Press release

nova-Institute GmbH (www.nova-institut.eu)
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Production Capacities for Bio-based Polymers in Europe - Status Quo and Trends towards 2020

Europe’s current position in producing bio-based polymers is limited to a few polymers. However, new developments and investments are foreseen: the first European industrial-scale PLA plant by 2014, the introduction of future PET production facilities by 2015, recent developments in the commercialization of bio-based PBT and further advancements in the field of high-value fine chemicals for PA, PUR and thermosets production. Although Europe shows a strong demand for bio-based polymers, production tends to take place elsewhere, namely in Asia and America. The European Union’s relatively weak position in the production of bio-based polymers is largely the consequence of an unfavourable political framework for the industrial material use of biomass.

The European market data presents the latest findings of production capacities of bio-based polymers in Europe based on the market study published by the nova-Institute in spring this year and its continuously updated database. The “Bio-based Polymers Producer Database” shows that Europe’s situation in producing bio-based polymers is limited to just a few polymers. Europe has so far established a solid position mainly in the field of starch blends (blends of polymers with native starch or thermoplastic starch) and it is expected to remain strong in this sector for the next few years (see figure). Nevertheless, new developments and investments are foreseen in Europe: some years after the installation of industrial scale PLA capacities in North America and Asia, the first European industrial-scale PLA plant is scheduled to become operational in 2014.

PET production is growing worldwide, largely due to the Plant PET Technology Collaborative (PTC) initiative, whose global value chain development will lead to the introduction of future production facilities in Europe by 2015.

Figure 1: Bio-based polymers: Evolution of production capacities in Europe from 2011 to 2020 (without Cellulose acetate and Thermosets)
One noteworthy finding of other studies is that Europe shows the strongest demand for bio-based polymers, while production tends to take place elsewhere, namely in Asia and South America. The bio-based polymer production facilities for PLA and PHA located in Europe are currently rather small, and although there are next to no production capacity figures for the latter, several pilot plants are already operating. On the other hand, bio-based PUR and PA production has gradually taken off in Europe and is likely to remain stable in order to supply the growing markets on the building and construction and automotive sectors. Europe does host industrial production facilities for PBAT (shown in figure). Although still fully fossil-based, PBAT is expected to be increasingly bio-based reaching shares of 50% by 2020, to judge by industry announcements and the capacity development of its bio-based precursors. Also for PBT (see table) recent developments in the production of bio-based 1,4 butanediol (BDO) have proven that the bio-based route to the polymer is commercially feasible and its production is planned to have started by 2020 (date not disclosed yet).

With leading chemical corporations, Europe has a particular strength and great potential in the fields of high-value fine chemicals and building blocks for the production of PA, PUR and thermosets among others. However, only few specific, large-scale plans for bio-based building blocks with concrete plans for the production of bio-based polymers have been announced to date.

Table 1: Bio-based polymers, producing companies in Europe and production capacities (t/a)

<table>
<thead>
<tr>
<th>BIO-BASED POLYMERS</th>
<th>PRODUCING COMPANIES IN 2013**</th>
<th>PRODUCTION CAPACITIES IN 2011* (t/a)</th>
<th>PRODUCTION CAPACITIES IN 2013** (t/a)</th>
<th>PRODUCTION CAPACITIES IN 2020** (t/a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLA</td>
<td>7</td>
<td>8.220</td>
<td>8.230</td>
<td>226.730</td>
</tr>
<tr>
<td>Starch Blends</td>
<td>7</td>
<td>217.000</td>
<td>279.000</td>
<td>539.000</td>
</tr>
<tr>
<td>PHA</td>
<td>7</td>
<td>50</td>
<td>10.050</td>
<td>10.090</td>
</tr>
<tr>
<td>PA</td>
<td>7</td>
<td>16.000</td>
<td>16.000</td>
<td>31.000</td>
</tr>
<tr>
<td>PBAT</td>
<td>1</td>
<td>74.000</td>
<td>74.000</td>
<td>74.000</td>
</tr>
<tr>
<td>Polylefins: PE, PP, PVC, EPDM</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>n. a.</td>
</tr>
<tr>
<td>PET</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>300.000</td>
</tr>
<tr>
<td>PBT</td>
<td>1</td>
<td>0</td>
<td>&lt;50</td>
<td>80.000</td>
</tr>
<tr>
<td>PUR</td>
<td>3</td>
<td>39.450</td>
<td>39.450</td>
<td>39.450</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>354.720</td>
<td>426.780</td>
<td>1.300.270</td>
</tr>
</tbody>
</table>

** Source: Bio-based Polymers Producer Database, 2013-07

EU: No dedicated policies to promote bio-based polymers

The European Union’s relatively weak position in the production of bio-based polymers is largely the consequence of an unfavourable political framework. In contrast to biofuels, there is no European policy framework to support bio-based polymers, whereas biofuels receive strong and ongoing support during commercial production (quotas, tax incentives, green electricity regulations and market introduction programmes, etc.). Without comparable support, bio-based chemicals and polymers will suffer further from underinvestment by the private sector. It is currently much more attractive and safe to invest in bio-based polymers in Asia, South America and North America.
Remark:
The figure shows the production capacities for bio-based polymers except for thermosets and cellulose acetate. There is a simple reason for this: although good expert estimations of world thermoset and cellulose acetate production capacity are available, based on the global development of their bio-based precursors, it is not possible to break this information down by region. This study considers only announced capacities.

Order the full report
The full 360-page report contains three main parts – “market data”, six “trend reports” and 114 “company profiles” – and can be ordered for 6,500 € plus VAT at:
www.bio-based.eu/market_study

This also includes one-year access to the “Bio-based Polymers Producer Database”, which will be continuously updated. The full report will be updated yearly. Subscribers of the full report in 2013 can order the updated version in 2014 for just 1,000 € plus VAT.

Download the full leaflet of the market study at: www.bio-based.eu/market_study/
The figures included in this press release can be downloaded in high resolution at:
www.bio-based.eu/market_study/pressrelease

About nova-Institute
The nova-Institute was founded as a private and independent institute in 1994. It is located in the Chemical Park Knapsack in Hürth, which lies at the heart of the chemical industry around Cologne (Germany). For over 19 years now, the nova-Institute offers research and consultancy with a focus on bio-based and CO$_2$-based economy. nova-Institute has been globally active in feedstock supply, techno-economic and environmental evaluation, market research, dissemination, project management and policy for a sustainable bio-based economy. More information about all services of the nova-Institute at www.bio-based.eu

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