



CASE STUDY

PLA-Premium
W 721-C

Technology:
Injection-blow moulding

Application:
Bottle for cosmetics

“PLA-Premium substitutes PET quality with no extra processing costs”

ADBIOPLASTICS helped a rigid plastic packaging manufacturer to introduce more sustainable biobased and compostable packaging in its portfolio, while keeping PET conventional plastic processing costs, quality performance, and existing injection-blow moulding line. By processing the bottle with PLA-Premium W 721-C grade in conventional equipment the customer could achieve a similar performance in processing, time cycle, volume yield and quality while keeping similar transparency, and improving the engravings.

CHALLENGE Our customer was a relevant manufacturer of rigid plastic packaging with two production sites in Spain addressing domestic and international food and cosmetic markets. The company’s staff was aiming at offering its portfolio of customers biobased and compostable material alternatives, such as PLA based bioplastic, but processing specialist was reluctant to try it because of former bad processing experience with them.

SOLUTION The reference product selected by the manufacturer for trial was a PET 400 ml transparent bottle with thread (Weight 32 g, Diameter 58 mm, Height 186 mm, Thickness: 0.4-0.6 mm), presenting some challenge in terms of design like thread and shoulder design, bottom logo engravings, and in terms of processing like time of cycle, temperature, etc. Our technical team previously reviewed the customer’s PET reference grade and discussed with the manufacturer’s staff current PET processing conditions to reduce risks perception, align with existing equipment possibilities, and ensure a successful trial of PLA-Premium bottle. PLA-Premium W 721-C grade was suggested as the most suitable within its range by our technical team to face the challenge. Equipment could be easily fine-tuned by the customer along the first trial. Immediate very good look bottle results were confirmed on-site.

RESULT Test and samples’ results were considered by the packaging manufacturer as satisfactory and deserved to be shown by the commercial area to sound the interest among customers

HIGHLIGHTS

- **No need of new investment:** It can be processed on the **same machine as PET** by changing processing parameters.
- Very competitive cycle time: the **cycle can be lowered 4 seconds up to 21 seconds**, compared to the 25 second reference. It does not make a difference with PET.
- Volume savings: each packaging unit requires **less than 10% of material, than with PET**. The PLA bottle weight is less (29g) than PET (32g) despite higher PLA density ($1.2g / cm^3$)
- The shape of the container is similar and even makes it possible to **better highlight the shoulders and the engravings** on the base. The **thread works fine**.
- The **transparency is similar**: with regard to pure PLA or PET. It can be improved with longest tested cycle time (25 seconds), but will not be relevant for coloured packaging.
- **Good freefall drop resistance:** PLA-Premium filled bottle shown resistance up to 1,5 m height when simulating shipment and handling realistic conditions.