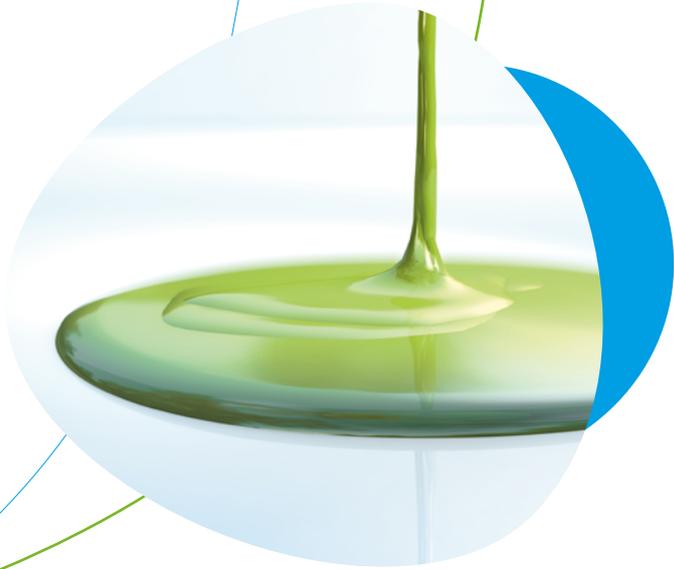


PRODUCT GUIDE
**ADDITIVES FROM
BIO-BASED MATERIALS**



○ DEFOAMERS
○ WAX ADDITIVES

RHEOLOGY ADDITIVES

○ WETTING AND DISPERSING ADDITIVES



Introduction

Sustainability, climate neutrality, and similar topics are increasingly coming into focus worldwide. Collective awareness and new regulations, such as the European Green Deal, are demanding change not only in society but also in the chemical industry. The chemical industry is a major contributor to greenhouse gas emissions, but it also offers an important lever to contribute to a more sustainable world. One way to make the chemical industry more sustainable and climate friendly, and less based on finite resources, is the use of bio-based materials. Thanks to its intensive product and application research, BYK offers its customers a comprehensive portfolio of (partly) bio-based additives.

Note

To ensure the best appearance and full functionality, please open in Adobe Acrobat.



Bio-based products

What are bio-based products?

According to the European Commission, bio-based products are “wholly or partly derived from materials of biological origin, excluding materials embedded in geological formations and/or fossilised. [...] As they are derived from renewable raw materials such as plants, bio-based products can help reduce CO₂ [...].”*



BYK's understanding

BYK's understanding is closely related to this definition. BYK takes the definition of “bio-based” given in ASTM D6866 into account as well, so that the bio-based content only refers to the organic carbon.

This means that the measurement does not include “neutral” substances that do not contain any carbon, such as water, minerals, and silicon dioxide. Furthermore, substances containing inorganic carbon are likewise excluded. The measured value should therefore be understood as the amount of bio-based organic carbon in relation to the total organic carbon (TOC).



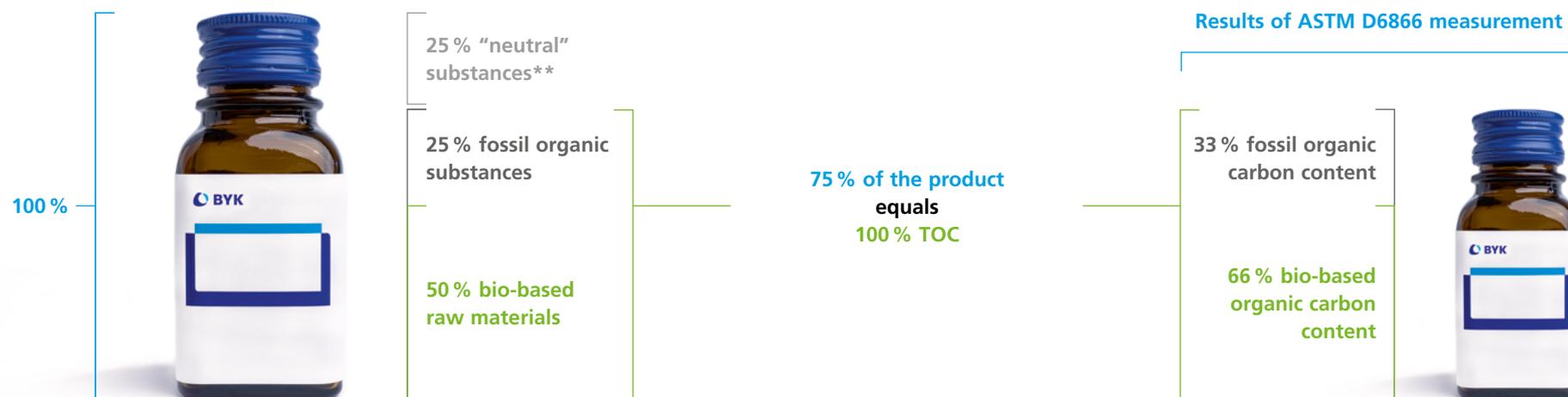
Measuring method according to ASTM D6866

The bio-based content is determined according to ASTM D6866 using the radiocarbon method. The basis of the radiocarbon method is the decay of ^{14}C isotopes to ^{12}C isotopes. ^{14}C isotopes are formed in the atmosphere and decay at a constant rate to ^{12}C isotopes. Due to the constant exchange with the environment, the ratio of ^{14}C to ^{12}C in living organisms (bio-based materials) almost

corresponds to the equilibrium in the surrounding environment. In fossil-derived materials, the decay is considerably more advanced and the ^{14}C isotope concentration considerably lower. The ASTM D6866 "Standard Test Methods for Determining the Bio-based Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis" defines different ways to measure

the ^{14}C content and therefore the bio-renewable content. The method used here is "Method B – Accelerator Mass Spectrometry (AMS)" and done by an independent, accredited testing laboratory. For a better understanding, see G.01.*

Schematic product composition



* The illustration is a very simplified presentation. The statement that 75 % of the product equals 100 % of the TOC is only partially correct, since other elements are excluded.

** e.g. water, carbonates, silicone dioxide, minerals, etc.



Additives from bio-based raw material

Product	Bio-based organic carbon content (%)
Wetting and dispersing additives	
ANTI-TERRA-204	53
ANTI-TERRA-U 100	74
BYK-1162	93
BYK-MAX D 4220	62
BYK-W 980	61
DISPERBYK-106	37
DISPERBYK-107	81
DISPERBYK-108	89
DISPERBYK-192	41
DISPERBYK-2062	91
DISPERBYK-2157	91

Product	Bio-based organic carbon content (%)
Defoamers/air release additives	
BYK-014	57
BYK-1740	100
BYK-A 505	100
Wax additives	
AQUACER 561	88
AQUACER 570	91
AQUACER 1540	92
AQUACER 2650	91
CERAFLOUR 993	96
CERAFLOUR 994	96
CERAFLOUR 1000	> 97
CERAFLOUR 1001	> 97
CERAFLOUR 1002	> 97

Product	Bio-based organic carbon content (%)
Processing additives	
BYK-3950 P	100
BYK-MAX P 4102	100
BYK-P 9050	95
BYK-P 9051	51
BYK-P 9060	70
BYK-P 9065	91
BYK-P 9080	86
Viscosity depressants	
VISCOBYK-5120	89
Rheology additives	
OPTIGEL-WX	96
RHEOBYK-7590	100
RHEOBYK-7591	100

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This issue replaces all previous versions.

