

13th PAGEV Turkish Plastics Industry Congress

Presentation:

Plastics of the Future

HILTON ISTANBUL BOMONTI HOTEL, 04. DECEMBER 2018

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Confidential

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04.12.2018

what is precious to you?

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Clariant at a Glance

Clariant at a Glance

A GLOBALLY LEADING COMPANY IN SPECIALTY CHEMICALS



6377

Sales 2017 (CHF m)
from continuing operations

302

Net result 2017 (CHF m)
from continuing operations

4

Business Areas

974

EBITDA 2017 (CHF m)
before exceptionals

15.3 %

EBITDA margin 2017
before exceptionals

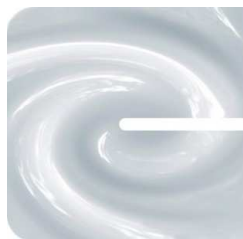
156 in **52**

companies countries

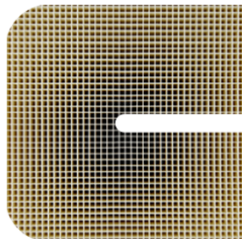
18135

Employees 2017

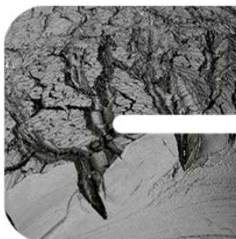
Four Business Areas



CARE CHEMICALS



CATALYSIS



NATURAL RESOURCES



PLASTICS & COATINGS

BU Additives is a global, diversified solution provider



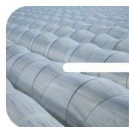
ADVANCED SURFACE SOLUTIONS

We offer solutions that protect and enhance surfaces in plastics, coatings and inks, adhesives, agro and care.



FLAME RETARDANTS

Our patented halogen-free flame retardants provide environmentally compatible protection and pass demanding fire safety standards.



PERFORMANCE ADDITIVES

Our performance additives solutions prevent oxidation, dissipate electric charge accumulation and improve heat, light and weather resistance.



Plastics

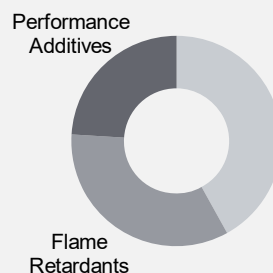


Coatings & Inks

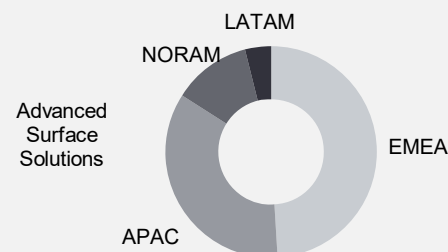


Consumer

SALES 2017
BY BUSINESS LINE



SALES 2017
BY REGION



~ 800

Employees

7

Production sites

3

Application Development
Centers

3

Research Centers

What is going on in the Plastic World

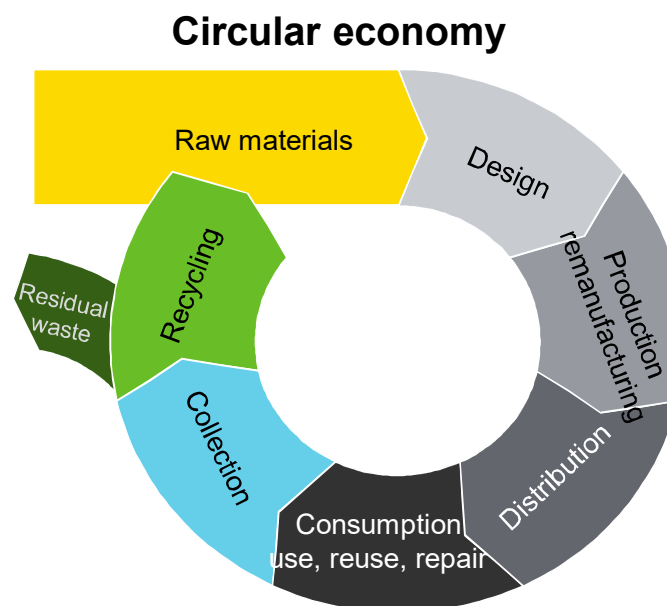
What's going on in the Plastic World

- 2017 - steady but unspectacular growth in the plastic industry
 - Italian imports increase >23 % of plastics processing machinery the first half of 2018
- Plastics processing is arguably one of the largest industry/employer in most countries/regions. Food Production is the largest area of economic activity
- The industry has done a poor job of extolling its contribution and as a consequence is under increasing attack on environmental grounds (Lobbying)
- The debate regarding the circular economy will increase in the future, issues of “frictionless living” and “convenience” shaping the discussion and the opportunity
- In the medium term all regions will continue in growth but not all polymers can now anticipate future growth

Circular economy of plastics

- **Design:**
 - Reduce material input, reuse materials make recycling easier, implies:
 - Rationalise polymer types used
 - No multilayer materials or components
- **Limits on “single use plastics” (EU)**
 - By 2021, decision from 24.10.2018
- **Publicity - the emotional debate:**
 - We ingest more than 10 000 pieces of microplastic each year
 - By 2050 there will be more plastic in the sea than fish (by weight)
 - Plastics (packaging) will increasingly be taxed and become a source of government revenue

Linear economy merge
into a **Circular economy**
without or min. of waste



Ocean waste

- $8 * 10^6$ [t] of plastic waste into the ocean each year
- Ten rivers take ~90 % of the waste in the ocean

- ***Waste river top five are:***

- Yangtze ($1.5 * 10^6$) [t/a]
- Indus
- Yellow
- Hai he
- Nile



ZDF-Dokumentation, 19.05.2018, Plastik verschmutzt die Weltmeere

- As a comparison the River Thames takes ~18 [t] in the ocean (source: AMI 2018)

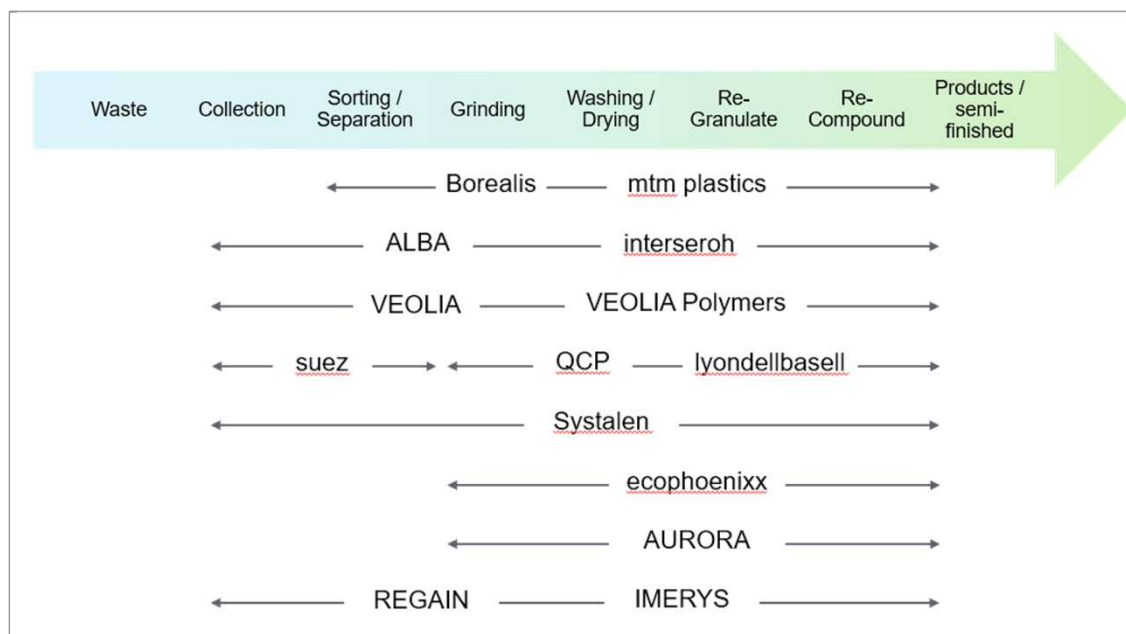
Partners in the European Circular Economy

– Brand Owners

- Proctor & Gamble
- Unilever
- Ikea
- Henkel

– Tailers & Traders

- Lidl:
Green Cycle GmbH
acquires Tönsmeier



– PET bottles

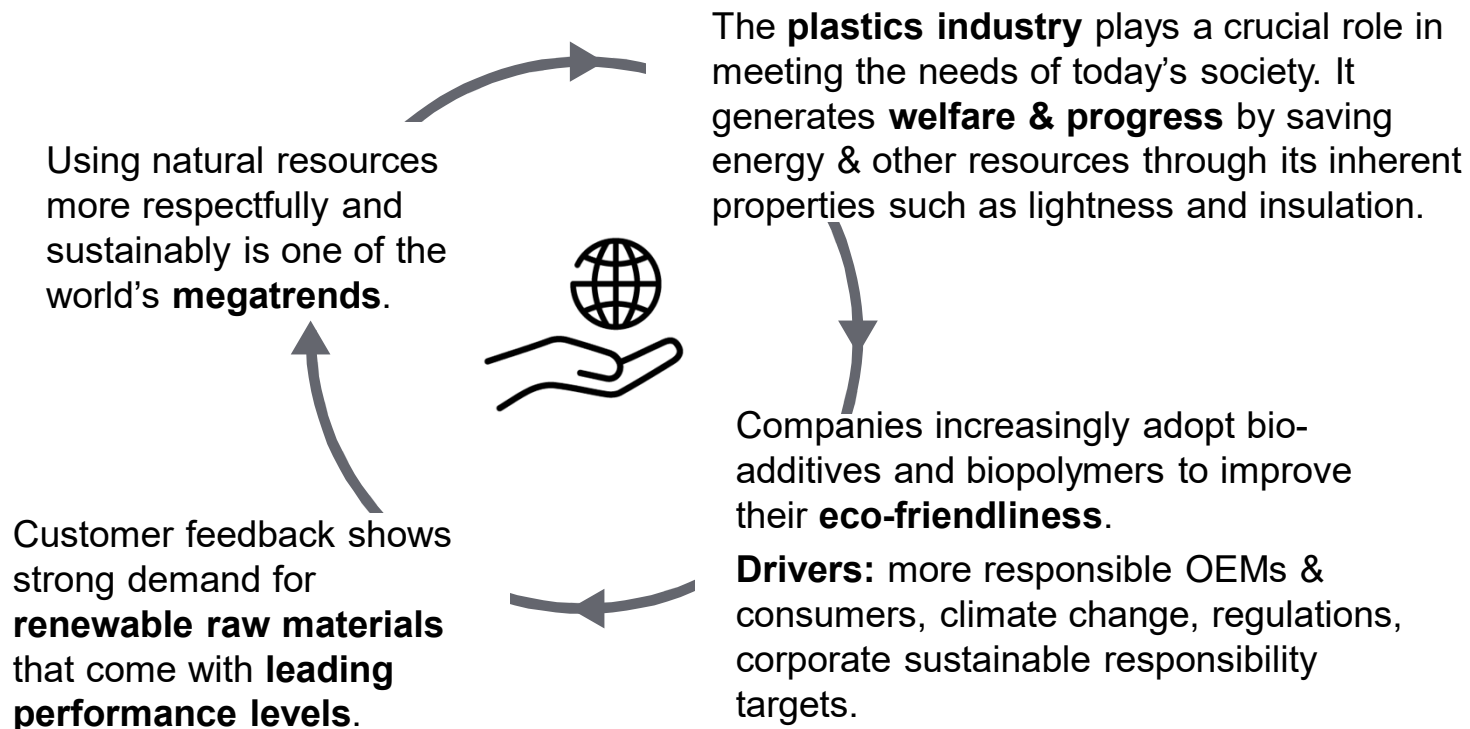
- By 2025, 90 % recycling rate and 35 % recycled material in new bottles

– Countries / Economies

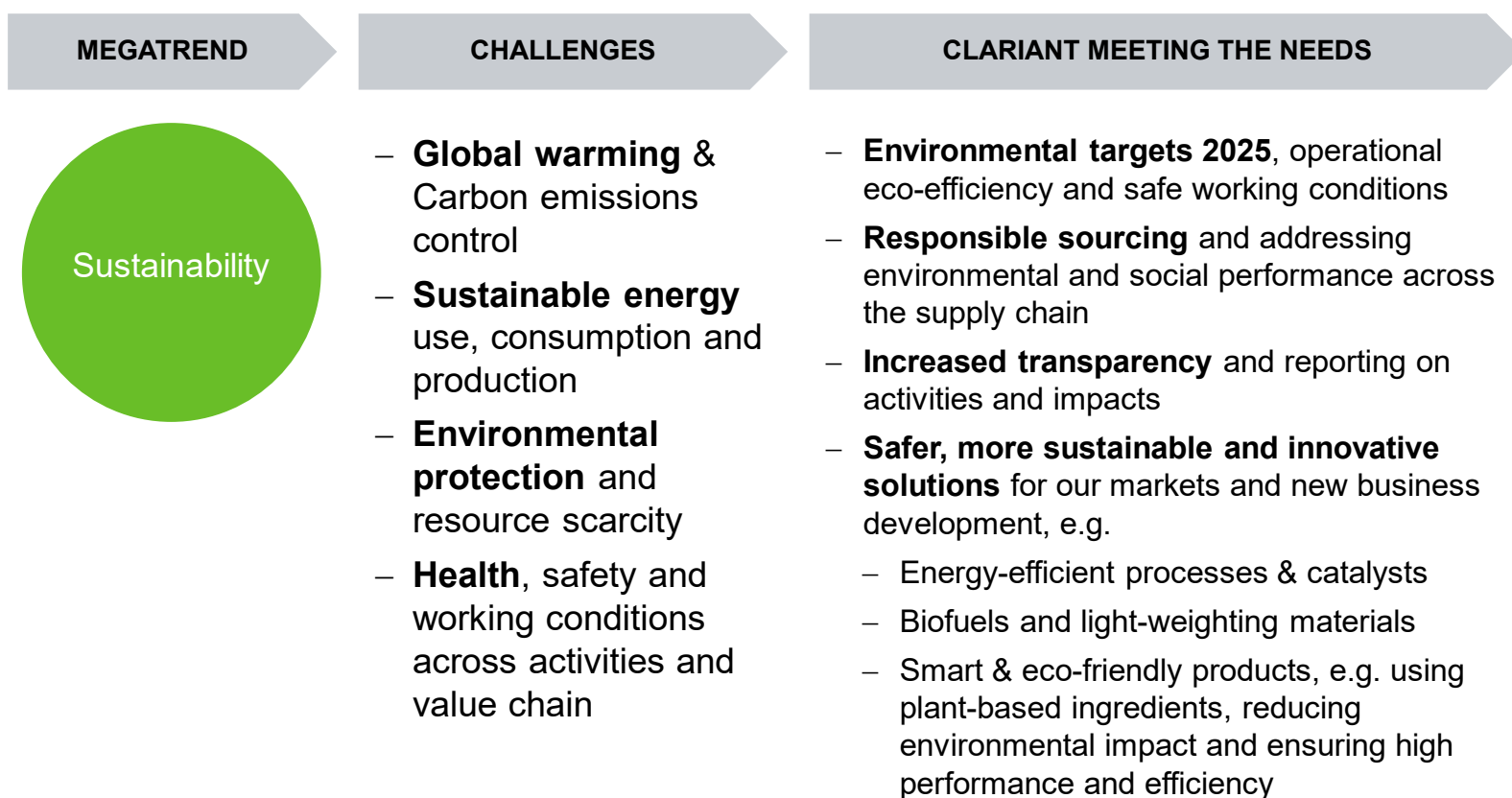
- China

Clariant's Focus on Sustainability

Sustainability is a Key topic in the Plastics Industry



Clariant is committed to adjusting our business processes to meet evolving social and environmental needs



EcoTain[®] Label – our approach to sustainability



EcoTain[®] is our **flagship label for sustainability** excellence products and solutions. It highlights solutions offering outstanding sustainability advantages and add value to customers and the society as a whole.

Each product and solution carrying the EcoTain[®] label has undergone a systematic, **in-depth screening process** using 36 criteria spanning all three sustainability dimensions: **social, environmental and economic**.





Its ambitious benchmark **distinguishes products** that

- significantly exceed market standards in general,
- have best-in-class performance in one or several criteria, and
- make overall sustainability contributions.

EcoTain[®] products actively support the sustainability efforts of our customers, **without compromising on performance**.

A strong foundation for adding value with sustainability

FACTS AND FIGURES

<div>By 2025</div> <div>ambitious Environmental Targets</div>	<div>75%</div> <div>of Product Portfolio meet Clariant's sustainability definition</div>	<div>169</div> <div>products excelled with the EcoTain® label</div>	<div>80%</div> <div>of product portfolio screened based on 36 sustainability criteria</div>	
<div>Among top 4% of companies in</div> <div>Dow Jones Sustainability Index</div>	<div>Sustainability Dialog</div> <div>established to enable regular stakeholder dialog</div>	<div>LTAR*</div> <div>decreased to 0.20 in 2017 compared to 0.33 in 2012</div>	<div>Committed to</div> <div>UN Global Compact, Responsible Care® and member of Together for Sustainability</div>	<div><div>MEMBER OF</div><div>Dow Jones Sustainability Indices</div><div>In Collaboration with RobecoSAM</div></div> <div><div> ROBECOSAM Sustainability Award Silver Class 2018</div></div> <div><div> United Nations Global Compact</div></div> <div><div> Responsible Care® OUR COMMITMENT TO SUSTAINABILITY</div></div> <div><div> TOGETHER FOR SUSTAINABILITY</div></div>

*LTAR = Lost Time Accident Rate
(the ratio of the number of occupational accidents where at least one day's work was lost to every 200 000 hours of work).

Benefits for the Customer

EcoTain[®] creates credible value chain

ECOTAIN[®]



The EcoTain[®] label as a clear sign for identifying sustainability excellence products.

CREDIBLE AND RELIABLE SYSTEM



Warranty and credible proof points for sustainability claims on the products.

Clariant as a reliable and sustainable partner (DJSI and EcoVadis).

CONTINUOUS IMPROVEMENT



Ensured continuous product improvement and minimization of sustainability product risks.

TRANSPARENCY



Informed purchase decision with regards to sustainability performance of the product.

HOLISTIC AND LIFE-CYCLE VIEW



Easy matching of product sustainability benefits with the sustainability hot spots and needs of the customer.

Highly effective and sustainable Rice Bran Wax

This is why we are introducing RBW, a renewable non food-competing solutions based on up-valued rice bran wax

Clariant converts a by-product of rice oil production into high-performing lubricants and dispersing agents for engineering thermoplastics.



The idea behind of Rice Bran Wax



Our vision is to offer innovative solutions with best-in-class performance, high-level quality and without harmful substances



We create value by appreciating the needs of our customers and delivering best service with our long-term expertise, profound technical knowledge and market insights

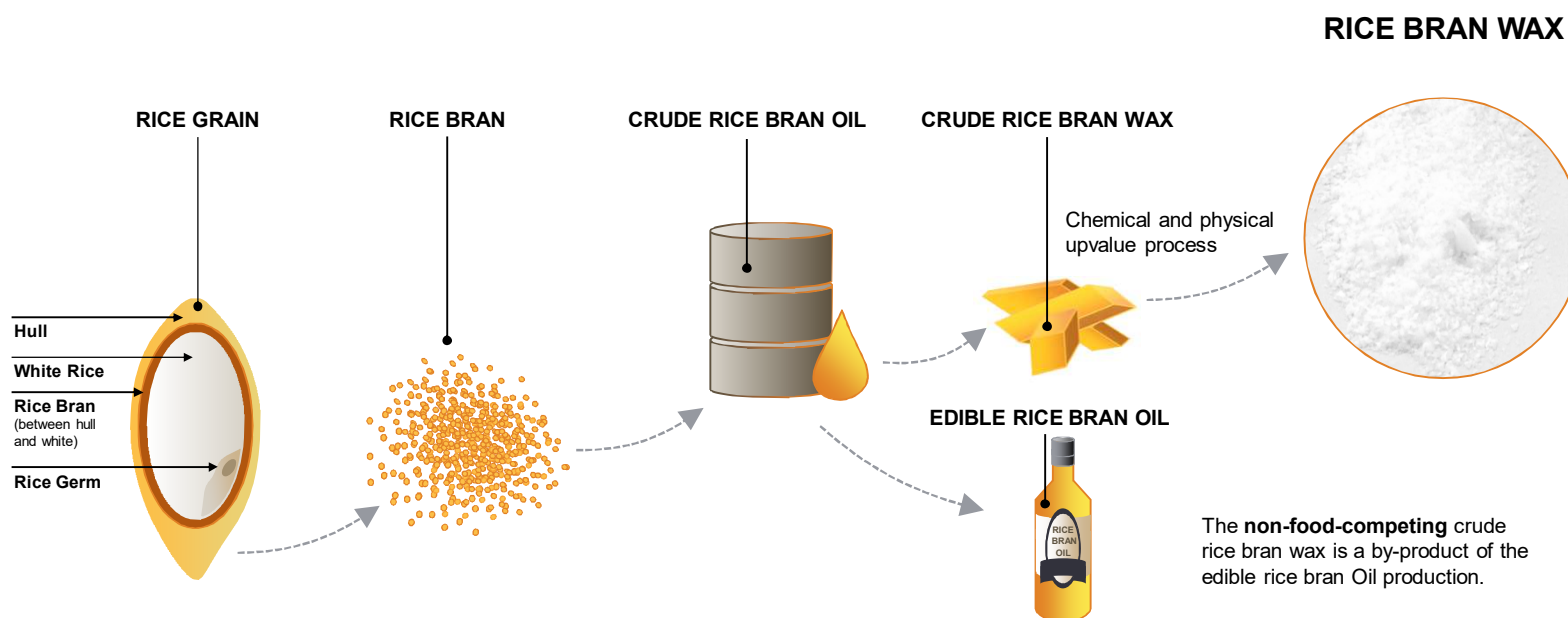


We believe in improving technology with the help of renewable resources



We aim for reduced energy consumption during manufacturing process and more efficient production

Product Conversion: From rice grain to RBW



We **chemically & physically upvalue** crude rice bran wax into our high-performing Rice Bran Waxes to achieve the properties our **Plastics** customers need

Clariant value proposition is simple: Improved plastics' surfaces and processing, while more eco-friendly

CLARIANT OFFERS

YOUR BENEFIT

- Improvement of melt flow, mold release force and pigment / filler dispersion

- High shaping flexibility, low rejection rates, strong mechanical properties, and smooth surfaces

HIGH-PERFORMING & MULTI-FUNCTIONAL



- High thermal stability, low volatility and migration

- Maximum output & controlled costs

SMOOTH MANUFACTURING



- Non-fossil wax derived from non-food-competing raw material with long-term availability

- Improvement of your supply chain's eco-friendliness
- Reliable & steady supply

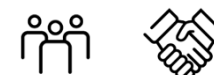
SUSTAINABLE



- Global technical application support

- Winning formulations that support commercial success

CUSTOMER-FOCUSED



Rice Bran Waxes are valuable for engineering thermoplastics, thermosets and biopolymers



INTERNAL LUBRICATION

e.g. for geometrically complex parts

RBW is compatible with the polymer matrix (similar polarity) and improves melt's ease of flow by preventing »internal« friction between the individual particles of the polymer

- **Thermoplastics:** e.g. Polyamide, Polyester, TPU, PC, PC/ABS, PPA
- **Thermosets:** e.g. Epoxy
- **Biopolymers:** e.g. PLA



EXTERNAL LUBRICATION

e.g. for smooth surface properties (i.e. gloss)

RBW as an »external« lubricating film between the polymer and the hot metallic surfaces of the processing machine; prevents the polymer melt from adhering to the machine parts and reduces the demolding force

- **Thermoplastics:** e.g. Polyamide, Polyester, TPU, PC, PC/ABS, PPA
- **Thermosets:** e.g. Epoxy
- **Biopolymers:** e.g. PLA



DISPERSION

e.g. for better optical & mechanical properties (i.e. color)

Pigments and fillers are partially wetted by RBW which improves their compatibility with the polymer. Uniform dispersion leads to optimal color yield or strong mechanical properties

- **Thermoplastics:** e.g. Polyamide, Polyester
- **Biopolymers:** e.g. PLA

Disclaimer

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Thank you!

