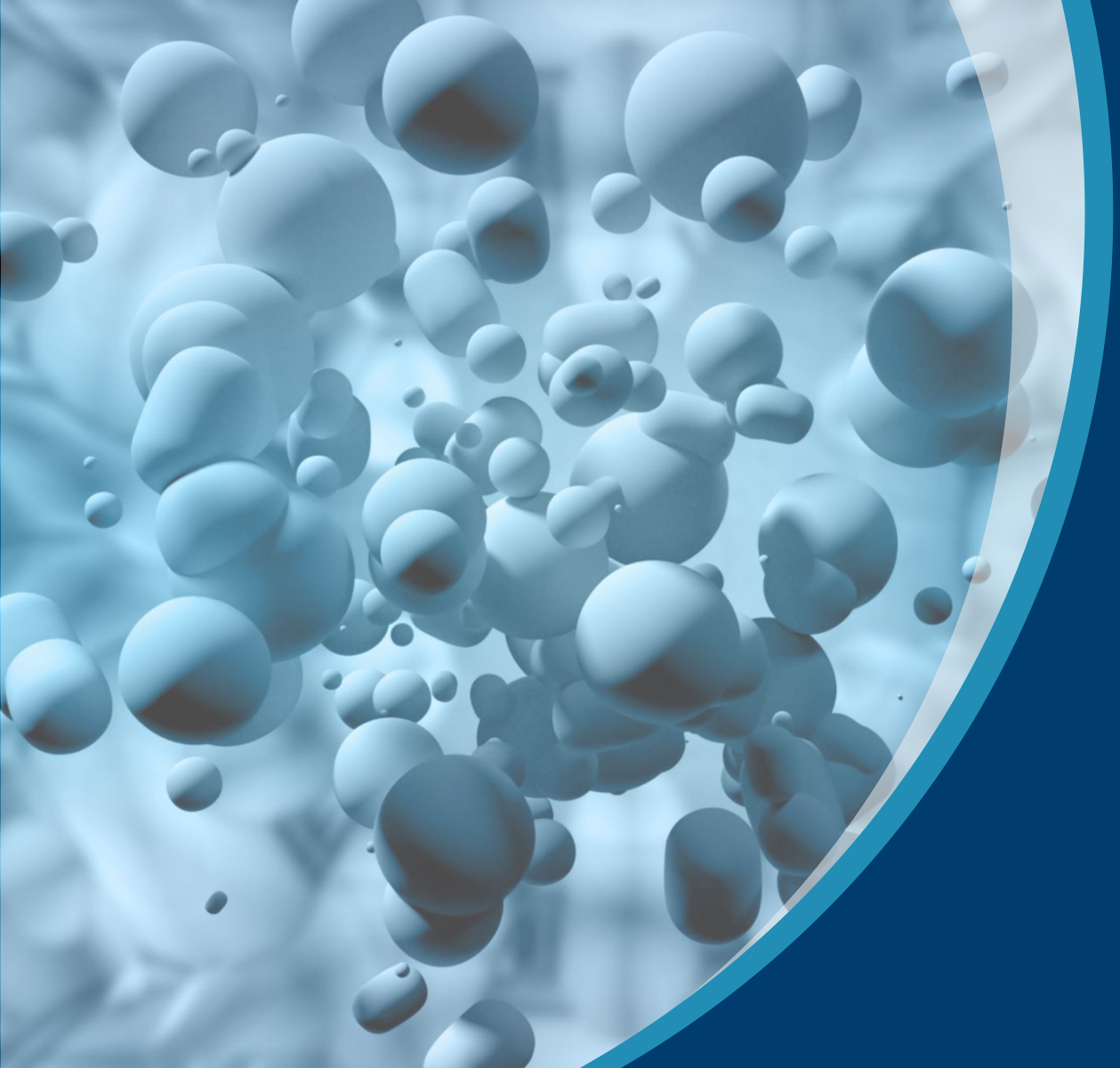

Special Report

Global Structural Bio-polymers Market

[January 2021]

Background

- Bio-based polymers are witnessing growing adoption in a wide variety of industries, including consumer goods, construction, automobile and packaging, due to increasing demand for sustainable solutions as well as low environmental impact
- Key companies such as Dow, LyondellBasell and Clariant are adopting bio-based sources for their polymer offerings in order to cater to the sustainability initiatives undertaken by major end users.
- Within this context, Aranca conducted a comprehensive market assessment of the structural bio-polymer industry, covering aspects related to size of market, type of feedstocks, drivers for the industry, key challenges and recent developments in the domain.
- Based on this assessment, Aranca has released a special report that covered the overall assessment of global structural bio-polymers market.

Key Objectives:

- To understand the current market dynamics of the global structural bio-polymers market
- To understand the current and emerging end markets of the structural bio-polymer market
- To analyze major global customers adopting bio-polymers
- To identify, profile, and benchmark potential companies that operate in the domain
- To assess key trends, drivers and challenges governing the market outlook

Introduction

About this report:

- This report provides a comprehensive overview on the current supply dynamics of the global structural bio-polymers market, as well as key trends, drivers, challenges and developments dictating the overall market.

Key Deliverables:

- Supply Side Assessment of global structural bio-polymers market (segmented by type and feedstock)
- Market segmentation of bio-polymer market by end use applications
- Current drivers, challenges, recent developments and market outlook

Relevant audience:

- Bio-feedstock (monomers, oligomers) manufacturers, bio-polymer manufacturers, bio-polymer distributors, formulators, converters
- Consumer goods manufacturers, construction materials manufacturers, automotive parts manufacturers, packaging (rigid and flexible) manufacturers, textile manufacturers

Customization:

- Contents of this report can be customized based on user requirements. Accordingly, report coverage shall be expanded to include specific areas of interest.

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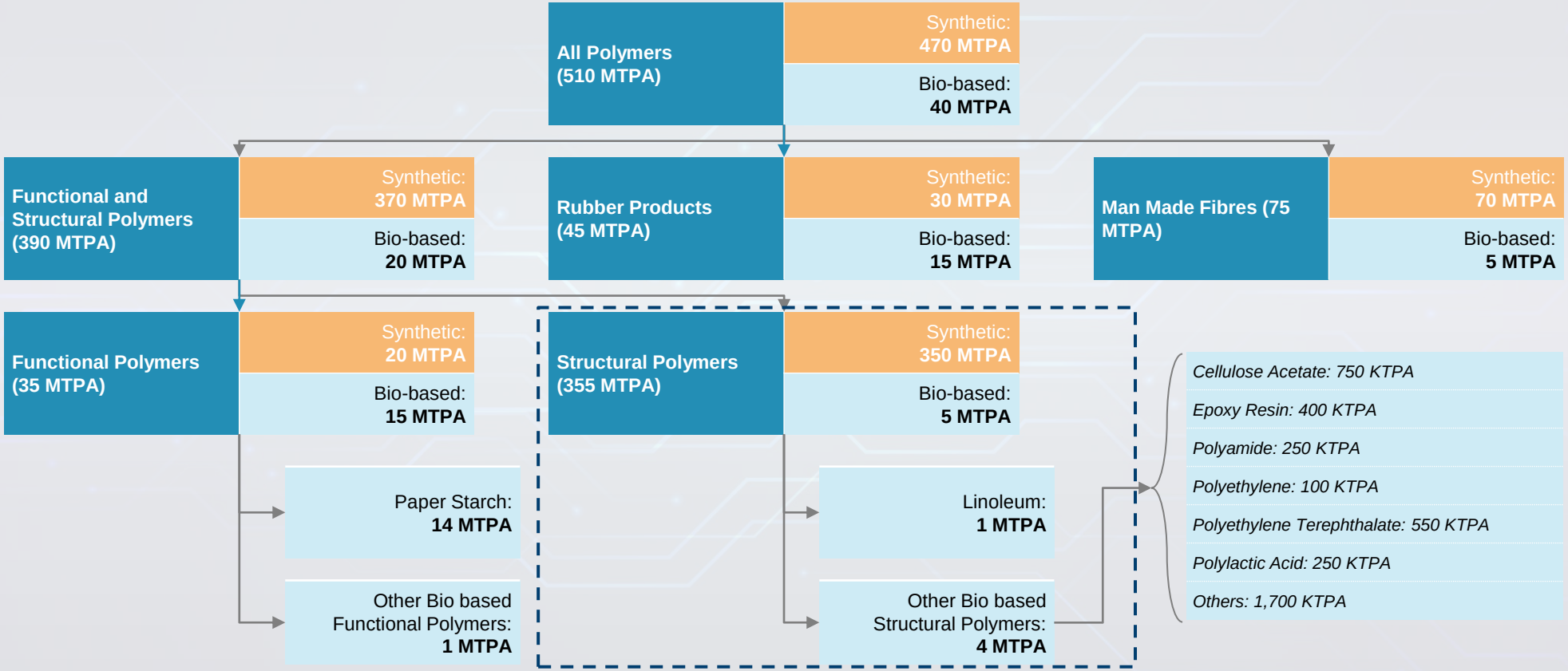
Polymers Product Schema

Currently, ~10% of the overall polymer market is bio-based; bio-sources are steadily being adopted among all segments, especially functional and structural polymers



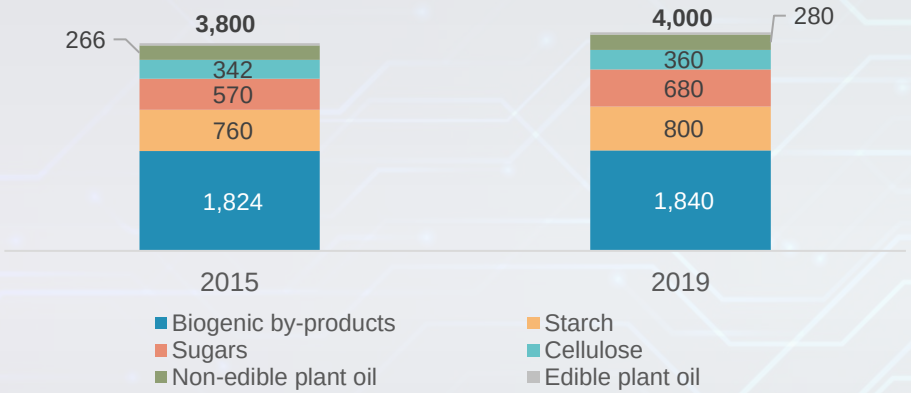
Source: *Aranca Estimates*

Structural Bio-polymer Production

The bio-polymer market is gradually moving from partial substitution of synthetic polymers through drop-ins to completely replacing them with dedicated bio-based sources

Global Structural Bio-polymer Production: Split by Feedstocks

2015-2019 | Figures in Kilo Tons Per Annum (KTPA)



The Bio-polymer market is steadily moving from drop ins to dedicated bio-based sources……

Bio-polymer drop-ins	Dedicated bio-sources
▪ Bio-ethylene	▪ Glycerol
▪ Bio-propylene	▪ Furans
▪ Bio-polyethylene	▪ Sorbitol
▪ Bio-polyethylene terephthalate	▪ Cardanol
	▪ Cellulose Fibres

Drop ins *are bio based versions of existing petrochemicals, having similar chemical properties.*
Dedicated bio sources *are produced from new bio-based chemistries and do not have any identical petrochemical counterpart*

- The market is gradually transitioning from focusing on “drop-ins” to developing “dedicated” bio sources. i.e. moving from substituting petrochemical based polymers with bio-based counterpart to producing newer bio-based chemistries.
- Further, dedicated bio sources generally have newer properties and functionalities, which is not provided by drop-ins bio-based polymers.
- Additionally, key resin manufacturers are steadily experimenting with various bio sources such as glycerol (from biodiesel), furans, cardanol, vanillin etc. to develop polymers that can offer superior performance compared to synthetic polymers.

Source: *Aranca Estimates*

Key Developments in Structural Bio-polymer Market

Structural bio-polymer suppliers are developing newer sources to diversify into other applications; downstream polymer companies are increasingly partnering with feedstock suppliers to develop bio-based products

Product Developments

- Mitsubishi Chemicals developed new isosorbide based engineered polymer for lighting shades.
- This new polymer would replace glass and synthetic engineered polymers.
- Glass has a risk of shattering whereas synthetic polymers are prone to discoloration and has low weather resistance.

- Nouryon to produce bio-based polymers produced from itaconic acid (through Itaconix's technology) for consumer care products.
- Further, the company is experimenting with itaconic acid for manufacturing polymers used in detergent applications.

- BiologiQ's NuPlastiQ has recently developed a new potato starch-based material to produce thermoplastic resins.
- However, this material is generally used as a blend with synthetic resins such as polyolefins to enhance their properties.

Acquisitions / Investments / Partnerships

- Clariant in partnership with Global Bioenergies has developed isobutene-based polymers used for personal care formulations.
- Currently, the polymer is produced on a small scale at Global Bioenergies' demo plant in Germany. However, the companies are working on upscaling their production owing to positive response from the market.

- LyondellBasell has collaborated with Finland-based energy company Neste to produce bio-based propylene and low-density polyethylene.
- These polymers will be sold as a drop-in replacement to their synthetic counterparts (traditional polypropylene and low-density polyethylene) for food applications.

- Dow and UPM Biofuels (UPM BioVerno) recently announced commercialization of bio-based polyethylene plastic for packaging applications.
- UPM BioVerno produces tall oil (from residue of paper pulp production).
- Dow converts the feedstock from UPM to produce bio-polyethylene.

Source: *Aranca Estimates*

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About Aranca

Founded in 2003 Aranca is a global research advisory services firm working with clients worldwide across financial markets, industry sectors and technology domains Aranca brings to play the strong combination of best data and best talent to empower decision makers with intelligence and insights, enabling them to reach better business decisions Our multi disciplinary expertise is designed to cater to clients of all sizes across a wide spectrum, from Fortune 500 companies and financial institutions to private equity and high potential start ups

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