

# Life Cycle Assessment demonstrates significantly lower carbon footprint of Avantium's plantMPG™

**AMSTERDAM, 26 October 2022, 07:00 hrs CEST – Avantium N.V., a leading technology company in renewable chemistry, has published Life Cycle Assessment (LCA) data for its plantMPG™ (plant-based mono-propylene glycol) from its Ray Technology™: a chemical intermediate used in a variety of applications including in functional fluids and unsaturated polyester resins. The ISO-certified LCA for plantMPG™ shows a significant improvement of up to 81% in greenhouse gas (GHG) emissions over the full life cycle when Avantium's plantMPG™ is compared with its incumbents.**

---

Avantium partnered with Sphera to perform a cradle-to-grave LCA for plantMPG™, produced with its Ray Technology™ from sucrose derived from Dutch sugar beet. The LCA takes into account wastewater treatment as the end-of-life for plantMPG™<sup>i</sup>. Avantium's plantMPG™ is compared to incumbent MPG production routes from fossil raw materials (naphtha- and shale-derived propylene) and renewable raw materials (soy- and rapeseed-derived glycerine). For the plantMPG™ production process, electricity from wind power, green hydrogen based on wind power and thermal energy from natural gas was assumed<sup>ii</sup>. The plantMPG™ LCA study has been conducted according to the guidelines of ISO 14040/14044 and has been reviewed by an external independent critical review panel.

The impact on climate change of plantMPG™ is significantly lower, with 50% to 81% lower GHG emissions, compared to fossil-based and biobased incumbents<sup>iii</sup>. The climate change reduction for plantMPG™ is largely driven by the use of plant-based feedstock (sugar beet) and the resulting biogenic nature, with the carbon being absorbed and stored by the sugar beets and re-entering the natural carbon cycle at the end of life of plantMPG™. Furthermore, the non-renewable primary energy demand of plantMPG™ is significantly lower (-41% to -82%) compared to other fossil and renewable MPG alternatives. PlantMPG™ also outperforms all incumbent MPG technologies in water use (-13% to -99%).

"The LCA clearly demonstrates the potential of Avantium's plantMPG™ to help reducing global warming. As 100% plant-based intermediate, plantMPG™ entails a significantly lower carbon footprint compared to its alternatives. This accommodates the global need to transition to climate neutrality and a green future", says Math Lambalk, Business Development Manager at Avantium Renewable Chemistries and responsible for the plantMPG™ LCA.

A summary of the LCA, also addressing other relevant impact categories, is available on the Avantium website: <http://www.avantium.com/sustainability/LCA>

---

## About Avantium

Avantium is a leading technology development company and a frontrunner in renewable chemistry. Avantium develops novel technologies based on renewable carbon sources as an alternative to fossil-based chemicals and plastics. The company currently has three technologies at pilot and demonstration phase. The most advanced technology is the YXY® plant-to-plastics-technology that catalytically converts plant-based sugars into FDCA (furanicarboxylic acid), the key building block for the sustainable plastic PEF (polyethylene furanoate). Avantium has successfully demonstrated the YXY® Technology at its pilot plant in Geleen, the Netherlands, and has started construction of

the world's first commercial plant in 2022, with planned large-scale production of PEF in 2024. The second technology is Ray Technology™ and catalytically converts industrial sugars to plant-based MEG (mono-ethylene glycol) and plant-based MPG (mono-propylene glycol): plantMEG™ and plantMPG™. Avantium is scaling up its Ray Technology™ and the demonstration plant in Delfzijl, the Netherlands opened in November 2019. The third technology is called the Dawn Technology™ that converts non-food biomass into industrial sugars and lignin in order to help transition the chemicals and materials industries to non-fossil resources. In 2018, Avantium opened the Dawn Technology™ pilot biorefinery in Delfzijl, the Netherlands. Avantium also provides R&D solutions in the field of sustainable chemistry and is the leading provider of advanced catalyst testing technology and services to accelerate catalyst R&D. Avantium works in partnership with like-minded companies around the globe to create revolutionary renewable chemistry solutions from invention to commercial scale.

Avantium's shares are listed on Euronext Amsterdam and Euronext Brussels (symbol: AVTX). Avantium is incorporated in the Euronext Amsterdam SmallCap Index (AScX). Its offices and headquarters are in Amsterdam, the Netherlands.

---

**For more information:**

*Media Relations:*

Caroline van Reedt Dortland, Director Communications, Avantium  
+31-20-5860110 / +31-613400179,  
[mediarelations@avantium.com](mailto:mediarelations@avantium.com)

*Investor Relations:*

Miriam Wijnands, Manager Investor Relations  
+31-20-5860192 / +31-618467012,  
[ir@avantium.com](mailto:ir@avantium.com)

---

i In applications such as aircraft deicing and laundry detergents (home care), MPG will be subjected to wastewater treatment as end-of-Life scenario.

ii The life cycle impacts of plantMPG™ are sensitive to assumptions around energy sources. Given a scenario using the national electricity grid mix, grey hydrogen based on natural gas and thermal energy from biomass for the Ray Technology™ production, significant changes to total results compared to the base case results occur for climate change, primary energy demand, marine eutrophication, land use and water use.

iii The incumbent routes are based on Ganzheitliche Bilanzierung (GaBi) datasets with average country level data for the technologies assessed.