

CIRCSTAB STABILIZING RPET PERFORMANCE, MAXIMIZING CIRCULARITY

ADDRESSING PET RECYCLING CHALLENGES

Recycled PET (rPET) plays an essential role in the shift toward a circular economy, but repeated recycling cycles introduce material performance challenges. With each cycle, rPET deteriorates, resulting in loss of mechanical integrity and coloristic performance, and limiting its use in food-contact applications. To address these challenges and improve the quality of recycled PET, CircStab offers advanced stabilization during the recycling process. It enhances material quality, improves recyclability and preserves the structural integrity of rPET for future applications.

HOW CIRCSTAB WORKS

CircStab is a next-generation additive designed to prevent PET degradation during the recycling process. By stabilizing rPET, CircStab ensures excellent optical and mechanical properties, maintaining key performance parameters such as:

- ✓ L* – Preserves brightness for high-quality, clear rPET
- ✓ b* – Minimizes yellowing for better color consistency
- ✓ AA (Acetaldehyde) Levels – Reduced to further ensure safe and high-purity applications
- ✓ IV (Intrinsic Viscosity) – Prevents molecular degradation, boosting rPET strength and durability

BENEFITS



- ✓ Enhancing Aesthetics – Enabling brighter, clearer rPET
- ✓ Minimizing Toners - Reduces dependence on color neutralization toners, effectively increasing L* values
- ✓ Retaining Mechanical Properties – Retains strength and flexibility over multiple recycling cycles
- ✓ Optimizing Processing Efficiency – Optimizes industrial-scale PET recycling, significantly reducing SSP times and increasing line throughput
- ✓ Sustainability Boost – Supports a circular economy by increasing the quality and re-usability of rPET
- ✓ Regulatory Compliance – Meets stringent industry regulations, ensuring safe and compliant use in PET recycling

UP TO

10%
INCREASE

of intrinsic viscosity after melt extrusion and LSP & SSP*

UP TO

20%
REDUCTION

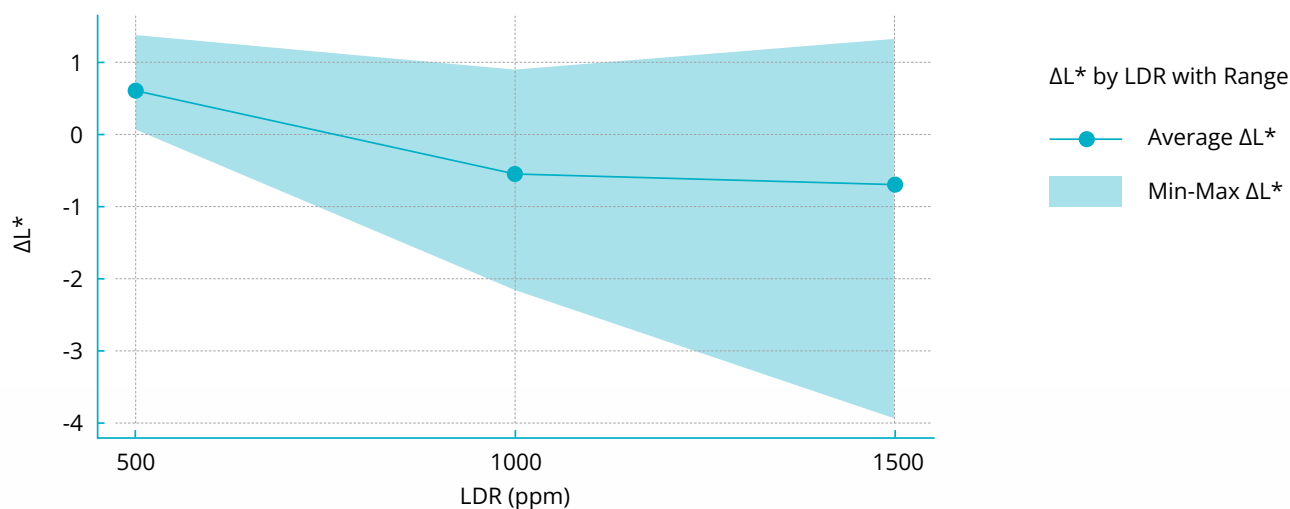
of acetaldehyde after melt extrusion*

*compared to the reference material without the additive

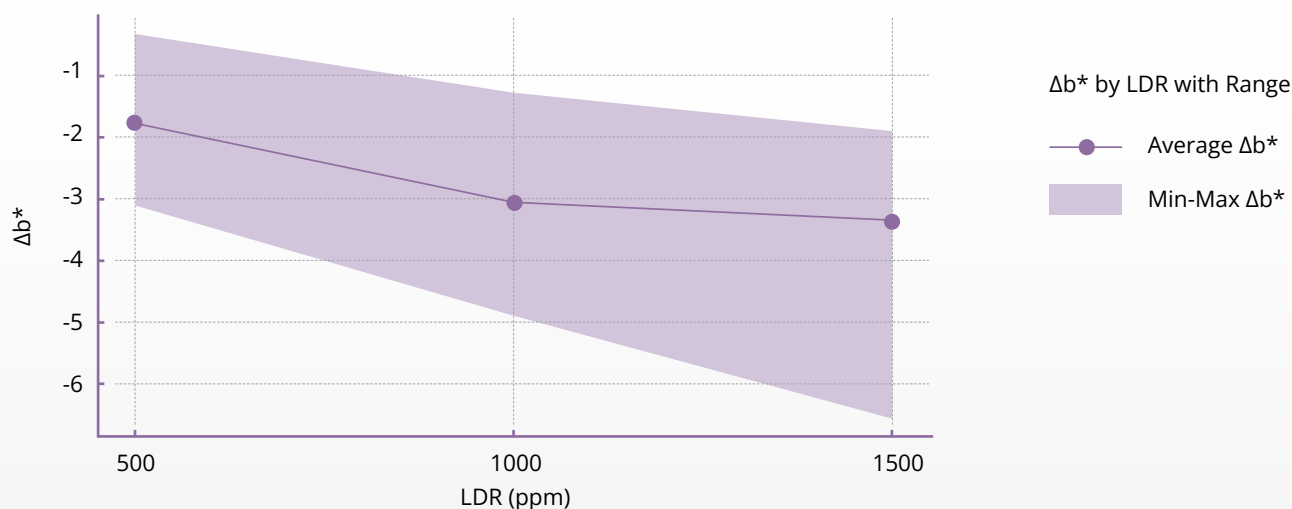
TECHNICAL DATA

Looking at increasing dosing levels of CircStab some interesting positive trends are visible versus control rPET material without CircStab.

Below graph shows the spread in combined ΔL^* values versus the control without CircStab of multiple trials for 3 dosing levels (500, 1000 and 1500 ppm). Low dosing levels in general show an increase in L^* or close to neutral results. Higher dosing levels can show a decrease depending on source rPET material.



For the Δb^* , the trend is always towards the blue with less yellowing. b^* values reduce with increasing dosing levels of CircStab. Below graph shows the spread in values over multiple trials.



Overall when using either a Solid State Polycondensation (SSP) or Liquid State Polycondensation (LSP) reactor, CircStab showed a near stable L^* value for the lower dosing levels and a clear reduction of b^* value, versus the non-stabilized control rPET for all dosing levels.

The above data is representative of addition of CircStab to rPET in an SSP and LSP process. Actual CIELab color performance can be different as a result of rPET flake quality and process conditions.

UNLOCK THE FULL POTENTIAL OF RPET WITH CIRCSTAB

By integrating CircStab into your PET recycling process, you can enhance the quality of recycled PET, improve recycling efficiency, and reduce reliance on virgin materials. CircStab ensures that recycled PET is not only high-quality but also suitable for a broader range of high-performance applications. We provide on-site technical service with advanced dosing solutions, allowing precise and efficient additive integration to give you peace of mind.

At Holland Colours, we provide solutions that help the industry innovate, adapt, and move closer to a circular economy. Through innovation, we're shaping a more sustainable future for packaging, driving the journey toward sustainability and circularity.



FIND OUT MORE

Contact our sales people about purchasing quantities and deliveries or our technical experts for questions about our technology and its implementation:

AMERICAS: richmond@hollandcolours.com | +1 765 935 0329

ASIA: surabaya@hollandcolours.com | +62 31 849 3939

EUROPE: info@hollandcolours.com | +31 (0)55 36 80 700



www.hollandcolours.com



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