

Media Release

Clariant Masterbatches Helps Packaging Customers Protect and Improve Quality of Recycled Polymers

- **Additives and colors support circular economy**
- **Mitigating the environmental impact of packaging waste**
- **Increasing recyclability of molded, extruded and blow-molded plastics**

Muttenz, July 25, 2019 – Recognizing that recycling is the foundation of a circular economy, Clariant Masterbatches and its Packaging Market group, is mobilizing considerable resources to help ensure that an ever higher percentage of plastic packaging is recycled.

“Today’s recycling efforts have an important impact on plastics in the environment,” says Alessandro Dulli, Clariant Masterbatches Global Head of Packaging, “and it is still only a beginning. We can recover – we must recover – much, much greater volumes and turn the vast amount of packaging waste into new raw material. To do that, we need to overcome major challenges around the capabilities of proper sorting of waste to produce a high-quality PCR [post-consumer recycle], and around issues related to coloration, stabilization, product safety and process stability. At Clariant, we are committed to bringing our knowledge in chemistry, applications and markets to bear on the problem.”

Clariant has begun establishing a dedicated team to understand these dynamics and reduce these risks, to remain at the forefront of products and technologies that increase the quality of PCR. Already, substantial resources are available in the form of new and existing additive and colorant technologies that include products that prevent damage or loss of performance properties during recycling and others that actually repair damage that inevitably occurs as polymers are processed, used and then reprocessed. Among those that prevent damage are:

- **Antioxidants** – The combination of heat and exposure to oxygen can cause plastics to lose mechanical properties or become discolored, and black spots can form. Any of these can render the material unsuitable for re-use. Clariant CESA®-nox antioxidants, added during PCR compounding or the production of new packaging made of recycled material, prevent these problems.
- **Processing Aids** – The melt behavior of PCR polymers differs from that of virgin material, which leads to a higher risk of build-up around the die, where it can degrade and become discolored. CESA-process additive masterbatches effectively reduce this effect and provide for smoother processing.

To heal or repair damage done to recycled resins, Clariant has developed several additives. Three examples operate on a molecular level:

- Chain Extenders – Condensation polymers like PET polyester are particularly susceptible to damage during recycling. Moisture, solvents and heat can cause polymer chains to break down, resulting in a loss of processability, molecular weight and important material properties. To succeed in high-value product applications, this degraded material needs to be repaired. When added during processing, CESA-extend re-links polymer chains that have broken due to degradation, restoring critical properties and making it easier to use recycled materials.
- Modifiers – Even if polymer chains cannot be completely repaired, these CESA-mod additive masterbatches reduce brittleness and increase impact strength enough to allow bottles and containers made of PCR to better meet top-load and drop-test standards.
- Color Correction – To overcome the color shift that occurs in recycled plastics, Clariant offers different solutions to meet customer needs: a family of PCR colors has been created to allow brand owners develop beautiful colors even when the recycled polymer has an undesirable color tone; other CESA additive masterbatches can compensate the yellowish color shift in transparent and translucent applications.

IMPROVED SORTATION

Sorting is a critical element in the drive to increase the volume plastics packaging that is recycled, and Clariant is helping. For instance:

- Detecting Dark Colors – Standard black plastic containers, colored with pigments that use carbon black, are currently very difficult to detect by sorting machines in recycling plants as they absorb the near infra-red (NIR) light used for sorting. Clariant's new CESA-IR masterbatches and alternative pigment systems allow black and dark-colored plastics to reflect NIR light, so they are visible to the sorting sensors.
- Marking Additives – Clariant is working to develop a new sort of taggant to improve the efficiency of the sortation process. The idea is to mark specific applications (e.g. HDPE caps) so that the material can be processed separately, retaining more of its value and potentially allowing it to be re-used in the same application.

“This is where we are focusing our greatest attention today.” says Mirco Groeseling, Global New Business Development Manager at Clariant, “We can provide a full portfolio CESA additive masterbatches, as well as RENOL® & REMAFIN® color solutions, to help overcome today's most critical recycling challenges. People can find out more by contacting us at recycle2gether@clariant.com”

Discover more on how Clariant is supporting a circular economy for plastics through sustainable innovations and collaborations. Meet Clariant leaders and partners at our “Symphony of Collaboration” K 2019 media event on Thursday October 17, 8:15am media breakfast followed by 9am press conference, Booth 8AJ11. Register on www.clariant.com/K2019 or by emailing Stefanie Nehlsen at stefanie.nehlsen@clariant.com.



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Clariant is a focused and innovative specialty chemical company, based in Muttenz near Basel/Switzerland. On 31 December 2018 the company employed a total workforce of 17 901. In the financial year 2018, Clariant recorded sales of CHF 6.623 billion for its continuing businesses. The company reports in four business areas: Care Chemicals, Catalysis, Natural Resources, and Plastics & Coatings. Clariant's corporate strategy is based on five pillars: focus on innovation and R&D, add value with sustainability, reposition portfolio, intensify growth, and increase profitability.

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