Target

The target was to create a bottle shape for ketchup capable to withstand a hot filling process being a cost effective alternative to aspeptic filling. Major brands as Heinz has recently put their ketchup in PET bottles with the aid of oxygen scavengers and filled in aseptic. Aseptic is recognised as an expensive process due to the very strict CIP (Clear in Place) procedures because the growth of microorganisms at room temperature is very high and high is also the risk of contamination. The bottling line has to be manufactured in order to avoid dead spots and must be made of polished stainless steel (eg. AISI 316) meaning that the surface must be smooth. All of these precautions increase very much the cost of the plant and its maintenance in comparison to almost standard hot fill process.

Challenges & Development

- Hot fillable ketchup bottles created by SIPA withstands the cooling of the product with related volume reduction and partial vacuum. Normally, with classical long neck bottle shape, when the bottle collapses, the label becomes partly or completely unstuck.
- FEM Analysis shows that the bottle designed by SIPA does not deform with hot filling process and stays in shape afterwards, preventing “label crinkling” (unsticking of label).

FEM Analysis
Squeezable Hot-filled ketchup bottles

Results & Packaging Features

First test: multilayer APP preform (30g)
1. No delamination
2. Resisted to ketchup filling temperature (85°C + 2°C)
3. Panel behaved as forseen in FEM analysis

Second test: Blend (PET + oxygen scavenger) + preform dwg 28g
1. No delamination
2. Resisted to filling temperature
3. Behaved as forseen in FEM analysis
4. Field experiment

- Weight: 28-30g
- Dimensions:
  - Height = 171mm
  - Max Diameter = 79mm
  - Min Diameter = 57mm
- Volume: 500mL
- Neck Finish: 38mm
- Filling Temperature: 85°C ± 2°C

Advantages

This packaging gives you the following advantages:

- Cost effective alternative to aseptic packaging
- 12 months shelf life with oxygen scavengers
- Attractive design
- Standard labelling
- Squeezable bottles
- Do not deform during hot-filling process
- No label crinkling (un-sticking of label)
- Can be produced at high output with a rotary blowmolding machine equipped for hot-fill process.

For further information on this packaging, contact Dino Zanette: dino.zanette@zoppas.com