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Liquid petroleum products - Bio-lubricants - Recommendation for terminology and characterisation of bio-lubricants and bio-based lubricants

S.R. CEN/TR 16227:2011

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Produits pétroliers liquides - Bio-lubrifiants -
Recommandations pour la terminologie et la caractérisation
des biolubrifiants et des lubrifiants provenant de la
biomasse

Flüssige Mineralöl-Erzeugnisse - Bio-Schmierstoffe -
Empfehlungen für die Terminologie und Charakterisierung
von Bio-Schmierstoffen und bio-basierten Schmierstoffen

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Foreword

This document (CEN/TR 16227:2011) has been prepared by Technical Committee CEN/TC 19 “Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a Mandate M/430 of the European Commission, addressed to CEN for the development of European standards for bio-lubricants in relation to bio-based product aspects. It has been prepared by CEN/TC 19/WG 33 “bio lubricants”, the secretariat of which is held by DIN.

Introduction

The main reason of the recent interest in bio-lubricants is due to the origin (i.e. use of bio-based raw materials) or to the biodegradability of the final products, needed for instance in case of leakages or technically intended losses. The use of bio-based raw materials could be beneficial with reference to two current problems: fossil resources depletion and climate change. Today, regarding the latter issue, we have to manage the carbon in order to avoid its accumulation in the atmosphere. Efficient use of all available resources and responsible utilization of renewable carbon is a way to participate in this reduction.

Lubricants are important materials which contribute significantly to environmental protection: thanks to their tailor-made properties they reduce energy losses and wear in machines and aggregates.

The global manufacture of lubricants in all applications only uses a small part of the entire consumed mineral oil: in Europe, it only makes up around 1 %. The major fraction (> 80 %) of the residual fossil material is used for energy production, predominantly for transportation and heating purposes. Besides crude oil, biomass is an additional raw material source for lubricants.

The currently available biomass is consumed in different segments: food and feed production, power and heat generation, biofuel production and industrial applications (e. g. production of paper, fine chemicals). Due to the limited capacity of ecosystems, the utilization efficiency of renewable resources and availability issues have to be addressed across the whole bio-economy landscape. The eco-efficiency in this competitive use (e. g. energetic use vs. manufacture of goods) should always be in focus.

According to various scientists [1], it would appear appropriate to use agricultural raw materials predominantly in a cascade of uses, instead of burning them directly in furnaces or engines. That would mean, for example, first producing a bio-lubricant from biomass: around 1 t to 2 t of bio-lubricants can be produced per hectare of agriculture land. The bio-lubricant thereby stores CO₂ in the form of vegetable carbon and removes it from the atmosphere. It would be desirable to trap this CO₂ in the lubricant for as long as possible. Finally, after maximum utilization including recycling when achievable and appropriate, the lubricant can then be used either as energy source or – after re-refining – as downshifted base oil – to return the bound carbon to the natural cycle in the form of CO₂.

In order to ensure responsible and environmentally conscious use of natural (fossil and renewable) resources, a clear and unambiguous terminology is of particular importance.

The approach which is published in this report is focused on the view of the customer: *Are the referred criteria for “bio-lubricants” potentially provable for the formulated product?* The statement of this report is: *Every announcement with regard to biodegradability, toxicity and bio-based content should be measurable through the final product in hands of the customer.*

Finally, this approach intends to enhance the reputation of “bio-lubricants” and the confidence of the customer in this product group, even if no official eco-label stands for the correctness of declarations.

The criteria for “bio-lubricants” published in this Technical Report are not contrary to the European Ecolabel for Lubricants, but complementary.

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