



– Press Release –

CARBIOS: the technological solution for the recycling of opaque PET plastics such as the new milk bottles

Clermont-Ferrand, France, January 23, 2017 – CARBIOS (NYSE Alternext in Paris: ALCRB), an innovative green chemistry company specializing in enzymatic bioprocesses applied to plastic and textile polymers, comforts the applicative potential of its innovations by making 100% recyclable all household packaging in opaque polyethylene terephthalate (PET) such as the new milk bottles.

Since recently, a technological revolution is on its way in the field of milk packaging as bottles made of opaque PET are widely replacing those made of high density PE (HDPE). This enabled to reduce their weight by 25%¹ and to eliminate the aluminium seal on bottle caps, leading to raw material savings and greater performances for industrials. However and as reported in the media recently, these new bottles, white outside and grey inside, are not recyclable by conventional processes. On a practical level, recyclers have to reject opaque PET bottles to landfill or incineration as their systems are unable to tolerate this new stream and to give it a second life.

Since 2012, CARBIOS carried out extensive research on the development of an enzymatic recycling process for PET. This work successfully demonstrated the depolymerization at 100% of PET based commercial products (bottles, packaging, films...) into their original monomers: TPA (terephthalic acid) and MEG (mono ethylene glycol). Today, CARBIOS' proprietary innovation offers a technological solution to the recycling of all PET products (transparent, multi-layer, opaque, complex...), including these new PET milk bottles.

It is through alternative and innovative processes that the transition towards a real circular economy of plastics will accelerate. As underlined by the MacArthur Foundation, "*Without fundamental redesign and innovation, 30% of plastic packaging will never be reused or recycled*"². Moreover, it is also a strategic challenge for all players in the sector, to find new solutions in order to reach the EU Commission target of 55% recycling rate for plastics of all kinds by 2025³ (against 29,7%⁴ recorded on average for EU countries in 2014). To that extend, CARBIOS innovation will help to face these challenges, by enabling for the first time, the recycling of all PET based plastics.

The market of PET, recording 4% to 5% growth each year⁵, represents a world production of 64 million tons⁶ (Mt) split between fibers (43 Mt⁷), bottles (15Mt⁸), films and packaging (6 Mt⁸). 3 bottles out of

¹ Source: Les Echos, Novembre 15, 2016 article « Les bouteilles alimentaires opaques, une illustration des dérives du système de recyclage »

² Source: The New Plastic Economy, January 13, 2017

³ Package Economie Circulaire Directives 2008/98/CE et 94/62/CE

⁴ Source: PlasticsEurope 2016

⁵ Source: Smithers Pira in 2014, Icis in 2009 and Pira International in 2012

⁶ Source: SRI Consulting in 2010, Icis in 2009, Samsung in 2010, Tecnon in 2013 and IHS in 2014

⁷ Source: Tecnon in 2013 and IHS in 2014

⁸ Source: SRI Consulting in 2010, ICIS in 2009 and Samsung in 2010

100 are currently made of opaque PET and this new plastic material should represent 100% of milk bottles within the next 5 to 10 years according to market players.

“We are proud to provide a technological solution for the treatment of opaque PET plastics and thereby support the innovation choices of industrials. The results of our work in PET biorecycling address a major environmental issue by exceeding the limits of current processes. Our innovative approach enables to meet these challenges and confirms the potential of our technology, now in its pilot stage and for which we hope to lead the industrialization in the coming years,” stated Jean-Claude Lumaret, CEO of CARBIOS.

About CARBIOS:

[CARBIOS](#) is a young, innovative green chemistry company, whose mission is to find biological solutions to the environmental and sustainable development issues faced by industrial businesses today. CARBIOS acquired the rights to research that was conducted over a number of years by various public and private sector laboratories. By leveraging the unique properties of biological catalysts (enzymes), it has used this research as the foundation for developing innovative industrial bioprocesses that optimize the technical, economic and environmental performance of polymers (thermoplastic materials and synthetic or food-based fibers). The company has focused its efforts on a strategic application sector: plastics. CARBIOS’ growth strategy is based on a clear business model of industrial value creation that targets attractive markets, develops innovative and competitive bioprocesses and licenses them to major industrial stakeholders for commercialization. CARBIOS benefits from the financial support of the leading European venture capital firm [Truffle Capital](#). CARBIOS was founded in 2011 and has been funded, since its inception, by funds managed by the *Holding Incubatrice Chimie Verte* fund. CARBIOS was granted the label “Young Innovative Company” by Bpifrance (former OSEO) and is eligible for investments by private equity mutual funds (FCPIs).

For more information, please visit www.carbios.fr

CARBIOS is eligible for the PEA-PME, a government program allowing French residents investing in SMEs to benefit from income tax rebates.



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