

Bioplastics – engineered for high tech applications!

Christoph Lohr
Applications Technology Injection Moulding

FKuR Kunststoff GmbH
Siemensring 79, 47877 Willich, Deutschland

FKuR at a glance

- Privately owned company
- Started in 1992 as a research institute
- Founded in 2003 as Bioplastics spin-off
- Material research and development in co-operation with the Fraunhofer Institute UMSICHT, Oberhausen/Germany

- Brandnames:
 - ➔ Bio-Flex®: PLA blends for extrusion and injection moulding
 - ➔ Biograde®: CA blends for injection moulding and thermoforming
 - ➔ Fibrolon®: Wood Plastics Compounds (WPC) for injection moulding

Sustainability – Our Mission!

Sustainability

„Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.“

(World Commission of Environment and Development, 1987)

Increasing ecological consciousness
of consumers & companies

Raw Bioplastics

Request for sustainable products

Need for Bioplastics

PLA

PHA

PBAT

PBS

Starch

CA

Raw Bioplastics

Request for sustainable products

Need for Bioplastics

PLA

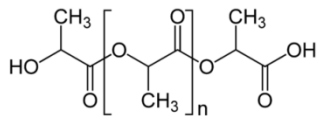
PHA

PBAT

PBS

Starch

CA



- Bio-based
- Biodegradable

Raw Bioplastics

Request for sustainable products

Need for Bioplastics

PLA

PHA

PBAT

PBS

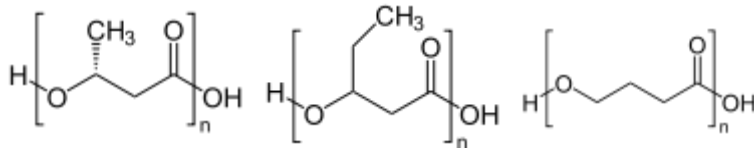
Starch

CA

P3HB

PHV

P4HB



- Bio-based
- Biodegradable

Raw Bioplastics

Request for sustainable products

Need for Bioplastics

PLA

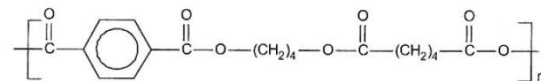
PHA

PBAT

PBS

Starch

CA



- Fossil-based
- Biodegradable

Raw Bioplastics

Request for sustainable products

Need for Bioplastics

PLA

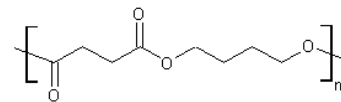
PHA

PBAT

PBS

Starch

CA



- Fossil-based
- Biodegradable

Raw Bioplastics

Request for sustainable products

Need for Bioplastics

PLA

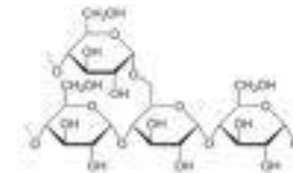
PHA

PBAT

PBS

Starch

CA



- Bio-based
- Biodegradable

Raw Bioplastics

Request for sustainable products

Need for Bioplastics

PLA

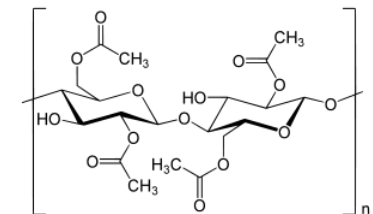
PHA

PBAT

PBS

Starch

CA



- Bio-based
- Biodegradable

Raw Bioplastics

Which Bioplastics meet my product's requirements best?

PLA

PHA

PBAT

PBS

Starch

CA

Price

- Bioplastics generate added values!

Performance

- Mech. requirements often not fulfilled!

Processing

- Barely processible with existing machines!

Compounding is the Key!

Which Bioplastics meet my product's requirements best?

Compounding is the Key!

Price

BIO-FLEX®

➤ Bioplastics generate added values!®

FIBROLON®

BIOSGRADE®

Performance

Easy to handle Bio Resins

➤ Mech. requirements often not fulfilled!

Processing

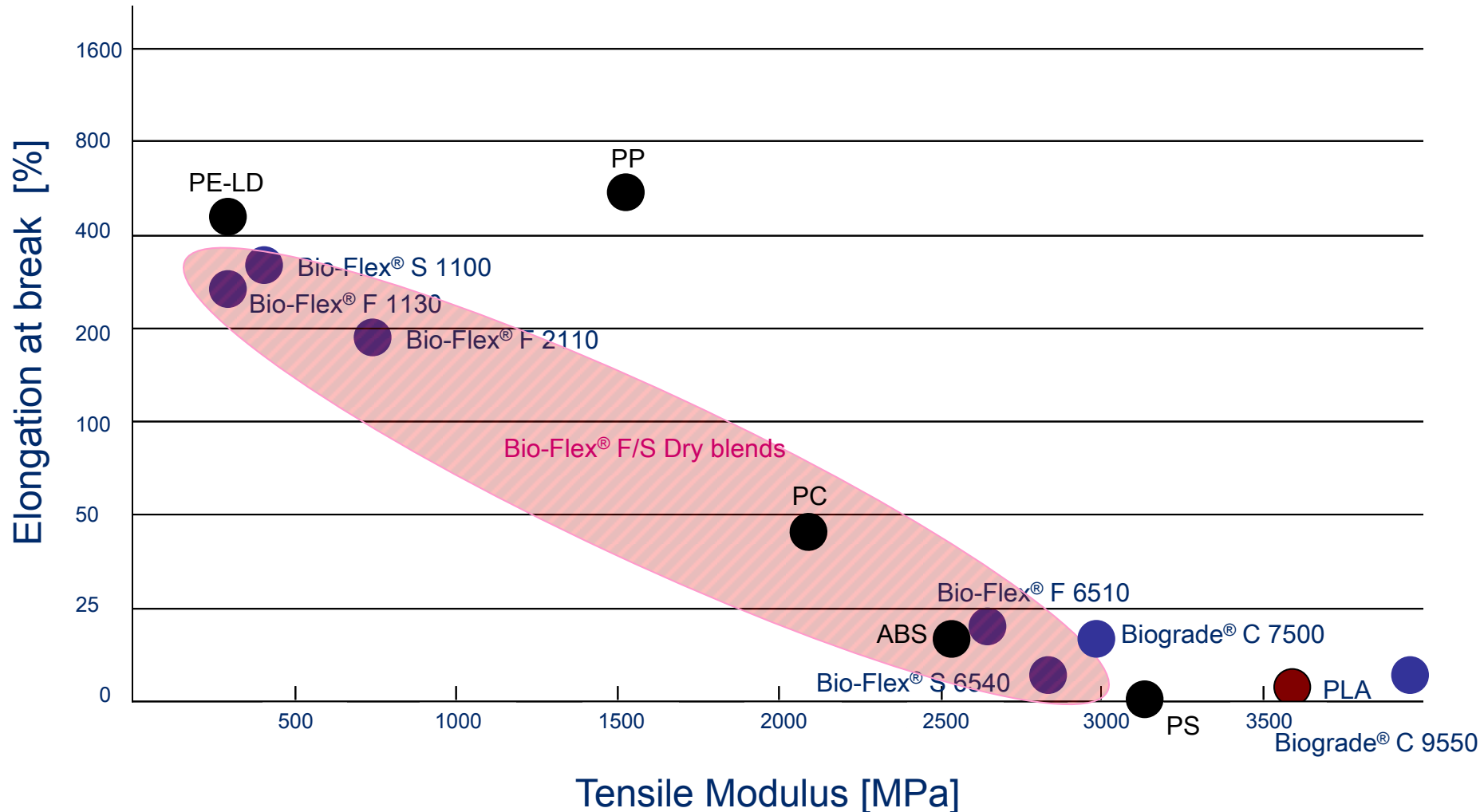
➤ Bar processible with existing machines!

Price

Performance!

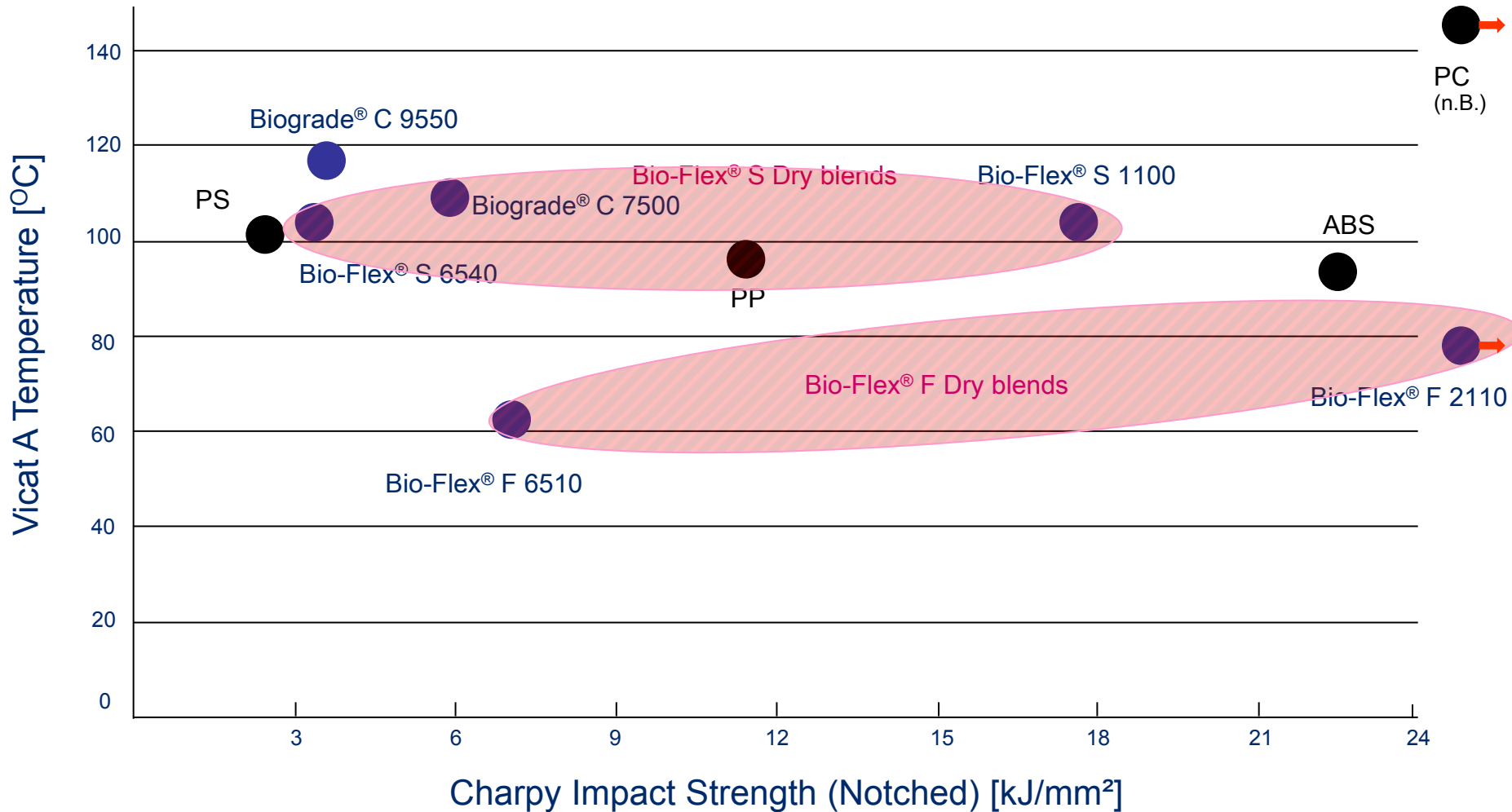
Properties of Bio-Flex® and Biograde®

(Bio-Flex® F/S compounds can be dry blended to adjust properties to requirements)



Properties of Bio-Flex® and Biograde®

(Bio-Flex® F/S compounds can be dry blended to adjust properties to requirements)



Cooperative Product Development

BIO-FLEX®

FIBROLON®

BIOGRADE®

Easy to handle Bio Resins

Bioplastics

- Supply tailor made material solution!

Compound

- Support process, tool & combined solution!

Product

- Argumentative support in marketing!

Basics



Bio-Flex® F 1130:

- Compostable according to EN 13432
- Moisture resistance
- Excellent degradation/performance ratio



Basics



Source: RITTER PEN

Bio-Flex® F 6510 and Biograde® C 9550:

- Pleasant to the touch
- Processing on multi-cavity moulds
- Undercuts are possible



Basics



Fibrolon® F 8530 & S 7530:

- Biodegradable, long term degradation
- High stiffness
- Limited Food Contact Approval



Catering



NEW Biograde® V 2091:

- For injection moulding and thermoforming
- Excellent transparency
- Thin wall injection moulding with 0.35 mm wall thickness

Various Packaging



NEW Bio-Flex® S 5630:

- With the essential requirements for elasticity and flexibility
- Gloss and haptic
- Thermoforming on conventional equipment, cycle time similar to PP

Computer Peripherals



NEW Biograde® C 6530:

- For thin walls and long flow paths
- Good impact resistance
- Surface touch increases product's value

Computer Peripherals



Source: FUJITSU

Biograde® C 7500:

- High heat resistance
- Produced on existing moulds
- Injection moulding using hot runner system



Cosmetics Packaging



Bio-Flex® F 6510 & F 2110 and Biograde® C 7500:

- Chemical resistance
- Gloss and scratch resistance
- Combination of extrusion & injection moulding possible

Cosmetics Packaging

Bio-Flex® F – Multi-Layer:

- Barrier properties
- Printing without corona treatment
- Chemical resistance



Deep Freeze Packaging



Bio-Flex® F – Multi-Layer:

- Desirable surface gloss
- Contains no starch or starch derivatives
- High impact resistance at freezing temperature



Fruit & Vegetable Packaging



Bio-Flex® F 1130 Nets and F 2110 Films:

- High elongation at break
- Excellent potential for printing and pigmentation
- Fully compostable according to EN 13432



Source: GIRO

Beauty & Healthcare



Bio-Flex® F 1130:

- Breathable but still moisture resistant
- Superb feel without special texture
- Increasing products value



Beauty & Healthcare



Fibrolon® F 8530 and Bio-Flex® S 5630:

- Increasing products value
- Unique optical appearance
- Injection moulding also with inserts



Sample Case

Beauty & Cosmetic Sample Case

- All plastics made by FKUR
- All articles available on the market
- Multiple production processes



Fazit!!?

Your applications
realizable with FKuR's Compounds
to fulfil your customers' demands!



Bioplastics – engineered for high tech applications!

www.fkur.com