



CASE STUDY

PLA-Premium
Y 013

Technology:
Mould injection

Application:
Cap plug threads

“PLA-Premium shows similar injection and processing conditions than PP”

ADBIOPLASTICS helped a manufacturer of cosmetic and fragrance bottle’s plug treads to introduce more quality performing PLA-Premium biodegradable reference in its portfolio, keeping mould, cycles, etc.

CHALLENGE	Our customer was a manufacturer of bottle caps’ technical part (plug tread) with a production site in Spain addressing domestic and international markets in the cosmetic and fragrance sectors. They manufacture millions of units per year of the reference according to different plug-screw combinations (wood-plastic, aluminium-plastic, plastic-plastic). After a few unsuccessful attempts with non-additivated pure PLA bioplastic, the company’s staff was aiming at offering its portfolio of customers an enhanced biobased and compostable material, that will work well technically.
SOLUTION	The product selected by the manufacturer for trial was a PP referenced cap which is employed in the internal plastic thread part that is embedded in the decorative cap/plug (wood, metal, plastic, etc.) employed in fragrance bottles. That presented some challenge in terms of design and processing like time of cycle, temperature, finishes, etc. Our technical team previously reviewed the customer’s PP reference grade and discussed with the manufacturer’s staff current processing conditions to align them with existing equipment possibilities. To ensure a successful trial of PLA-Premium, PLA-Premium Y 013 grade was suggested as the most suitable to face the challenge. Equipment could be easily fine-tuned by the customer along the trial. Very good look results were confirmed.
RESULT	The result of the test and the pre-series samples were considered by the customer as satisfactory. According to customer’s background experience only a few bio-based resin options have performed well, highlighting PLA-Premium value proposition with regards to pure PLA. The processing conditions were like those of PP cap tread production, showing a good demoulding of the piece and the sealing of the cap was suitable. In fact, compared with PP option, the PLA-Premium material achieved to get a compromise between stiffness-flexibility and tensile / torque (1.73 N.m) thus being in the proper range (1.30-1.90 N.m). That was comparable with the PP traction as well. Finally, the piece was adopted as valid as also joined very well with decorative cap (e.g. wood) thanks to good performance of the grooves of the thread.
HIGHLIGHTS	<ul style="list-style-type: none"> ● No need of new investment: It can be processed on the same equipment as PP by changing processing parameters. ● The shape, finishing and technical performance of the piece is like PP version, shrinkage and thickness variation, cycle time and demoulding is not an issue. ● Solution is highly bio-based, biodegradable, food contact/ cosmetic and REACH compliant according to customer requisites