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TPE's direct 3D printing from pellets
An industrial quality breakthrough

Elastoplast final event
16th March, 2021
Manon Frydman

Introduction to PAM Technology

Pellet Additive Manufacturing

Industrial-grade pellets to meet the most demanding constraints and requirements

PAM technology allows our industrials partners to benefit from all the flexibility of 3D printing solutions while offering them the freedom of materials choice (nature, costs, sourcing, etc.) and the possibility to preserve their original standards and quality

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Tensile tests results

Very low hardness material - 51 VLRH

Printing settings

Infill pattern : Zig-Zag – infill density : 100% - nozzle : 0.8mm – layer height : 0.4mm

Properties	u.m.	Pam tensile bar	Injection moulding	Pam performance
Hardness (DIN ISO 27588 (D=6mm)	VLRH	45	51	**88,24 %**
Density (DIN EN ISO 1183-1)	g/cm^3	0,874	0,873	**100,11 %**
Tensile strength (DIN 53504/ISO 37)	Mpa	1,4	1,9	**73,68 %**
Elongation at Break (DIN 53504/ISO 37)	%	1178	1412	**83,43 %**
Tear resistance (ISO 34-1 Methode B)	%	3,5	4,2	**83,33 %**

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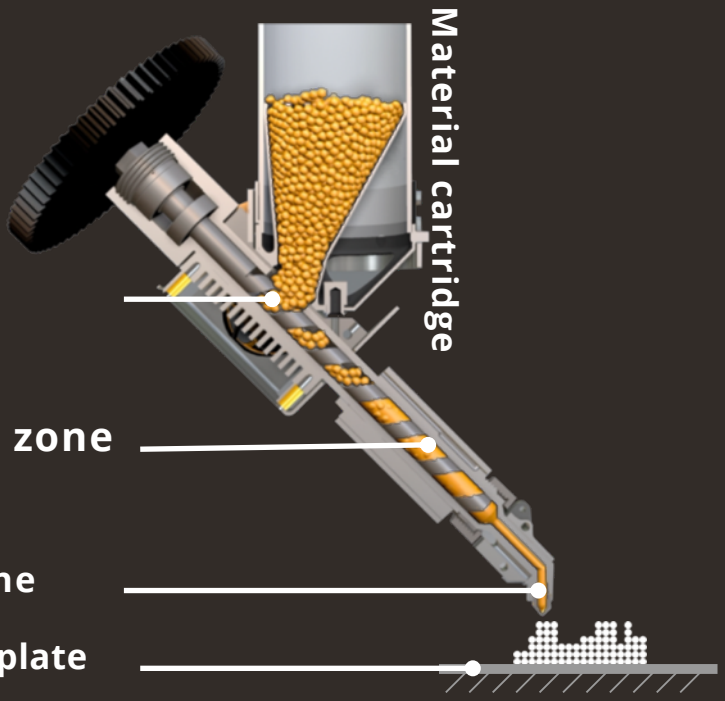
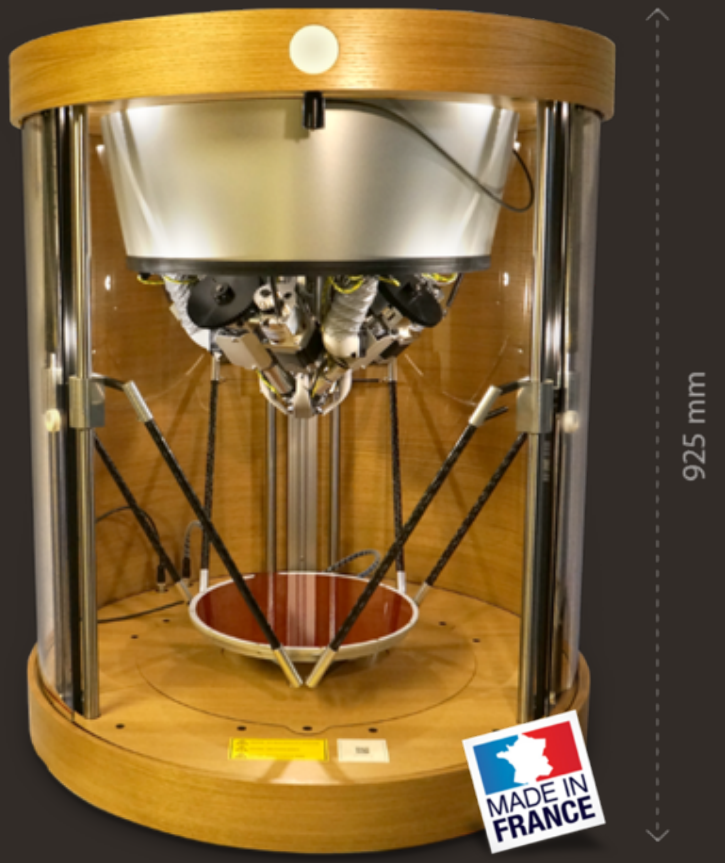
PAM technology and TPE
Until 2018

Pushing the boundaries of elasticity

A technology resulting from 7 years of R&D





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A proved compatibility with elastomers

Car lighting sealing part in TPU 33 ShoreD

TPU **elastic properties are entirely kept** thanks to the Pam technology and **guarantee sealing** of the back of the lighting.

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An ability to print low hardness materials

Application in TPE 45 ShoreA

Pam technology makes it **possible to process highly flexible materials**, unlike conventional FDM, SLS and SLA processes. This part has an **excellent surface appearance**, good interlayer adhesion.

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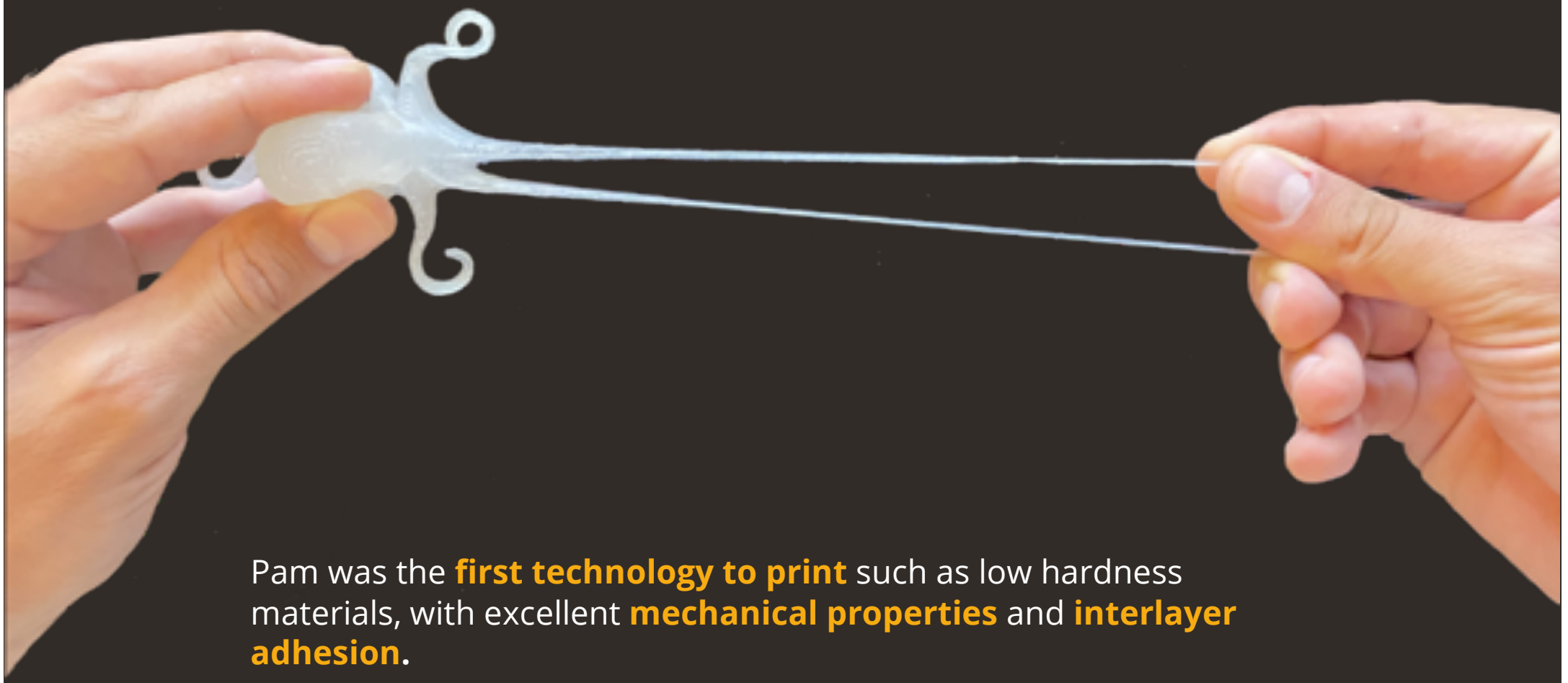
PAM technology and TPE
Since 2018

Printing every level of hardness [1/2]

Octopus in TPE 30 Shore00



Pam was the **first technology to print** such as low hardness materials, with excellent **mechanical properties** and **interlayer adhesion**.

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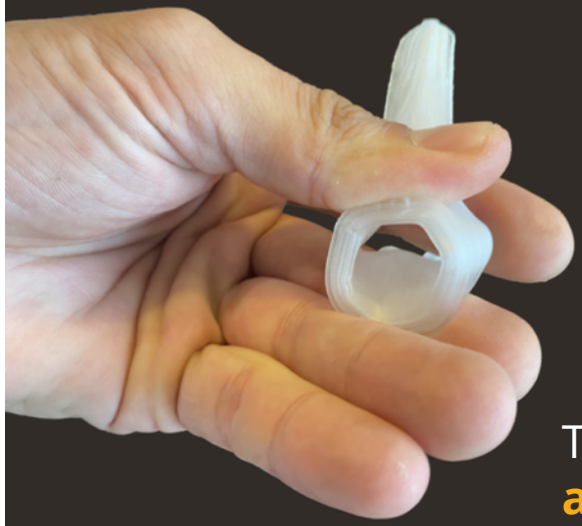
Printing every level of hardness [2/2]

Snorkle mouthpiece part in TPE 70 Shore A



This TPE presents excellent **interlayer adhesion and printability.** This prototype has been 3D printed with New Pam Series P.

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Combining elastomer properties [1/3]

Multi-material printing : Sportwear outsole

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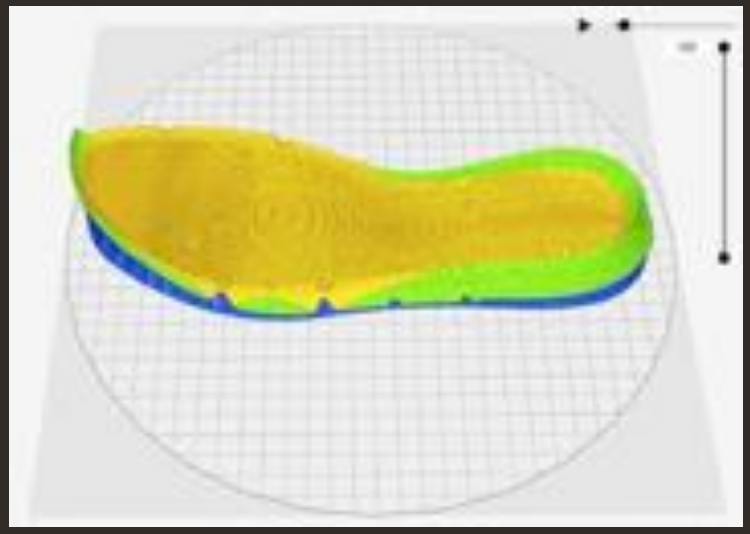

3 materials are required to print this sole :

Material 1: TPE 45 ShA

Material 2 : TPE 70 ShA

Material 3 (support) : HIPS

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Combining elastomer properties [2/3]

Multi-material printing : clamp hose in PP x TPE 60 shA

Click here to watch the video

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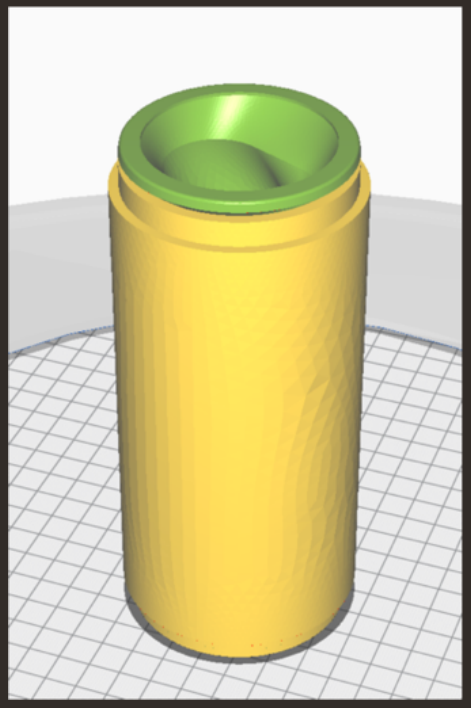
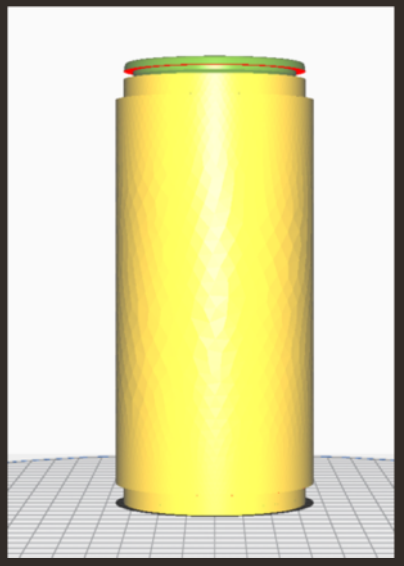
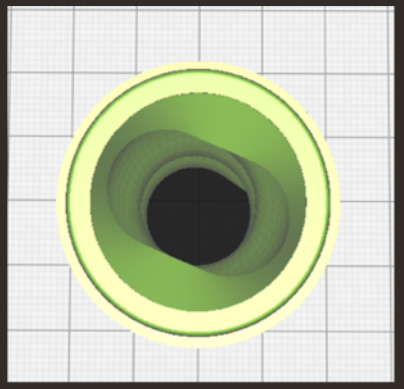
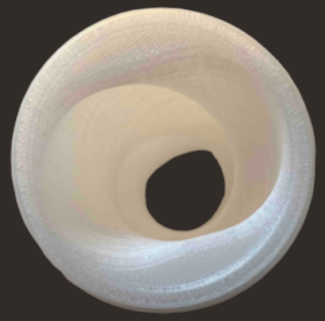
Combining elastomer properties [3/3]

Pump sleeve – PP/TPE60









2 materials are required to print this part :
Material 1: PP
Material 2 : TPE 60 ShA

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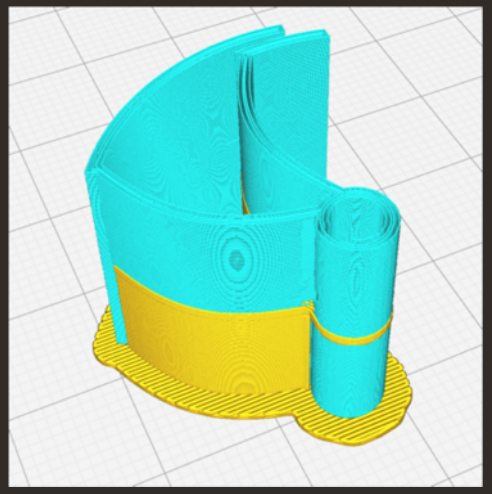
Printing TPE with water soluble support

Example with BVOH and TPE 45 shA

2 materials are required to print this part :
Material 1: TPE 45 ShA
Material 2 (support) : BVOH



Printing profile under development

Advantages vs support structures printed with the same material as the final part :

- Easier to remove
- Better surface quality

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Questions/Answers

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