



OXO-BIODEGRADABLE PLASTICS ASSOCIATION

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EU reg. no. 186937011291-26

IT'S OK TO RECYCLE OXO-BIODEGRADABLE (BUT NOT BIO-BASED) PLASTIC

On 18th November, European Plastic Converters ("EuPC") published a Report on recyclability of biodegradable plastics by the Austrian Transfercenter für Kunststofftechnik GmbH ("TCKT"). The Oxo-biodegradable Plastics Association requested an analysis of this report by the Roediger specialist laboratory at Stellenbosch, South Africa, and the analysis is now published on the OPA website at <http://www.biodeg.org/files/uploaded/Roediger%20on%20EuPC%205%20Dec%20'13.pdf>

The Roediger analysis concludes that the TCKT report is confused, and that "it needs to be clearly understood that there are two very different types of biodegradable plastic products:

- a. "Compostable" - (also loosely known as "bio-based plastics" or "bioplastics") and designed according to EN13432 to biodegrade in industrial composting, and
- b. Oxo-biodegradable - made from petroleum-derived polymers such as PE and PP, containing special ingredients (which do not include "heavy-metals") designed according to ASTM D6954 to degrade and biodegrade in the open environment leaving no harmful residues.

TCKT tested four samples, of which three were bio-based and compostable. Only one of them (DEG2) was non-biobased and degradable, but it is not properly described. It is not therefore known what type of polymer was used, how old the sample was, nor which additive had been included in the polymer, nor at what concentration within the polymer. There is no explanation as to how the author assessed whether DEG2 was biodegradable.

Roediger laboratories' conclusion is that:

1. The TCKT report confirms that bio-based "compostable" plastics can NOT be safely recycled together with oil-based plastics in a post-consumer waste stream, but
2. There is no reason to change their view after extensive tests in 2012 that plastic products made with oxo-biodegradable technology may be recycled together with conventional oil-based polymers without the need for separation and without any significant detriment to the newly-formed recycled product.

Roediger points out that "oxo-biodegradation is defined by CEN in TR15351 as *"degradation resulting from oxidative and cell-mediated phenomena, either simultaneously or successively"* and that "Whilst described in the TCKT report as "oxo-fragmentable," and sometimes described in non-scientific literature as "oxo-degradable" this describes only the first or oxidative degradation phase. These descriptions should not be used for material which degrades by the process of oxo-biodegradation defined by CEN, and the correct description is "oxo-biodegradable."

The Roediger report notes that "Oxo-biodegradation of polymer material has been studied in depth in many scientific studies, most recently at the Technical Research Institute of Sweden and the Swedish University of Agricultural Sciences. An independently peer-reviewed report of the work was published in Vol 96 of the journal of Polymer Degradation & Stability (2011) at page 919-928. It shows 91% biodegradation in a soil environment within 24 months, when tested in accordance with ISO 17556."

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