

## ARTICLE 6: Bioplastic

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### Abstract:

The use of plastic materials because of their great diversity and constant progress in the properties and technologies, steadily increases. Also, the financial crisis is the plastic industry endured well, so that in 2010 the world production again reached a record-breaking amount of 265 million tones (source of Plastics Europe). The use of plastic is very strongly associated with the most advanced technologies, and provides answers to the present and future challenges of modern society, such as the production of energy from renewable sources, an upswing in electronics, modern health care, energy and environmental efficiency, etc.

### Introduction:

With a constant growth and high (absolute) quantities used plastic, come to the fore even more live discussions on critical or potentially negative consequences of the use of plastic. The first weak point of plastic is almost exclusive use of fossil resources for their production. Although it is for this purpose only about 4% of the extracted oil, it represents in the long run nonpermanent solutions. The second problem of plastic is the fact that it comes to artificial materials that are in the nature of the foreign body with potential negative consequences. Customers are forced to take their own responsibility for used plastic at all in the nature of the otherwise smoothly transferred to the material, which also has a relatively poor public image, or is sometimes literally demonizing. In the Professional Community producers and users already for a long time there is awareness of these negative points of plastic so it is a significant part of development activities aimed at finding a solution that would maintain the positive acquisition, offered by plastic, improve the sustainability aspect.

Decades ago was the main response to this challenge of recycling through which increases the demand on the base of the cartridge of raw materials, energy and other resources during the manufacture of plastic, but unfortunately also a recycling does not give a comprehensive and sustainable solutions. In particular, shall not be liable to the above exposed a dilemma the use of non-renewable resources, and deviations from the nature. Further development is therefore plotting more fundamentalism in the path by which plastics become more strongly associated with the circulation of substances in nature. Attention was paid to both the stage of "the creation" (production), as well as "disappearance" (waste management) plastic. Today, the results of this development are clearly reflected in the new generation of plastic materials that are present in market vend a larger number of them and the total is called bio plastics. This term is established mainly in the industry and includes biodegradable plastics and/or plastics made from renewable sources. These materials are today in the industrial production, commercial reachable and almost imperceptibly spread in many applications.

Bioplastics for the above definition includes biodegradable plastics, which can be made from renewable energy (biomass) or non-renewable (fossil) raw materials and plastic at least partly made from renewable resources, which is biodegradable. The distribution can be illustrated with a few examples:

Biodegradable plastics from renewable resources – thermoplastic starch, polylactid, polyhidroksialkanoaty

Biodegradable plastics from non-renewable recourses – aromatic aliphatic polyesters, polycaprolacton

Biodegradable plastics from renewable resources – bioPE, bioPET

### Conclusion:

Bioplastic production today still does not reach 1 million tons, which is relatively low compared to the overall market of plastic which indicates that there will be growth in the following years, at least 10% or more. According to some sources, in the next five years will provide for doubling the quantities of used bioplastic. In accordance with this we can expect, in particular, the rapid development of a wide variety of uses. Most of the biodegradable plastic is today used for the production of packaging, 2025 is expected to be at significantly higher quantities for packaging used only 40%, while 25% were found use in the electronic and automotive

industry. According to the environmental requirements the BHRI Institute is fully aware of the importance of the use of recycled materials in our products. Based on that we are force to encourage our research and development department to continuously improve our customers' demands by developing high tech environmental bio products. Simultaneously with the increase in the production of bioplastic, which is mainly based on renewable energy sources is expected to transition from a so called primary sources such as starch, sugar or oil, which could be used as food, to the second generation – these are waste renewable resources such as agricultural waste, wastes from the production of food, etc. The development of the use of such raw materials today is dedicated to a good part of the research. In the long term, this means that we will not be placed in front of an ethical dilemma or sources used for human consumption or for the manufacture of plastic, which is one of the most common objections to the current production of bioplastic.