



CASE STUDY

PLA-Premium	Technology:	Application:
Z 324-C	Injection moulding	Cosmetic jar

“PLA-Premium performs as original plastic in jar keeping cosmetic self-life”

ADBIOPLASTICS helped a manufacturer of rigid plastic packaging to introduce a more sustainable biobased and compostable packaging in its portfolio of jars applications for personal care cosmetics. While keeping not only original plastic processing costs, quality performance, and existing injection-moulding line and mould, but also the product shelf life.

CHALLENGE Our customer was a relevant manufacturer of injection/mould rigid plastic packaging with a production site in Spain addressing domestic and international food and cosmetic markets. The company’s staff was aiming at checking compostable material alternatives performance, such as PLA bioplastic. A robust PP thick wall transparent and opaque jar was searched for the trials, besides the requirement of more than 6 month-long shelf-life of the cosmetic product.

SOLUTION In partnership with the manufacturer, and under its technical counselling, an ideal form for the jars was developed. The thickness and dimension of both the jar and the screwcap should be adequate to satisfy the product shelf-life requisite while providing robust packaging. The jar’s main characteristics were: Weight 54 g, Diameters 57 mm/ 35 mm, Height 48 mm width range: 2 to 8 mm) and presented some challenges in terms of design like thread and screwcap. ADBIOPLASTICS suggested a highly additivated PLA-Premium grade as a crucial factor to grant a long shelf-life of the product for that would improve the barrier properties even further. Equipment could be easily fine-tuned by the manufacturer along with the trial. Immediate very good look jar results were confirmed on-site.

RESULT The PLA-Premium material maintained roughly the same thermal and physical-mechanical properties than the original plastic. Besides, it was shown empirically how the resulting jar was comparable to reference ones in terms of shelf-life. No appreciable colour changes of the cosmetic product upon prolonged exposure were found when compared with the original PP container by spectrophotometry.

- HIGHLIGHTS**
- **No need for new investment:** Jar could be processed on the **same industrial equipment**.
 - The shape of the container is similar. The **thread and closure worked fine**.
 - The **transparency was acceptable:** with regard to pure PLA.
 - PLA-Premium makes the jar **more shock resistant** compared with pure PLA.
 - Barrier properties improvement: PLA-Premium **OTR and WVTR permeability values enhance by 40 % and 10 % if compared with pure PLA**.