

PET containers for Detergents

Product description & requirements

Detergent refers to mixtures of chemical compounds with cleaning properties in diluted solution. Household chemicals are used to assist cleaning and general hygiene purpose. In household contexts, detergents refers to laundry and dish detergents; also hand soap is included. Detergents may be in any form: liquid, powder, paste, bar, cake, moulded piece, shape etc. and they are composed of core components such as: surfactants, chelants and buffer; performance additives such as bleach, polymer and enzymes and ingredients such as perfume and brighteners. In fact some of the performance additives and aesthetic ingredients are sensible to UV light and need to be protected.

Target

The target was to replace other plastic containers with more modern, eye-catching design and lighter, more flexible PET containers. Higher productivity, lower raw-material cost, better neck-finish definition, better safety are some other advantages of using PET.

Development & challenges

PET results to be chemically compatible with most detergents (it depends on composition , pH, polar components, ion concentration, preservatives, fragrances, stabilizers, coloring, etc).

The shapes of the bottles were to be modern but similar to those produced with HDPE, being also lighter in weight. Challenges are to create an asymmetrical bottle, oval shaped bottles; special design with ribs, handle, pattern or texture are some of the other challenges. To permit to obtain suitable container, attention on design has to be taken: edge, boundary, side, overall dimensions, embedded or embossed details, base design.



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Results & Packaging Features

The new PET bottles are transparent allowing the consumer to see the content. For this reason UV-barrier additives need to be added in order to protect the detergent from color variations. In some cases even the trigger cap was to be applied.



Weight: 27g
Volume: 450ml
Color: clear
Dimensions:
 Height = 189mm
 Width = 92mm
 Depth = 53mm
Neck Finish: 28mm



Weight: 43g
Volume: 16.48oz
Color: black, white, green
Dimensions:
 Height = 218mm
 Width = 98.3mm
 Depth = 47.4mm
Neck Finish: 28mm



Weight: 45g
Volume: 1000ml
Color: clear
Dimensions:
 Height = 237.5mm
 Width = 109mm
 Depth = 87mm
Neck Finish: 28mm

Advantages

This packaging gives you the following advantages:

- Different design available with respect to HDPE, PP, PVC containers;
- Transparent, no opalescence as HDPE or PP;
- Clearness, brightening as glass;
- Brilliant colors: clear or easy to be colored with additives;
- Unbreakable, drop resistant;
- Good resistance to chemicals;
- Safer, good sealing;
- ECS SP, SFL or also SFR are SIPA available machines for this application.

Machine for PET asymmetrical containers

Machine Features

All these special shaped container could be made by SIPA one-step machine, ECS and ECS SP. **Preforms for oval-shaped bottles get preferential heating treatment on 2-step machines.** High speed production of asymmetric containers with uniform wall thickness is possible with the use of preferential heating on **SIPA's SFL and SFR**, linear and rotary stretch-blow molding systems. Bottles for such applications as detergents have often non-round shapes, while numerous containers for household have integral handles to make it easier to be used with sprays. All of this products are of course created from circular preforms. Blowing a symmetrical preform into an asymmetrical bottle is very challenging; SIPA offers Preferential Heating, which is ideal when the ratio between the large and the small sides of a container is greater than 2:1.



Preform features

Neck

Height h_c = 10mm MIN – 24,6 mm MAX

Diameter D_c = 38mm MAX

Neck ring = 44 mm MAX and ≥ 4 mm tempering ring

Body

Height h_p = 50mm MIN - 150mm MAX

Diameter D_P = 18mm MIN - 38mm MAX

Container features:

MAX diameter: 125 mm

MAX height (neck excluded): 349 mm



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Machine features

SIPA Rotary Stretch-Blowmolders with Preferential Heating Option: on going project.

This machine is designed for oval and asymmetrical containers ($L/W > 2$), for different applications: detergents, household chemicals, personal care, salad dressing, squeezable sauce, etc

SFR 6 cavities:

- Max. output for oval containers 1700 BCH (mechanical speed remains unchanged at 2250 BCH for std. bottles);
- Continuous preform feeding system by star wheel;
- Quick-change spindles;
- 7 standard SIPA re-heating ovens where preform rotates;
- 2 preferential heating (PH) ovens;
- Patented SIPA laminar ventilation controlled by inverters;
- Electrical stretching;
- Bored stretch rods for internal container cooling by flushed air.



SFR ovens:

- Proven technology: same preferential ovens as SFL machines, positioned after the penetration ovens;
- IR lamps on both sides of the ovens;
- Power of lamps can be individually set;
- Preform is not rotating inside preferential heating ovens;
- 2 pyrometers allow temperature regulation both on standard and PH ovens with possibility to choose the automatic feedback on one of the two.

