

The Compounding Experts

BioCelain® - “Drop-In”

Biobased and biodegradable compounds for many applications

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BioCelain®

Examples of applications

BioCelain® is already used in the following areas:

- Bottles, films
- Soft components of toothbrushes
- Toys, closures
- Reusable packaging
- Tea lights, candle holders
- technical parts
- Cups, Flowerpots



Source: Exipnos | BioCelain® product examples

AUTOMOTIVE INDUSTRY

Comparison of P-FLEX 020 (ABS HI) with BioCelain® A 105 S P75 (PBS-Compound)

Developing product BioCelain® A 105 S P75 is a compound of PBS with Natural Rubber (Latex) shows increased impact properties

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Type	BioCelain® A 105 S P75
Description	Bio-based and biodegradable PBS compound with good impact strength and stiffness. Meets the requirements of DIN EN 13432 and DIN EN 17033.
	Preliminary data sheet / Development type
Applications	- Technical components; automotive - Thermoforming - Textile fibers - Films - Foam - 3D printing filament

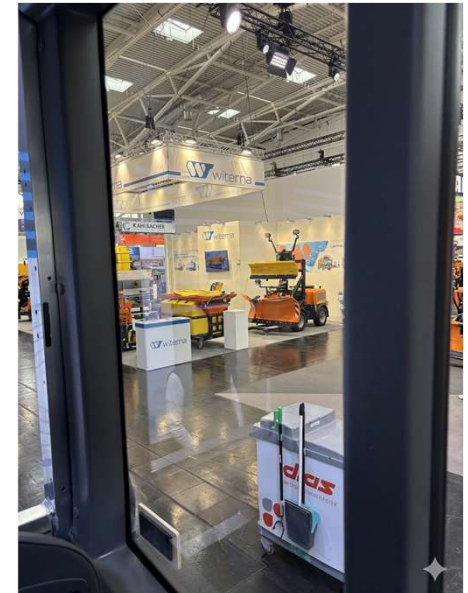
Property	Value	Unit	Test method
Density	1,45	g/cm³	ISO 1183 A
Melt Flow Index (MFI) 190°C/2,16kg	5	g/10 min	ISO 1133
Linear shrinkage	0,9-1,3	%	intern
Mechanical properties:			
Yield strength	35	N/mm²	DIN EN ISO 527
Elongation at yield	10	%	DIN EN ISO 527
Tensile E-Modulus	2300	N/mm²	DIN EN ISO 527
IZOD-Impact notched at 23°C	10	kJ/m²	ISO 180
IZOD-Impact notched at -20 °C	8	kJ/m²	ISO 180
Thermal properties:			
Vicat 5 kg	94	°C	ISO 306
Electrical properties:			
Surface resistivity	1E+14	Ohm*cm	DIN 53482
Other properties:			
Schmelzindex MFI 190°C/5kg	18	g/10min	ISO 1133
Charpy gekerbt 23°C	11	kJ/m²	ISO 179-1 /1/e /A
Moulding conditions:			
Mass temperature	165	°C	
Mould temperature	30-50	°C	
Drying	80/2	°C/h	

AUTOMOTIVE INDUSTRY

Comparison of (ABS HI) P-FLEX 020 with (PBS) BioCelain® A 105 S P75

DESCRIPTION	UNIT	ABS HI P-FLEX 020	PBS BioCelain A 105 S P75
MFI	g/10min	10 (230/2,16)	5 (190/2,16)
Yield strength	N/mm ²	37	35
E-modulus (tensile)	N/mm ²	2200	2300
IZOD notched 23°C	kJ/m ²	25	10
Vicat 5kg	°C	96	94
Shrinkage rate	%	1,2	1,4
Processing temperature °C		220 - 250	150 - 170

Source: Exipnos | Hint: Both largely comply with VW TL 52388-B



Source: Daimler Truck. Left: Door trim, Right: Window frame

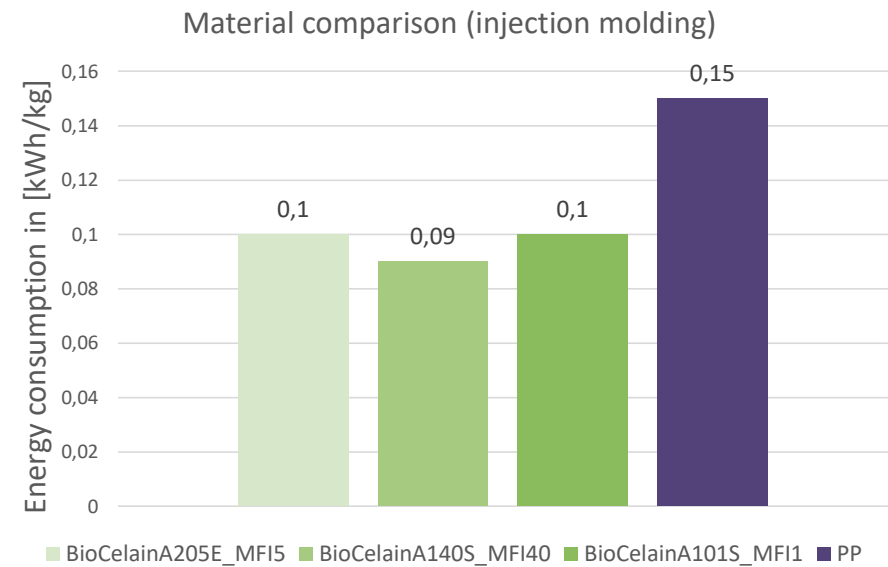
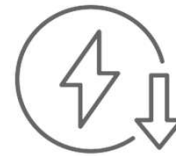
Energy consumption comparison

Injection molding

As part of the life cycle analysis (LCA) of the RUBIO project, positive results were achieved for PBS compared to PP in terms of energy consumption.

Approximately **30% less energy** is consumed when processing PBS by injection molding than when processing PP. This is due to the lower processing temperature of PBS

- Average processing temperature for PBS 160°C
- Average processing temperature for PP 230°C



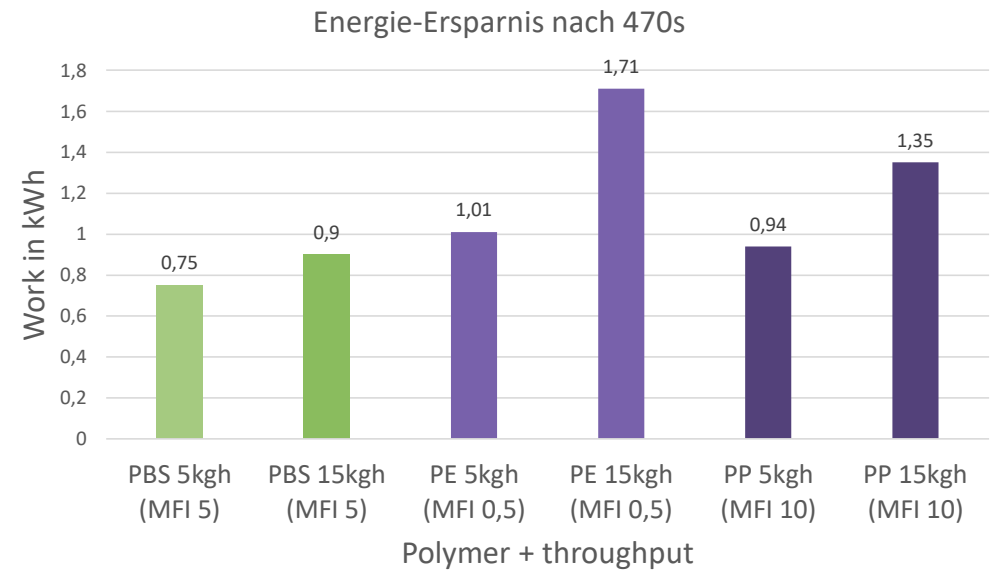
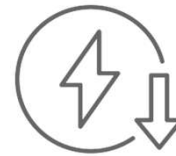
Source: RUBIO | Fraunhofer IMWS | Global Solutions GmbH | October 2024

Energy consumption comparison

Compounding

The savings potential of BioCelain® in compounding is even greater. Here, energy savings of up to 41.7% can be achieved compared to polyolefins.

This does not even take into account the fact that in the future, 100% of the carbon will come from plant biomass rather than fossil sources.



Source: RUBIO | Fraunhofer IMWS | Global Solutions GmbH | October 2024

SPRITZGUSS



BLOW-MOLDING



EXTRUSION



3D-DRUCK



Wir können Biopolymere...

BioCelain[®]

Competence Center

...in Anwendung bringen.

entwickeln | verarbeiten | anwenden | recyclen | digitalisieren



Deutschland verbinden.
Kompetenzen, Standorte und Partner – für nachhaltige Lösungen über Regionen hinweg.



Materialien entwickeln.
Innovative Biopolymere mit herausragenden Eigenschaften und Performance.



Anwendungen realisieren.
Für Konsumgüter, technische Bauteile, Verpackungen, Textilien und viele weitere Bereiche.



Zukunft gestalten.
Biobasiert, ressourcenschonend und kreislauffähig – für eine enkelfähige Zukunft in Deutschland.



The Compounding Experts

GEFÖRDERT DURCH



Bundesministerium für Forschung, Technologie und Raumfahrt

UNTERSTÜTZT DURCH











BIOBASIERT
Aus erneuerbaren Rohstoffen, nicht fossilbasiert.



KREISLAUFFÄHIG
Ressourcen schonen, wiederverwenden und recyceln.



DIGITAL
Daten sammeln. Wissen schaffen. Zukunft gestalten.



KOOPERATIV
Gemeinsam mit Industrie, Forschung und Regionen für Lösungen mit Wirkung.



WIRKUNGSVOLL
Für Wachstum, Arbeitsplätze und eine nachhaltige Zukunft.

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Oktober 2026

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Mitaussteller

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	ScheZe GmbH Recycling-Material
	Techniplas Schwäbisch Gmünd GmbH Beschichtung

**Live-Produktion
mit BioCelain®**

Erleben Sie vor Ort die Verarbeitung biobasierter und biologisch abbaubarer Materialien aus BioCelain® – live auf dem Stand.

 Mehr erfahren auf **polykum.de**

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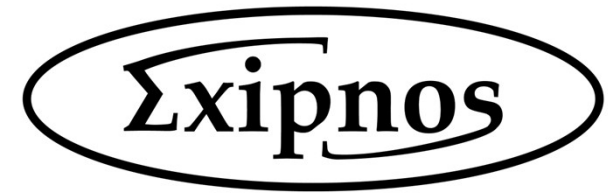
in Halle (Saale), Germany or worldwide via life stream

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about these materials?
Then become part of our global community now!

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Thank you for your attention!