



New raw materials for environmentally friendly lubricants

Factsheet: Advantages of "PHAt" thickeners

As a new, sustainable class of thickeners, polyhydroxyalkanoates (PHA) offer great potential as high-quality components for technical lubricants as well as solid film lubricants. Starting from their bio-based raw form, they can, in various modifications, influence the viscosity of a technical lubricant or the hardness of a solid film lubricant. As an environmentally friendly alternative, PHA additives make it possible to replace fossil-based additives in (dry) lubricants.

Microbial production

Some bacterial strains can produce the natural storage substance PHA. In a controlled production process, they only need a few nutrients that are provided in the fermentation broth. In addition to commercially available sugars (glucose, sucrose), residual and waste products, for example, from the sugar industry can in principle also be "fed" as a nutrient. PHA are toxicologically harmless and show good biodegradability. Therefore, they are predestined to replace conventional and less sustainable thickeners or binders in technical lubricants and solid film lubricants.

Various modifications

Bio-based PHA can be modified by chemical reactions. This expands the spectrum of their properties enormously. For example, PHA can be used to produce diols and polyester urethanes. Due to such modifications natural PHA are enabled to be used as thickeners in (dry) lubricants. The modified PHA can be used, for example, to adjust the rheology of technical lubricants or the hardness and elasticity of solid film lubricants.

Environmentally friendly alternative

Most conventional lubricants contain thickeners based on metal soaps, inorganic fillers, plastics or polyureas. These materials are often not or hardly biodegradable and can have disadvantages for the environment. However, the PHAt project partners are aiming to achieve biodegradability in the new PHA additives with their research. This should enable future technical lubricants and solid film lubricants to become more sustainable and ecologically sound in general and, especially in environmentally open applications, in order to replace fossil-based (dry) lubricants.



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Boilerplate for press releases

The „PHAt“ project

The PHAt project aims at the investigation of new natural and preferably biodegradable raw materials for use in technical lubricants and solid film lubricants. Especially, the project focusses on the development of environmentally friendly thickeners. The research consortium comprises expertise from industry and academia. They address the question whether potentially biodegradable polymers based on nature-derived material, so called polyhydroxyalkanoates (PHA), are suitable as thickeners. Thus, they can be used as an alternative to petroleum-based products in the future. The project is being funded by the Federal Ministry of Education and Research with approx. 1.25 million euros for three years.

<https://phat-projekt.de/en>

Project partners: Fraunhofer UMSICHT, Fritzmeier Umwelttechnik GmbH & Co. KG, FUCHS SCHMIERSTOFFE GmbH in cooperation with FUCHS LUBRITECH GmbH, UnaveraChemLab GmbH

Industrielle Biotechnologie Bayern Netzwerk GmbH

The Industrielle Biotechnologie Bayern Netzwerk GmbH (IBB Netzwerk GmbH) is a network and service organization in the field of industrial biotechnology and sustainable economics. The aim is to catalyze the implementation of valuable scientific knowledge in these fields into innovative, marketable products as well as processes. As a subcontractor, IBB Netzwerk GmbH is responsible for the dissemination of the results of the project. This is achieved by a project website, updates in social media, newsletters and press releases. Furthermore, the organization of project meetings is supported. The company is located in Munich. Further information can be found at: <https://www.ibbnetzwerk-gmbh.com/en>

Press releases

Please find all press releases and further information at: <https://phat-projekt.de/press/?lang=en>

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