. With more than 30 years' experience in polyurethane chemistry, we are the partner you are looking for when it comes to quality, reliability, discretion, flexibility, and speed.

TPU PORTFOLIO

EPAFLEX Thermoplastic polyurethane elastomers (TPU) efficiently bridge the performance gap between rubber and plastics in many demanding applications. Our current TPU product portfolio includes:

EPA mould 

designed for injection molding processes.

EPA line 

designed for extrusion processes.

EPA met 

bio-based high performance TPU for injection molding or extrusion processes.

EPA lite 

high performance rubberlike TPU based materials.

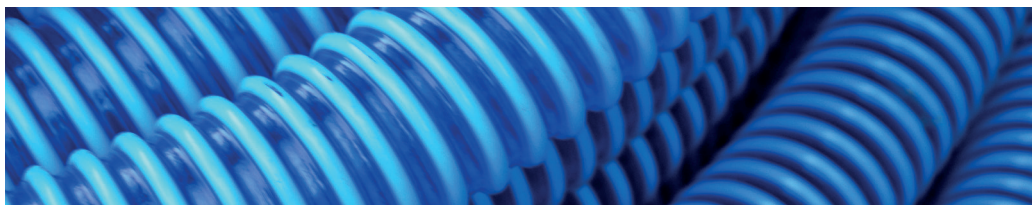
Key benefits offered by Epaflex TPU

- Excellent abrasion and scratch resistance
- Very good resistance to oil and greases
- Outstanding batch to batch consistency
- Good flexibility even at low temperatures
- Easy recyclability

EPALINE Series 300

Polyester based TPU, specifically designed for demanding extrusion processes. They offer superior batch to batch consistency and excellent melt strength. Food Safe Material (suitable for food contact applications, according to EU and FDA regulations) versions are available as specified in the table below.

EPA line 			378 A 51 20	380 A 55 25	380 A 55 25 HS	384 A 55 12	384 A 55 25	384 A 55 25 XC	387 A 55 20	390 55 25	395 55 25	350 D 55 25	355 D 55 25
Typical Properties	Test Method	Units											
Density	ISO 1183-1	Kg/dm ³	1,18	1,19	1,19	1,19	1,19	1,19	1,21	1,2	1,2	1,22	1,22
Hardness	ISO 7619	Shore A	78	82	83	85	85	85	86	89	93		
Hardness	ISO 7619	Shore D										50	50
Tensile Strength	ISO 527-1	MPa	48	48	50	50	50	50	45	50	55	55	55
50% Modulus	ISO 527-1	MPa	4,2	4,7	5	5,8	5,4	5,4	5,6	7,3	9,5	12,9	12,9
100% Modulus	ISO 527-1	MPa	5,4	5,7	6,2	7	6,4	6,4	7	8,5	11,1	15,5	15,5
300% Modulus	ISO 527-1	MPa	11	14,2	15	16,8	15,6	15,6	16	19	31	44,5	44,5
Elongation @ Break	ISO 527-1	%	570	520	530	520	530	530	600	480	430	350	350
Tear Strength	ISO 34-B	KN/m	85	100	105	100	105	105	90	110	125	140	140
Abrasion Resistance	ISO 4649	mm ³	45	30	35	25	25	25	35	25	30	35	35
Glass Transition Temp (Tg)	DMA	°C	-31	-35	-35	-35	-35	-35		-35	-35	-20	-20
MFI	ISO 1133	g/10 min	15-25	15-30	15-30	5-15	15-30	15-30	50	15-35	15-30	5-15	5-15
MFI Test Conditions			200°C/5 Kg	205°C/5 Kg	205°C/5 Kg	205°C/5 Kg	205°C/5 Kg	205°C/5 Kg	190°C/10 Kg	210°C/5 Kg	210°C/5 Kg	210°C/5 Kg	210°C/5 Kg
Vicat Softening Point	ISO 306:2022	°C	81	96	96	105	105	105	82	115	127	139	140
 Spiral hoses			✱	✱	✱		✱	✱		✱			
 Hydraulic hoses										✱	✱		
 Pneumatic tubes											✱	✱	✱
 Conveyor belts			✱						✱				
 Profiles						✱	✱	✱					
 FSM available			✱	✱		✱	✱	✱	✱	✱	✱	✱	✱



EPALINE Series 700 – Softer grades

Polyether based TPU with premium stability in hot and humid conditions, excellent resistance to microbial attack and outstanding transparency. Specifically designed for demanding extrusion processes. They offer superior batch to batch consistency and excellent melt strength. Food Safe Material (suitable for food contact applications, according to EU and FDA regulations) versions, and flame retarded products are available as specified in the table below.

EPA line 			770 A 15 15	773 A 15 10 W	780 A 15 15	785 A 15 12	785 A 15 15	785 A 15 25	785 A 15 30	785 A 15 15 M
Typical Properties	Test Method	Units								
Density	ISO 1183-1	Kg /dm ³	1,09	1,12	1,11	1,11	1,11	1,11	1,11	1,11
Hardness	ISO 7619	Shore A	72	74	80	85	85	85	85	87
Hardness	ISO 7619	Shore D								
Tensile Strength	ISO 527-1	MPa	35	45	45	45	45	45	45	45
50% Modulus	ISO 527-1	MPa	2,6		4		5,2	5,7	5	6,3
100% Modulus	ISO 527-1	MPa	3,3		5		6,3	7	6,2	7,5
300% Modulus	ISO 527-1	MPa	6,4		8,5		11	12,5	11,5	12
Elongation @ Break	ISO 527-1	%	650	650	600	500	550	550	550	650
Tear Strength	ISO 34-B	KN/m	60	60	30	90	85	85	90	80
Abrasion Resistance	ISO 4649	mm ³	60	45	70	35	25	25	25	45
Glass Transition Temp (Tg)	DMA	°C		-45	-40	-39	-39	-39	-39	-39
Compression Set 23C / 72 Hours	ISO 815	%					25	25	25	25
Compression Set 70C / 24 Hours	ISO 815	%					45	45	45	45
MFI	ISO 1133	g / 10 min	10-20	10	10-20	<15	1-10	25	30	55-75
MFI Test Conditions			205°C/5 Kg	190°C/5 Kg	205°C/5 Kg	190°C/21.6 Kg	190°C/8.7 Kg	205°C/5 Kg	205°C/5 Kg	190°C/21.6 Kg
Vicat Softening Point	ISO 306:2022	°C	71	82	81	87	87	87	87	85
 Spiral hoses			✱	✱	✱	✱	✱			
 Layflat hoses								✱	✱	✱
 Hydraulic hoses										
 Pneumatic tubes										
 Cables (non FR)						✱	✱		✱	✱
 Cables (mild FR)				✱						
 Profiles						✱	✱			✱
 FSM available			✱		✱	✱	✱	✱	✱	✱
 FSM grade OK for NSF 61			✱		✱	✱	✱	✱	✱	✱



EPALINE Series 700 – Harder grades

Polyether based TPU with premium stability in hot and humid conditions, excellent resistance to microbial attack and outstanding transparency. Specifically designed for demanding extrusion processes. They offer superior batch to batch consistency and excellent melt strength. Food Safe Material (suitable for food contact applications, according to EU and FDA regulations) versions, and flame retarded products are available as specified in the table below.

EPA line 			786 A 15 10 W	786 A 15 10 W M	788 A 15 30	788 A 15 15 M	790 15 15	795 15 15	795 A 15 15 M	745 D 15 15	750 D 15 15
Typical Properties	Test Method	Units									
Density	ISO 1183-1	Kg /dm ³	1,11	1,13	1,12	1,11	1,13	1,14	1,13	1,14	1,17
Hardness	ISO 7619	Shore A	83	87	87	88	90	93	93	95	96
Hardness	ISO 7619	Shore D								44	52
Tensile Strength	ISO 527-1	MPa	35	30	45	40	50	45	43	50	55
50% Modulus	ISO 527-1	MPa		6,5	6	8,3	8	9,5	9,5	11	14
100% Modulus	ISO 527-1	MPa		9	7,2	13	9,5	12	11,5	12,5	18
300% Modulus	ISO 527-1	MPa		20	14		22,5	28	20	30	45
Elongation @ Break	ISO 527-1	%	650	550	520	550	500	450	520	450	350
Tear Strength	ISO 34-B	KN/m	75	60	100	90	100	110	130	120	140
Abrasion Resistance	ISO 4649	mm ³	45	45	25	40	30	30	45	35	35
Glass Transition Temp (Tg)	DMA	°C	-36	-43	-39		-35	-30		-30	
Compression Set 23C / 72 Hours	ISO 815	%			25			25			
Compression Set 70C / 24 Hours	ISO 815	%			45			45			
MFI	ISO 1133	g / 10 min	10-20	55	28	40	15-35	40-60	10-30	10-30	<15
MFI Test Conditions			190°C/5 Kg	190°C/21.6 Kg	205°C/5 Kg	200°C/5 Kg	210°C/5Kg	210°C/10 Kg	200°C/10 Kg	200°C/8,7 Kg	210°C/5Kg
Vicat Softening Point	ISO 306:2022	°C	88	89	92	90	100	114	110	125	137
 Spiral hoses			✱								
 Layflat hoses					✱						
 Hydraulic hoses							✱	✱	✱		
 Pneumatic tubes						✱		✱		✱	✱
 Cables (non FR)					✱	✱	✱	✱	✱	✱	
 Cables (mild FR)			✱	✱							
 Profiles							✱				
 FSM available					✱	✱	✱	✱		✱	✱
 FSM grade OK for NSF 61					✱		✱				

EPALITE - EPADISC

Premium quality lightweight TPU based elastomers with special haptics (velvet touch). Specifically designed for soft touch applications and 2K extrusion on polar engineering thermoplastics, both in footwear and in other consumer applications.

EPA lite

Typical Properties	Test Method	Units	362 A 02	362 A 02 HS	372 A 02	372 A 02 HS
Density	ISO 1183-1	Kg /dm ³	1,04	1,04	1,04	1,04
Hardness	ISO 7619	Shore A	65	65	70	70
Hardness	ISO 7619	Shore D				
Tensile Strength	ISO 527-1	MPa	15	15		
50% Modulus	ISO 527-1	MPa	2	2	2,1	2,1
100% Modulus	ISO 527-1	MPa	2,7	2,7	2,7	2,7
300% Modulus	ISO 527-1	MPa	6,5	6,5	6,5	6,5
Elongation @ Break	ISO 527-1	%	500	500	550	550
Tear Strength	ISO 34-B	KN/m	45	45	45	45
Abrasion Resistance	ISO 4649	mm ³	65	65	65	65
☹️ Hydrolysis resistant				✳️		✳️

EPA disc

Typical Properties	Test Method	Units	50 D 03
Density	ISO 1183-1	Kg /dm ³	1,04
Hardness	ISO 7619	Shore A	95
Hardness	ISO 7619	Shore D	48
Tensile Strength	ISO 527-1	MPa	27
50% Modulus	ISO 527-1	MPa	10,6
100% Modulus	ISO 527-1	MPa	13,4
300% Modulus	ISO 527-1	MPa	22,7
Elongation @ Break	ISO 527-1	%	430
Tear Strength	ISO 34-B	KN/m	62
Abrasion Resistance	ISO 4649	mm ³	60
☹️ Hydrolysis resistant			✳️



FSM – Food Safe Materials

Food Safe TPU Materials for your applications

Properly and safely processed food plays a vital role in our daily lives, and food processing machinery mandates the use of safe and clean high-performance components.

EPAFLEX has developed a wide range of FSM grades that fully meet requirements set by Regulation EU 2023/1445 and are, therefore, manufactured according to the most stringent GMP (Good Manufacturing Practices) guidelines, in the Cassolnovo plant in Italy. EPAFLEX FSM grades also meet the relevant FDA regulations, such as FDA 177.2600 and FDA 177.1680

Clean water is essential to life, and delivering clean drinkable water is another key element to ensure a proper standard of living for every citizen of this world. Preserving water from contamination during transportation and storage is one of the key features of current and future drinking water equipment standards.

EPAFLEX listened very carefully to the requirements of the market and has recently achieved several certifications according to NSF/ANSI/CAN 61 and 372 standards. Moreover, EPAFLEX R&D and Operations teams are working to progressively add more certifications to the current portfolio, including the ones set by Regulations EU 2024/367 and 2024/370.

You found a selection of the EPAFLEX FSM TPU grades in the previous pages, together with the key applications they are suitable for.

Please note that EPAFLEX FSM grades are commercially available in 700 or 1000 Kg octabins in Europe and in APAC, or in 750 Kg boxes in Americas. To prevent contamination during transportation, storage and handling, we always use a protective inlayer in our FSM packaging.

Please get in touch with your EPAFLEX contact if you are interested in more precise and detailed info, or if you want to know about the latest updates of our FSM portfolio.



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POLYURETHANES

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