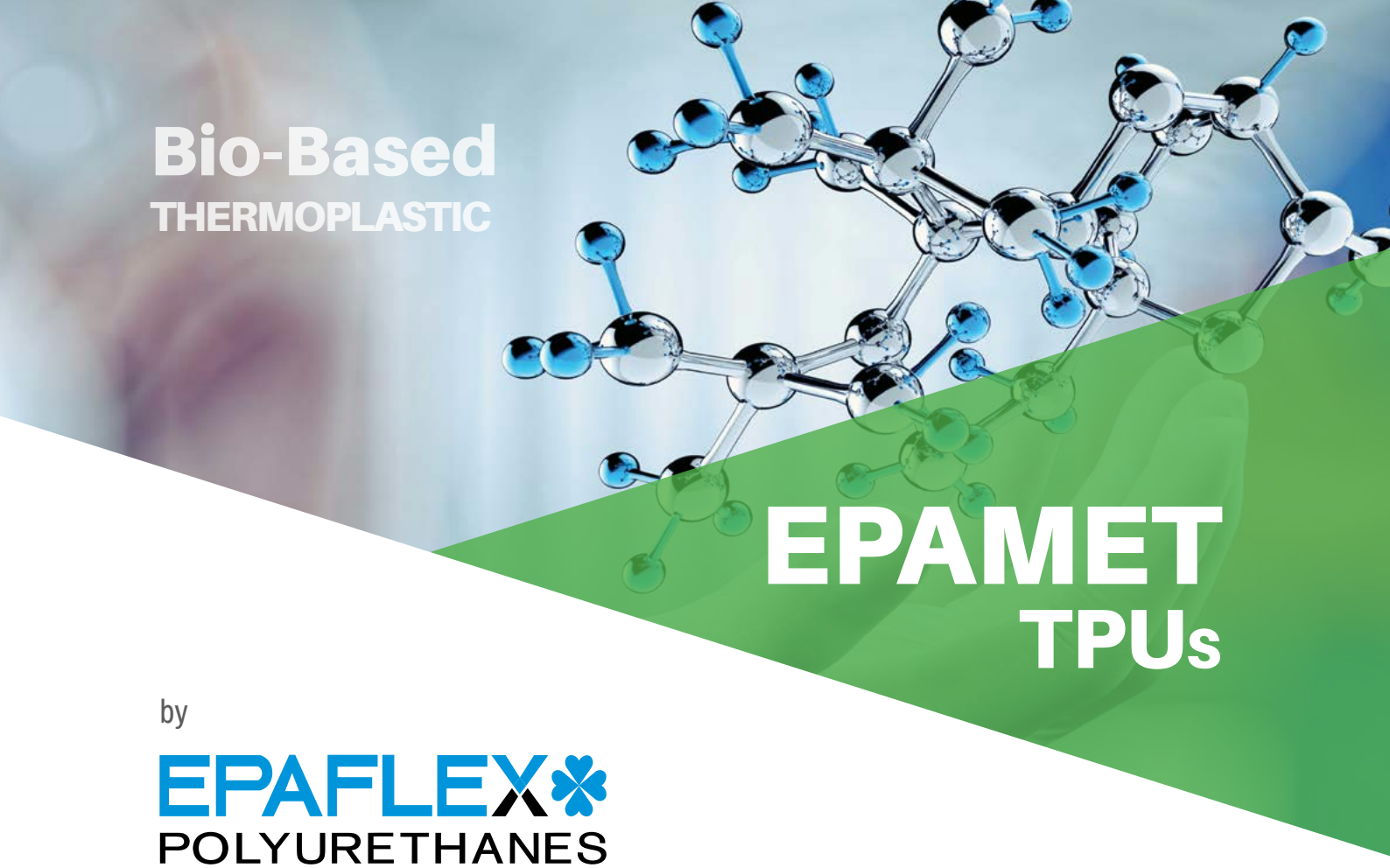


Bio-Based
THERMOPLASTIC

EPAMET
TPUs

by

EPAFLEX POLYURETHANES

Epamet TPUs are Bio-based thermoplastic polyurethanes made with renewable sourced material providing the same technical properties and performance of fossil based TPUs.

In a continuous process of contributing to a better environment Epaflex Polyurethanes has developed the ***Epamet*** line with the aim of offering products which are a valid alternative to traditional petroleum based TPU. The bio-based material content can be above 60% in ***Epamet TPUs***

The goal of significantly reduce the use of fossil-base products decreasing organic carbon content is reached with and outstanding ease of process, workability and use.

Main benefits of Epaflex Polyurethanes ***Epamet*** family are those of traditional thermoplastic polyurethanes; superior abrasion resistance, very good chemical resistance, cold temperature flexibility, outstanding mechanical properties, wide hardness range, superior oil and grease resistance, transparency and hydrolysis resistance. These TPUs can be used either in extrusion than injection moulding machines. No specific precautions need to be taken when using Epaflex polyurethanes bio-based TPUs and they can be used in a wide range of application ranging from footwear and tecnical injection moulding to extruded hoses, tubes, belts and profiles.

Epamet

WHAT IS IMPORTAN TO KNOW WHEN SPEAKING OF BIO-BASED MATERIALS

The term biomass covers all materials of biological origin, apart from fossil materials and/or those incorporated into geological formations.
The term therefore applies to plants, trees, algae, marine organisms, microorganisms, animals,... but not petroleum.
A bio-based product is a product derived from biomass.

BIO-BASED ORIGIN TWO MAIN APPROACHES:

When dealing with the bio-based origin of products, two approaches are used:
• the bio-based (biomass) content,
• the bio-based carbon content
Each approach has its own particularities with, depending on the context, its advantages and disadvantages.

DEFINITIONS

This results in several definitions and symbols:

m_B	bio-based content or biomass content, expressed as a percentage of the total mass of sample
X_B	bio-based carbon content by mass, expressed as a percentage of the mass of the sample (dry)
X_B^{TC}	bio-based carbon content by total carbon content, expressed as a percentage of the total carbon content
X_B^{TOC}	bio-based carbon content by total organic carbon content, expressed as a percentage of the total organic carbon content

STANDARDS

Each approach has its own test standard, American, European or International:

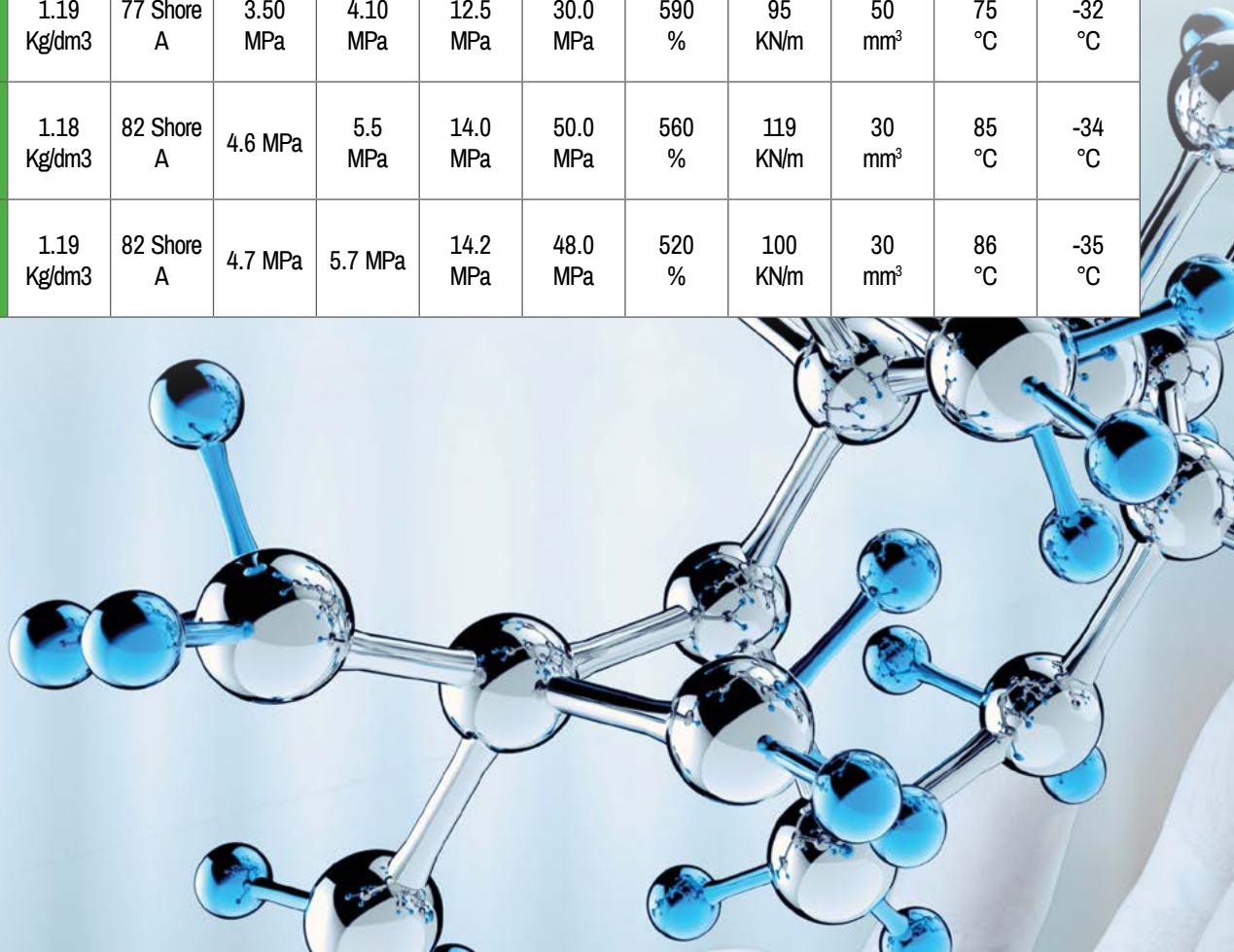
ASTM D6866	*Standard test method for determining the biobased (carbon) content of solid, liquid and gaseous samples using radiocarbon analysis*
EN 16640	*Bio-based products - Bio-based carbon content* *Determination of the bio-based carbon content using the radiocarbon method*
EN 16785-1	*Bio-based products - Bio-based content - Part 1:* *Determination of the bio-based content using the radiocarbon analysis and elemental analysis*
ISO 16620-2	*Plastics - Biobased content — Part 2:* *Determination of the biobased carbon content*
ISO 16620-4	*Plastics - Biobased content — Part 4:* *Determination of the biobased mass content*

The test methods are similar, but the way the results are expressed differs from one standard to another.

SOURCE: TUV Austria

EPAMET
BIO-BASED LINE

	Density	Hardness	Modulus @ 50%of elongation	Modulus @ 100% of elongation	Modulus @ 300% of elongation	Tensile strength	Elongation at break	Tear strength	Abrasion resistance	Softening temperature (VICAT) (1 kg, 50 °C/h)	Glass transition temperature (Tg)
	ISO 1183	ISO 868	EN 12803	EN 12803	EN 12803	EN 12803	EN 12803	ISO 34	EN 12770	ISO 306	DMA
665 A 26 B	1.18 Kg/dm3	66 Shore A	2.3 MPa	3.0 MPa	7.2 MPa	30.0 MPa	650 %	65 KN/m	60 mm^3	70 °C	-38 °C
675 A 26 B	1.19 Kg/dm3	75 Shore A	3.0 MPa	3.8 MPa	9.4 MPa	35.0 MPa	610 %	80 KN/m	45 mm^3	70 °C	-35 °C
278 A 51 30 B	1.19 Kg/dm3	77 Shore A	3.50 MPa	4.10 MPa	12.5 MPa	30.0 MPa	590 %	95 KN/m	50 mm^3	75 °C	-32 °C
283 A 51 30 B	1.18 Kg/dm3	82 Shore A	4.6 MPa	5.5 MPa	14.0 MPa	50.0 MPa	560 %	119 KN/m	30 mm^3	85 °C	-34 °C
380 A 55 25 B	1.19 Kg/dm3	82 Shore A	4.7 MPa	5.7 MPa	14.2 MPa	48.0 MPa	520 %	100 KN/m	30 mm^3	86 °C	-35 °C



EPAFLEX POLYURETHANES

Epaflex was established in 1991 as a system house specialised in the production of 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, spray foams for insulation and cast elastomers.
Together with Elachem SpA, Epaflex forms an industrial group which produces every year over 85 Kilotons of chemicals sold all over the world.

Download our TPU brochure:

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