Origin Materials and Avantium to Accelerate the Mass Production of FDCA and PEF for Advanced Chemicals and Plastics

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Strategic partnership will produce FDCA from Origin's carbon-negative platform for producing chemical intermediates from sustainable wood residues and Avantium's YXY ® Technology

WEST SACRAMENTO, Calif. & AMSTERDAM--(BUSINESS WIRE)--Feb. 21, 2023-- Origin Materials, Inc. ("Origin" and "Origin Materials") (NASDAQ: ORGN, ORGNW), the world's leading carbon negative materials company with a mission to enable the world's transition to sustainable materials, and Avantium N.V. ("Avantium"), (Euronext: AVTX) a leading technology company in renewable chemistry, today announced a partnership to accelerate the mass production of FDCA and PEF for use in advanced chemicals and plastics.

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The partnership aims to bring together the strengths of Origin's patented carbon-negative technology platform, which turns the carbon found in sustainable wood residues into useful materials including chloromethylfurfural ("CMF"), with Avantium's YXY ® Technology, which can be used to convert derivatives of Origin's CMF into FDCA, the chemical building block for the polymer PEF, at attractive unit economics.

The partnership represents a potential breakthrough in the commercialization of cost-competitive and low-carbon PEF, a polymer with an attractive combination of sustainability and performance characteristics for packaging including enhanced barrier properties. The produced PEF is expected to be 100% plant-based, fully recyclable, have attractive unit economics, and to offer a significantly reduced carbon footprint, with superior strength, thermal properties, and barrier properties compared to today's widely used petroleum-based materials.

"We are excited to partner with Avantium, a leading innovator and developer of sustainable chemistry, on a project with far-reaching impact," said John Bissell, Origin Co-Founder and Co-Chief Executive Officer. "Together we aim to bring the value of FDCA and one of its main applications, PEF, to the industry at large and to drive decarbonization throughout the supply chain. By combining Origin's revolutionary platform, which can produce key FDCA precursors like CMF from sustainable wood residues, with Avantium's YXY ® process technology, we aim to transform the polymers and materials industry. This partnership accelerates our efforts to bring economical non-food based FDCA and PEF to market."

"We are excited to enter into this strategic partnership with Origin Materials, a leading sustainable materials company and like-minded partner committed to revolutionizing the chemical and plastics industry," said Tom van Aken, CEO of Avantium. "The technologies of both companies are highly complementary and will also enable the use of non-edible, renewable feedstocks for the production of FDCA and PEF, meeting the expectations of brand owners and consumers worldwide. This supplements the feedstock options for our technology. We look forward to working together on our shared ambition to transition the world to large-scale sustainable materials made from non-fossil resources."

The partnership includes a licensing agreement providing Origin with access to relevant parts of Avantium's process technology for producing FDCA from Origin's CMF derivatives at a 100 metric kilotons per annum scale facility and a conditional offtake agreement under which Avantium will supply Origin Materials with FDCA and PEF from its plants to accelerate market development. Under the terms of the transaction, Avantium received an upfront payment of €5 million in 2022 and, as a result of signing the licensing agreement, will receive an additional payment of €7.5 million, and may receive additional payments depending on the achievement of certain development milestones. Origin expects to incorporate Avantium's process technology into the supply chain for product from future plants.

About Origin Materials

Headquartered in West Sacramento, Origin Materials is the world's leading carbon negative materials company. Origin's mission is to enable the world's transition to sustainable materials. For over a decade, Origin has developed a platform for turning the carbon found in inexpensive, plentiful, non-food biomass such as sustainable wood residues into useful materials while capturing carbon in the process. Origin's patented technology platform can help revolutionize the production of a wide range of end products, including clothing, textiles, plastics, packaging, car parts, tires, carpeting, toys, and more with a ~$1 trillion addressable market. In addition, Origin's technology platform is expected to provide stable pricing largely decoupled from the petroleum supply chain, which is exposed to more volatility than supply chains based on sustainable wood residues. Origin's patented drop-in core technology, economics and carbon impact are supported by a growing list of major global customers and investors.

For more information, visit www.originmaterials.com.

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 (furandicarboxylic 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 for FDCA in 2022, with planned large-scale production of PEF in 2024. The second technology is Ray Technology™ which 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.

Cautionary Note on Forward-Looking Statements

This press release contains certain forward-looking statements within the meaning of the federal securities laws. Forward-looking statements generally are accompanied by words such as "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect," "should," "would," "plan," "predict," "potential," "seem," "seek," "future," "outlook," and similar expressions that predict or indicate future events or trends or that are not statements of historical matters. These forward-looking statements include, but are not limited to, statements regarding the potential benefit of a partnership with Avantium, the ability to convert CMF into FDCA at attractive unit economics, the expectation that the produced PEF is expected to be 100% plant-based and fully recyclable, future payments under the licensing agreement between Avantium and Origin, expectation that Avantium's process technology will be incorporated into the supply chain for product from future plants, plans to accelerate market development, Origin Materials' business strategy, estimated total addressable market, commercial and operating plans, product development plans, anticipated growth and projected financial information and ability to realize the anticipated benefits of any partnerships discussed in the press release. These statements are based on various assumptions, whether or not identified in this press release, and on the current expectations of the management of Origin Materials and are not predictions of actual performance. These forward-looking statements are provided for illustrative purposes only and are not intended to serve as, and must not be relied on as, a guarantee, an assurance, a prediction, or a definitive statement of fact or probability. Actual events and circumstances are difficult or impossible to predict and will differ from assumptions. Many actual events and circumstances are beyond the control of Origin Materials. These forward-looking statements are subject to a number of risks and uncertainties, including that Origin Materials may be unable to successfully commercialize its products; the effects of competition on Origin Materials' business; the uncertainty of the projected financial information with respect to Origin; disruptions and other impacts to Origin's business as a result of outbreaks such as the COVID-19 pandemic, Russia's military intervention in Ukraine, the impact of severe weather events, and other global health or economic crises; changes in customer demand; and those factors discussed in the Quarterly Report on Form 10-Q filed with the U.S. Securities and Exchange Commission on November 3, 2022 under the heading "Risk Factors," and other documents Origin Materials has filed, or will file, with the SEC. If any of these risks materialize or our assumptions prove incorrect, actual results could differ materially from the results implied by these forward-looking statements. There may be additional risks that Origin Materials presently does not know, or that Origin Materials currently believes are immaterial, that could also cause actual results to differ from those contained in the forward-looking statements. In addition, forward-looking statements reflect Origin Materials' expectations, plans, or forecasts of future events and views as of the date of this press release. Origin Materials anticipates that subsequent events and developments will cause its assessments to change. However, while Origin Materials may elect to update these forward-looking statements at some point in the future, Origin Materials specifically disclaim any obligation to do so. These forward-looking statements should not be relied upon as representing Origin Materials' assessments of any date subsequent to the date of this press release. Accordingly, undue reliance should not be placed upon the forward-looking statements.

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