

Eppendorf Tubes[®] BioBased, Screw Cap 5.0/15/25/50 mL

Launch Information Hamburg, August 2022

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Always a step ahead – Eppendorf Tubes®

1963	Eppendorf Tubes® 3810 Innovation! The "Eppi®" is born	Optimized quality today: Eppendorf Tubes [®] 3810X (Flex-Tube [®]) since 2005
1988	Eppendorf Safe-Lock Tubes	Available in various purities, colorless, colored, Amber, LoBind [®]
2013	Eppendorf Tubes [®] 5 mL Innovative format!	Available with snap cap & screw cap in various purities, colorless, Amber, LoBind®
2015	Eppendorf Conical Tubes 15 mL & 50 mL	Available with screw cap in various purities, Amber, LoBind [®] and as SnapTec [®] 50
2019	Eppendorf Conical Tubes 25 mL Innovative format!	Available with screw cap & SnapTec [®] cap in various purities, Amber, LoBind [®]
2022	Eppendorf Conical Tubes, BioBased, 5.0 mL – 50 mL Innovative feedstock for optimized sustainability!	Available with screw cap

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Innovations have been the sales driver of the Eppendorf Tubes product portfolio since 1963

Innovation from Eppendorf is not only limited to the product, but also to special property, purity, quality and the conservation of resources for more sustainability

Introduction

- Fossil oil-based plastic vessels have become 'irreplaceable' in laboratories around the world, as they provide quality standards needed in increasingly demanding applications. Downside is the growing challenge in respect to sustainability.
- Eppendorf has committed to seriously address sustainability of the company and its products
- We have succeeded in finding a convincing alternative: Certified polypropylene based on renewable, reused raw materials, now to be used by Eppendorf for the first time in a new generation of tubes.







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Strategic Background



Sustainability	is playing an increasingly important role in the perception and purchasing decisions of our customers
	are increasingly positioning themselves and/or their products as
Competitors	'sustainable', but as of now there is no convincing solution known that addresses the consumable with direct sample contact
First Mover	the opportunity to uniquely position Eppendorf's consumables in terms of sustainability and to turn our vision into reality

Basic Information - Strategic background



BIOPLASTICS



Bio-Based Plastic

Bio-based refers to where the material comes from, it can be partially or fully biobased. Conventional plastics are fossilbased, meaning they use non-renewable resources from the planet. Bio-based plastics come from renewable biomass, which is plants. Some common plants used to make bioplastics are sugarcane, cassava and corn.

Not all bio-based plastics are biodegradable, although some are. Biobased only refers to what was used to make the material. It says nothing about what happens to it at the end of its life.

Bio-Degradable Plastic

Biodegradable exclusively means that the material can undergo a chemical process in which microorganisms in the environment convert the material back into natural substances such as carbon dioxide, biomass and water. In the case of biodegradable plastics, the conditions of the environment usually have to be quite specific for this to happen effectively.

Not all biodegradable plastics are bio-based; some are based on fossil materials.

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Bio-based Polymers used for Eppendorf Tubes® BioBased

To achieve more sustainable properties of plastic used to produce lab consumables, we must make and use plastics more sustainably and ultimately in more circular ways, using recycled and/or renewable feedstocks

- > This specific bio-based polymer is made of renewably-sourced, reused feedstocks, for instance used cooking oil (based on information provided by the polymer supplier and monitored by the ISCC PLUS system).
- > The raw materials used to produce the renewable feedstock are traceable back to the first collection points and the origin of the renewable raw materials from certified suppliers committed to sustainability is assured.
- The final polymers and their sustainable content are certified by "ISCC PLUS"* (International Sustainability & Carbon Certification) - the reliable global leading certification scheme for manufacturers producing e.g. bio-based polymers and their further processing.



What is "ISCC PLUS" Certification*

ISCC PLUS (International Sustainability & Carbon Certification) is a global certification program for circular economy and bio economy. The certification enables traceability along the entire supply chain

- > ISCC PLUS enables market participants and producers from the food and feed, chemical, pharmaceutical and bioplastic industries to obtain sustainability certificates. With an ISCC PLUS certification, companies ensure that the entire supply chain from agriculture to the finished product is regularly audited. The certification is also applicable to products based on waste, residues and recyclable material.
- > ISCC supports the transition to a circular economy and bio economy and brings many benefits to businesses and the environment like e.g.:
 - > Traceability throughout the supply chain,
 - > Proof of identity of raw materials,
 - > Clear and third-party verified information,
 - > Strengthening consumer confidence through global certification by an independent organization



What is "ACT" Certification

Independent Validation

 ${\bf \widetilde{\Delta}}_{
m mygreen\,lab.}$ provides independent validation and certifies lab products with "ACT - The Environmental Impact Factor Label" as third-party organization since 2017. Meanwhile Eppendorf has a growing number of ACT validated and certified Eppendorf products, e.g., tips. tubes, ULT freezers. different pipettes. and more to come. https://actdatabase.mygreenlab.org

", The ACT Label was designed to address the need of both scientists and procurement specialists for clear, third-party and independently verified information about the environmental impact of laboratory products. By emphasizing Accountability, Consistency, and Transparency (ACT) around manufacturing, energy and water use, packaging, and end-oflife, ACT makes it easy to choose more sustainable products." (Quote from https://act.mygreenlab.org)

Eppendorf BioBased Conical Tubes 25

Environmental Impact Scale Decreasing Environmental Impact

mL, BioBased SKU 30122534

Manufacturing

Renewable Energy Use

Manufacturing Impact Reduction

Responsible Chemical Management





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US

10

1.0

Yes

1.0

Eppendorf BioBased is Confirmed by two Strong and Independent Quality Marks

	ISCC PLUS: Manufacturer-related	ACT: Product-related
Logo		The Environmental Impact Factor Label
Organization	ISCC Association (ISCC e.V.) was founded through a multi-stakeholder initiative and is based in Germany	My Green Lab® is a San Diego, USA, based non-profit organization
Objectives	Contributing to the implementation of environmentally, socially and economically sustainable production and use of all kinds of biomass in global supply chains	Reduce the environmental impact of labs through smarter purchases
Why implement in project?	Mandatory precondition to source bio-based material from supplier	 Marketing purposes: ACT label is developing to become a "market standard" It is used by important competitors in the life science research market to demonstrate the sustainability of their products (e.g. Thermo, Labcon)
Advantages	 Monitored traceability from raw material to final product Contributes to development towards a "circular economy" (bio-based PP enables a second use/life cycle of organic material) 	• ACT Environmental Impact Factor provides a quantified score to compare different products



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Markets & segments





SDI Report 2014-2018: total of 246,000 laboratories world-wide

Classical target markets for conical tubes are pharma, hospital & clinical labs, biotechnology labs, academia, nutrition and gen./environ. test labs

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Eppendorf Conical Tubes[®] BioBased – Applications



New material > same applications & performance

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Target Market, Groups & Applications

Eppendorf Tubes[®] 5.0 mL – Target Applications





Field test survey data

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Eppendorf Tubes[®] 5.0 mL - Target Groups

- All users performing biomolecule purification and assay setup in volume range 2-5 mL
- > Life sciences users: storage of buffers, reagents, samples (-86 °C)
- Life science and biopharma: cell & microorganism cultures with subsequent purification of biomolecules with organic extractions & high-speed centrifugation
- Forensics/sequencing users: purification, analysis and assay setup with nucleic acid samples







Target Market, Groups & Applications

Conical Tubes 15/25/50 mL: Target Applications



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culture are main applications

Target Market, Groups & Applications

All Conical Tubes: Purities & Applications

Eppendorf QualityReagent & sample
preparation / storageSterile, pyrogen free, DNase/RNase and DNA (human
& bacterial) freeCell culture / microbiologyDNase/RNase, DNA (human) free, PCR inhibitor freePCR / sequencing / nucleic
acid analysis / forensics

We are launching BioBased Conical Tubes with the most relevant extended purity <u>Sterile, pyrogen free, DNase/RNase and DNA (human & bacterial) free</u>

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Target Customers



Recap: Same quality and same performance

- > Eppendorf Tubes® BioBased are addressable as general lab products in all tubes' relevant application fields
- > They are a fully applicable, more sustainable alternative

Target customers

Target customers are those with organizational and/or individual sustainability goals

- > Companies with sustainability targets in Pharma, BioTech, Gov. Research, etc.
- > Individuals wanting to reduce CO₂-footprint of their professional life, e.g. in Academia



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Product Vision







"Making polymer products and components substantially and measurable more sustainable according to the "Reduce, Reuse, Recycle" concept without compromising product quality and performance"

Strategic Positioning

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Premium Positioning

- > Same quality and performance as current Eppendorf portfolio
- > Eppendorf's first products on the market with direct sample contact largely** made of renewable resources
- Significantly reduced product related carbon footprint
 Serious attempt to decouple single use consumables from the usage of fossil resources
- > Independently certified by leading global system ISCC PLUS (International Sustainability & Carbon Certification)

** Tube is made with 90 % ISCC "bio-circular" material.[#] The cap will be made bio-based once the material becomes available. # The term "bio-circular" is used according to ISCC definition for the feedstock. However, this does <u>not</u> mean that our tube is a "circular" product!

Product Profile

Eppendorf Tubes® BioBased, Sterile, screw caps, 5 mL, 15 mL, 25 mL, 50 mL Product Highlights

- > Eppendorf Production Center in Oldenburg/Germany is "Certified ISCC PLUS Conversion Unit"
- > Tubes* are made from 90 % renewable-based feedstock (recycled e.g. from food oil wastes and residues) plus 10 % fossil-based feedstock (applying ISCC mass balance approach – see next slides)
- ACT label (Accountability, Consistency, Transparency): Environmental Impact Factor Certification
- > General Quality Certificates are available for Eppendorf Tubes® BioBased
- Product specific and batch specific purity certificates as well as an ISCC sustainability declaration for Eppendorf Tubes[®] BioBased are (made) available

*The cap is currently fossil-based. Eppendorf is preparing to switch this to renewable feedstock as well!





The Mass Balance Approach - Illustration





The Mass Balance Approach





Important mechanism to transform towards using recycled and/or renewable feed stock.

- Smart & easy way to gradually **shift resources** for products **from fossil to renewable** with as little as possible impact on the planet and the economy.
- Mass balance allows to mix resources in existing systems.
- Mass balance helps to keep track of the renewable quantities an allocates them to specific products.
- Our mass balance approach is audited under ISCC PLUS.

The Path from Vegetable Cooking Oil to Eppendorf Tubes® BioBased







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Product Ordering Information

*Reference products are the current Eppendorf Tubes®, screw cap, Sterile



	Order No.	Order No. (existing reference product*)	Pieces per unit
Eppendorf Tubes® 5.0 mL with screw cap, BioBased, Sterile	> 0030 122 518	> 0030 122 321	 > 200 tubes (2 bags x 100 each)
Eppendorf Conical Tubes 15 mL, screw cap, BioBased, Sterile	> 0030 122 526	> 0030 122 151	 > 500 tubes (10 bags x 50 each)
Eppendorf Conical Tubes 25 mL, screw cap, BioBased, Sterile	> 0030 122 534	> 0030 122 437	 > 200 tubes (8 bags x 25 each)
Eppendorf Conical Tubes 50 mL, screw cap, BioBased, Sterile	> 0030 122 542	> 0030 122 178	 > 500 tubes (20 bags x 25 each

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Product Information

Packaging

- > Tubes are packed in resealable bags
- For better identification, an explanatory additional label will be placed next to the product label
- > The accompanying text is formulated according to the ISCC guideline and must not be changed



These tubes without cap are made with 90% biobased plastic. The plastic can be traced back to biological waste material which is attributed to these tubes via the ISCC mass balance approach.

By choosing these tubes, our customers help to significantly reduce the amount of fossil resources required for the production.







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Launch information - 1



Timeline:

- > **Stock building:** planned to be finished in August 2022
- > Sales start planned for Europe August 11th 2022
- > Due to ongoing long shipping times, availability in the regions Americas, Asia Pacific and China can be expected for October

Launch information - 2

Marketing Material available on epBrain includes:

- > Brochure, English, as download PDF
- > Microsite <u>www.eppendorf.com/BioBased</u>
- > Templates: Press Release · Print Ad
- > Technical Data/Instruction for Use
- > Launch presentation
 - > Public version
- > White Paper "Consumables made of bioplastics enter the lab"
- > 2 Application Notes* (available from end of October 2022)
- > ACT Certificates, ISCC PLUS Certificate, Certificates of Quality
- > Images

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*App Note 1

Title: Green material - maximum safety: performance comparison of Eppendorf BioBased and Standard Conical Tubes Marketing message: Eppendorf Biobased Conical Tubes provide same technical/safety performance as Eppendorf standard tubes and same time perform better than competitors App Note 2

Title: Cell- and Earth-friendly Tubes: cytotoxicity assessment of Eppendorf BioBased Conical Tubes

Marketing message: Eppendorf Biobased Conical Tubes provide excellent cytotoxicity parameters and provide green alternative to standard conical tubes



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Brochure (6 Pages) – English - PDF



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Marketing & Sales Support

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Microsite – <u>www.eppendorf.com/BioBased</u>



Advertisment



Germany complies with requirements of certificar

Environmental Impact Factor Cartification by

» Comprehensive General Quality, Product-specific

tion system ISCC Plus*

Mr. Green Lab.

This new Tables family is made from 49.45 "bie-carps" > Eppendent Production Center is Obtenburg! lar" renewable-based feedblock becycled e.g. from food oil wastes and residuest plus 10 % foosil -based feedsmick (applying ISCC mass balance approach). By » Eppendert Tuber* BioRated are ACT*** labeled ing these tubes, customers help to significantly reduce the arecurst of fossil resources regained for their production.

www.eppendorf.com/BioBased

and an experimental of the last lay life in particular land have been last an experimentation of general in being

White Paper

Headline: Consumables made of bioplastics enter the lab

distant.

vacuum. Transfer has writered our daity life. Dat as versatile and necessary as if is. It she has a major acatogic impact ance it is made from fixed back. Employed produced from plants has vagar case when the an an alreading, had this approach also has its draubacks. Manifelig to badle a circular accounty, and a deams are contained for four an account for the production of plantscs. This antibagoer augulates have used code ago at case to and to produce the programphics optical in the first first four args with a complete plant work.

Can we solve the plastic problem?

Plantic is present in our daily work - at home and play in the lat. Consumables made of plantic facilitate daily. We and ensure vanishing and for some products, such as power law, there is no next attainative. But plantic take power a major protection as it is made from ende of and coordinates to climate sharps due to the high CO_M containing productive, processing and sharps.

Purcharmone, most of the plastic which we put into the wasts livin is not recycled out is beined, and us in another or thirds to way into the environment. It is machard to matcher nets that the plastical of as plastic wasts uncernise short regulations that match in matchery to be card for the themat (hetching) is

These the same transformed and the same trans Is made of innewood resources. As initially operating as the approach may seen, then are see being of innerent upon coordinate the of insection.

The arm - building a leafy circular economy

Tentay, must begitestice potations or wheat ALLs to be a good aftermotive gas omeaning but a ce

By using this approach, renewable building blocks are allocated to the product 50% biobased indicates that celly half of the building blocks are derived trom renewable resources while 50% are still beal Availabade. In physical units, this relaxes that 0.5 gos pressores tech sign The curlivation of wigat have a neighbor enviro on the extraphication a use (3.4). Furthermotic, even if the total and up 2025 is will manginal (8 packaging with houlaws microwary gitters would turns of remewable feedstock are mixed with 0.5 turns of fossil-foel-based feedstock to due 1 ton of product

The mass balance approach allows laterling products with a lotal or certain amount of building blocks made of renewable resources



Fiture 2: The Mass fislance Approach

The use of UCO to produce polypropylene is advantageous - ecologically and aconomically

From an ecologic point of view, the production of polypropylene from used cosking oil In selection, and the other is the processing of the processing of the product polycrophene made of crude of and the process with used contemporter with the product polycrophene made of crude of and the process has not acids to well as rev material and showed that the vectors process has a 42% tower impact on citratile change (12)

The mass salance approach gives the possibility to identify the share of renewable resources. Depending on the end product and its desired properties, polypropriese can contain a fee per cert of ethese to give a random copolymer (15). If ethese is made of focus likels, the end product is not 100% obtable. Here, the main balance approach indicates the correct biobased proportion in the end product. An independent certification verifies the amount of biobased and forsal feeds/ocks from the start of the value chain to the end prodect and gives, therefore, credibility across the whole manufacturing chain [16].

The example of polypropylene made of used cooking oil shows how the industry ca be transformed into a circular economy. Used cocking oil is a good example as t is a which can be further processed in the same way as napithal made from lossifiant

be used which makes this process economically favourable. During the steam cracking process, short-chain hydrocarbons are produced, one of which is propene. It has the same properties as properties bitshold from crude oil. In the last stop, propose is polymorized in the standard polymorization process a polypropylere granulates which can then be further used for the production of different products. Polypropylete produced in this way has the same properties as polypropylete produced from crude oil and can not be distinguished.



y to certify complex product chains in the iding blocks in your end-product.

c made of building blocks from bio-naphtha wade of crude oil? n and woll established way to measure and resources (14). The idea tehind is cuite re-septima) reports an ecurvalent amount continue at the personnel of the

edutock which is n roduct has to be determined; how many tion of output, in a second step, it has to be leedstock can be replaced by test in holester is not considered. The and to the product so that the most

Banner





Certificates Available for BioBased Conical Tubes

Keyword(s)	Content (short)	Implementation for BioBased Conical Tubes	Same quality level as existing Ep. products
TSE/BSE*	States that consumables are to be considered safe with respect to TSE and BSE transmission.	On existing certificate	\checkmark
Trace metal*	States very low concentration levels of trace metal (e.g. Al, Cr, Pb) present in nitric acid after 1h incubation time.	On existing certificate	\checkmark
Certificate of Quality Tubes*	General certificate of quality incl. confirmation to forgo slip agents, biocides and plasticizers.	On existing certificate	\checkmark
CoQ Laboratory Consumables*	Free of slip agents, biocides, plasticizers, Melamine, Silicone and Latex.	On existing certificate	\checkmark
PFAS*	Safe with respect to PFAS transmission when used in laboratory applications.	On existing certificate	\checkmark
Nitrosamine*	No risk of formation of nitrosamine during manufacturing process. No risk of contamination of nitrosamine during the cleaning process of product-contacting parts.	On existing certificate	\checkmark
ISCC PLUS	Our production facility in Oldenburg is certified according to ISCC PLUS (valid until 2023-04-19).	New certificate	\checkmark

*Note: The certificates all have the same content and assure the same quality level as our existing certificates!

Marketing & Sales Support

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Certificates: ACT	– ISCC PLUS	– CoQs
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