

Requisitos del Packaging



FIUBA

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¿Que le pedimos al pack?



¿Quién pide?

- Usuario / cliente
- Repositor
- Camionero
- Operario
- Línea de envasado
- Fabricante del pack
- La tierra
- La sociedad -> Estado
-



¿Qué piden/pedimos?

- Que sea fácil de usar
- Que no se rompa mientras lo llevo a casa
- Que sea estético/lindo
- Que tenga un segundo uso.....
- Que entre en la góndola
- Que no se rompa
- Que se pueda apilar
- Que no se dañe
- Que entre en el camión y no me quede espacio vacío
- Que sea fácil de manipular
- Que se pueda poner en línea con simpleza
- Que no se trabe en línea
- Que no se dañe durante el envasado
- Que sea de materiales accesibles en el mercado
-

No todo es lo que parece...



¿La tapita ganadora también es packaging?



Requisitos funcionales y de mercado





Proteger



Función por Producto



Y legales → el claim es el envase



Dispensar



Dispensar



ANEW CLINICAL

Dile adiós a las
ARRUGAS PUNTUALES

LÁPIZ PUNTUAL

NUEVO!

- **En 4 semanas**

Rehena las arrugas ubicadas en las zonas más difíciles de combatir, con Ácido Hialurónico.

Aplicalo por las mañanas en las zonas del entrecejo, la frente, las mejillas y la comisura de los labios.

La piel lucirá notablemente más joven.



37376-8
Anew Clinical Derma-Full Pro
Concentrate Gel Facial Electro
Rellenador 4.2 g
Precio Regular S/.110.00
S.59.90

82 • Cuidado de la Piel

Facilitador de uso, mejora experiencia, no es claim

Dispensar



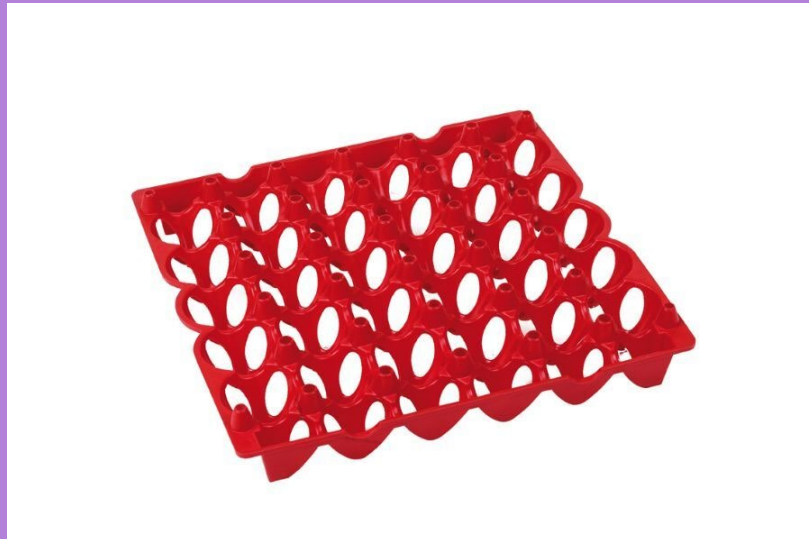
Preservación de producto, bomba de vacío y mezcla de gránulos al salir, no solubles, solubles

Conservar



Proteccion UV + oxigeno, test de exposicion a rayos uv

Transportar cuesta uno o más





Para que se transporten por docena se colocan en cajas de corrugado



Transit Test



Preservar



VS



Compatibilidad, migración de producto, **barrera**

Contener



VS



Compatibilidad, migración de producto, **barrera**

Contener



Resistencia a la decoración, muestras físicas

Funciones → Requisitos:

- Contener & Transportar
- Proteger & Conservar
- Dispensar

- Comunicar
- Legales "be compliat"

Experiencia de Usuario

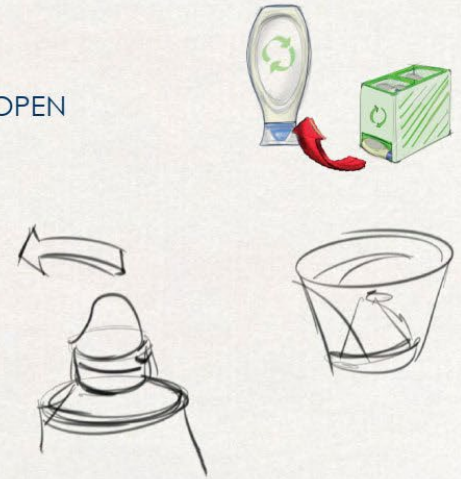
1 PURCHASE



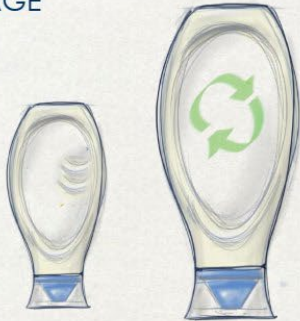
2 STORAGE



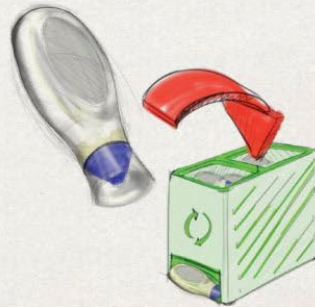
3 OPEN



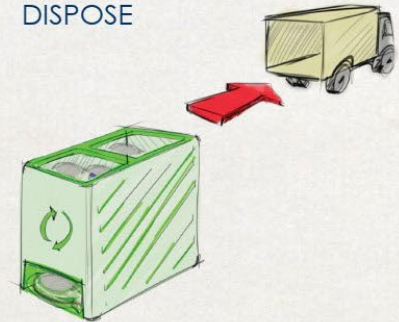
4 USAGE



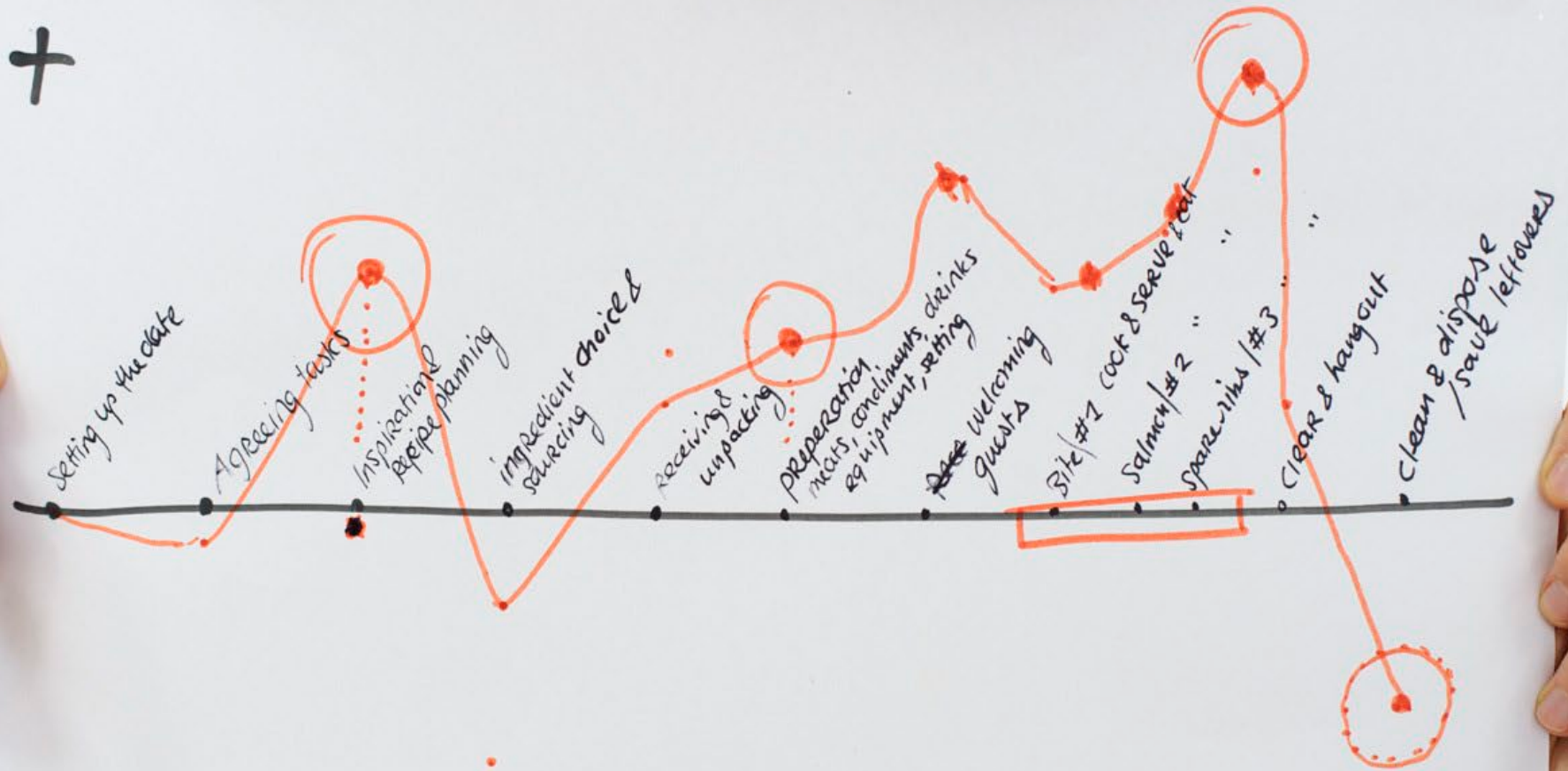
5 REPLACE



6 DISPOSE



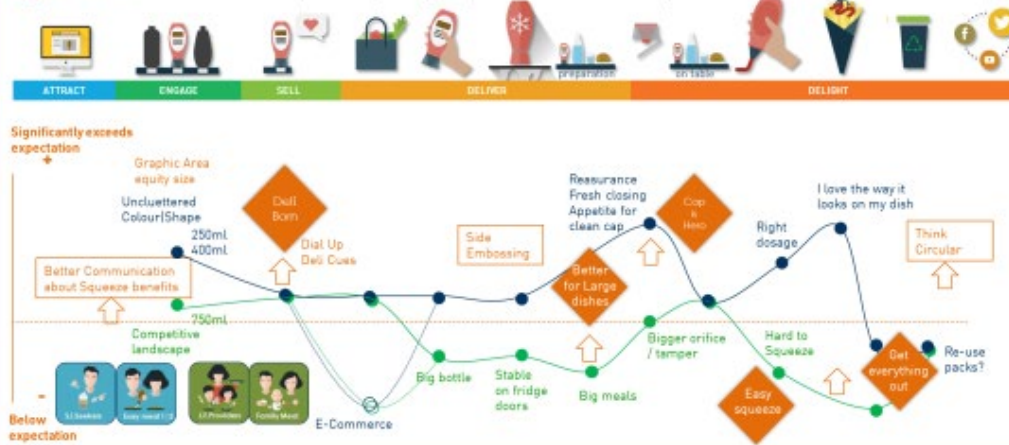
Mapa de Experiencia



Brief

THE SQUEEZE EXPERIENCE MAP

Key Moments: Where in the total experience journey can you deliver true value to your consumer?



THE DELI SQUEEZE EXPERIENCE WITH ON PAR FUNCTIONALITY TO MARCO POLO

Touch and Feel: Less industrial "Plasticky" more Deli Transparency/translucency Embossing | Tactile haptics | Sustainable

Dial up Deli and brand trust Family heritage

Nice overall shape Ergonomically (convex)

Looks nice on my table

& fridge **STABLE**

No hazard for kids **Robust** no break

Show the product inside See how much is left. No coloured bottles but disguise the ugly look by texture or haze

Directed Nozzle = control

No spluttering

Perfect Dosing!! (quantity)

perfect mayo beam

"I Love how it looks on my dish"

DELI

Make the top attractive.

Easy to navigate
Simple to read

Quick and Easy to USE

Nice to hold and handle

Easy squeezing across range

Avoid permanent deformation

Easy to open

(intuitive)

Tamper

CLICKS for

Reassurance

No mess

Clean = Hygienic = Fresh
= Transparent

1 colour for all brands and condiments (Transparent?)

Easy evacuation

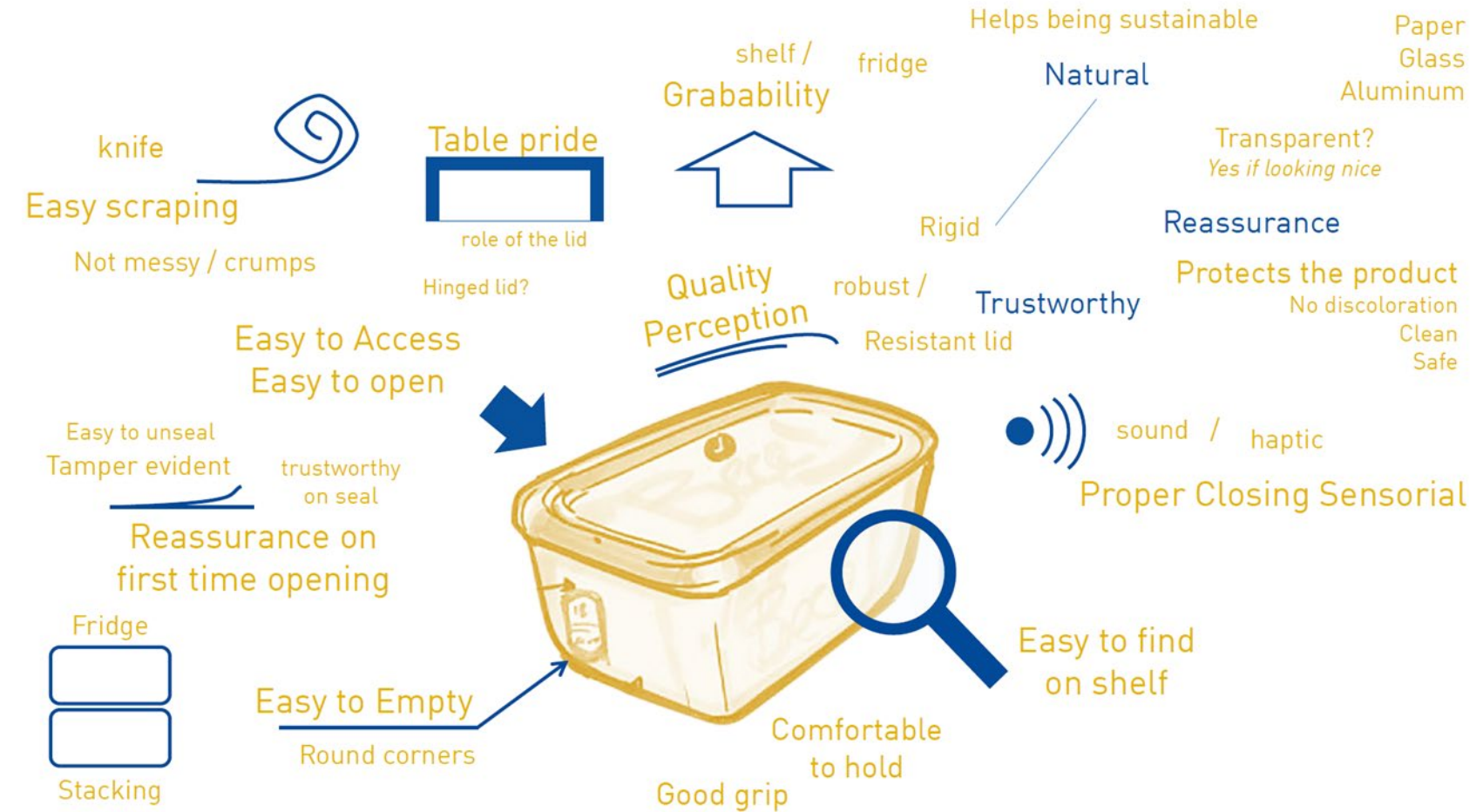
Also after 50%, no bumping on table

"Full" evacuation

Easy to get big portions for cooking



Requisitos funcionales y emocionales



Elemento → función

Mouth: The opening of plastic bottles. Generally, plastic jars has the wide mouth.

Neck Finish: The screw-threaded part of the bottles that holds the cap or closure in place. It is usually expressed as two reference numbers such as 24-410, the first number 24 refers to the overall diameter in millimeters, and the second number 410 refers to the thread size.

Shoulder: The area between the top of the body and bottom of the neck.

Wall: The thickness of the plastic containers measured at the side. It varies on the basis of the manufacturing process and original materials.

Seat: The indentations under the base that allow the filling or decorating equipment lines to align the bottles for optimum results.

Overflow capability: The max volume when a containers full filled to the very top.

Threads: The twisted spiral on neck finish to match the corresponding cap or closure. It is very important to the sealability of the plastic bottle.

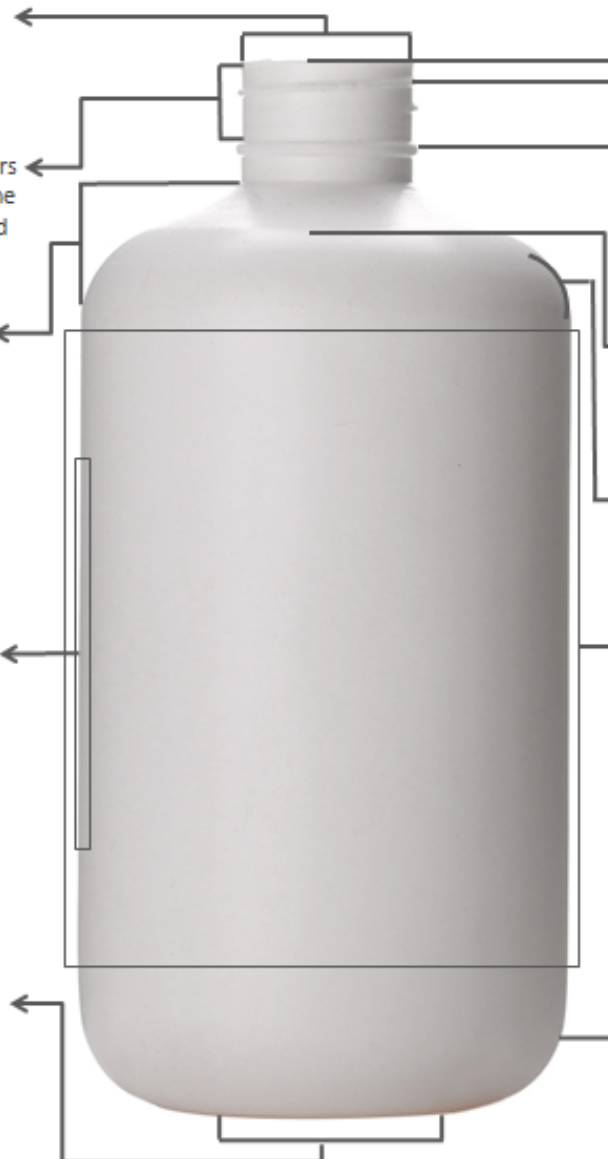
Bead: The collar beneath the neck where the cap or closure rests.

Standard Capacity: The normal volume when plastic bottles filled with contents up to the shoulder area.

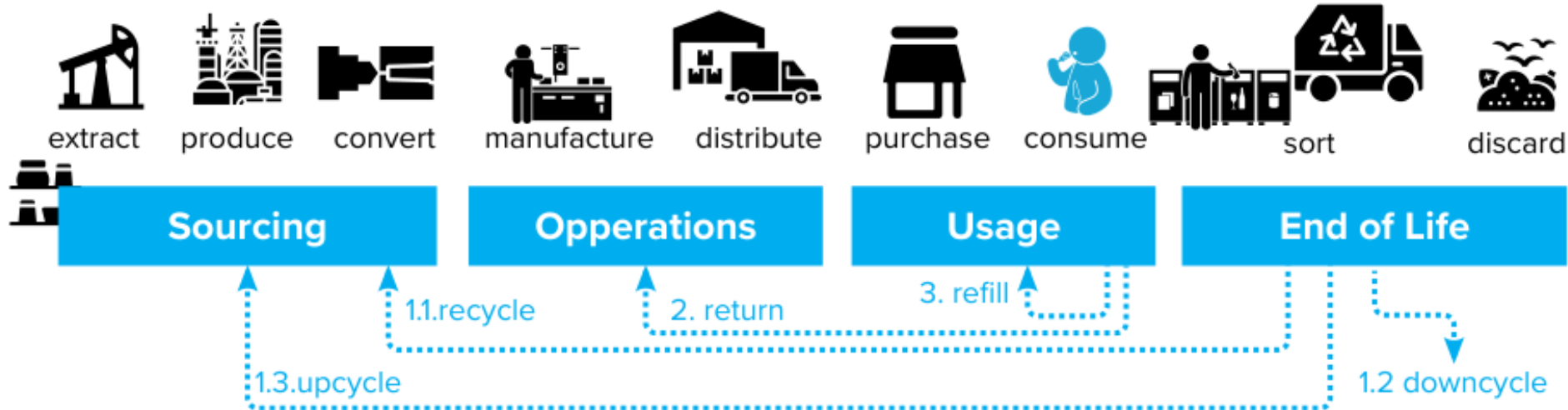
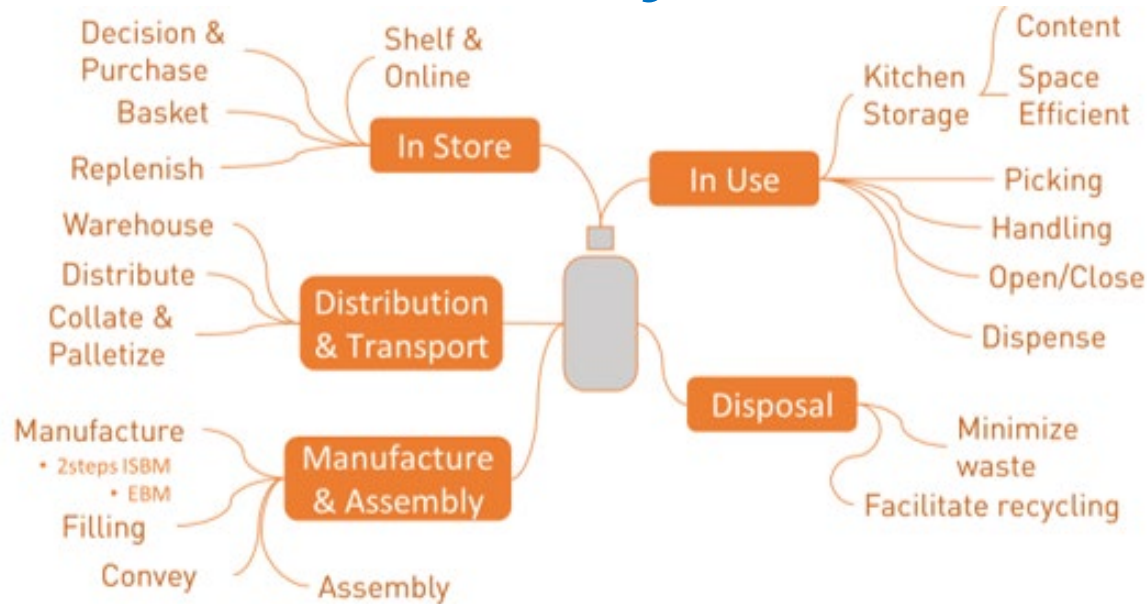
R Angle: The vector angle on shoulder which determines the shape of the shoulder. Such as cylinder plastic bottle, the R angle on shoulder is 90 degree.

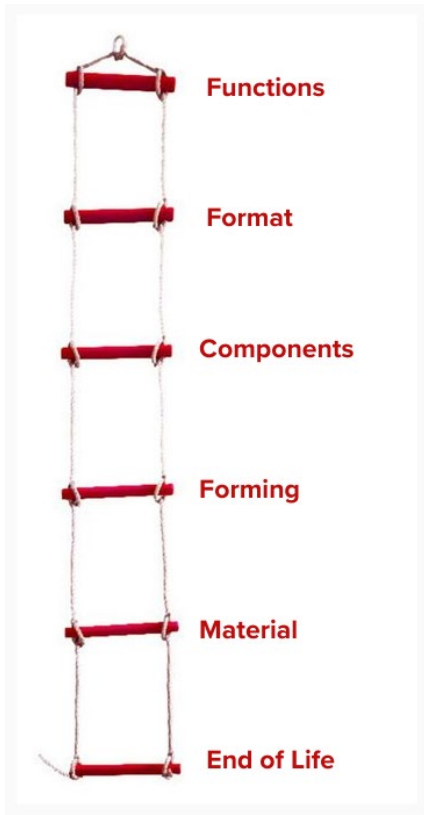
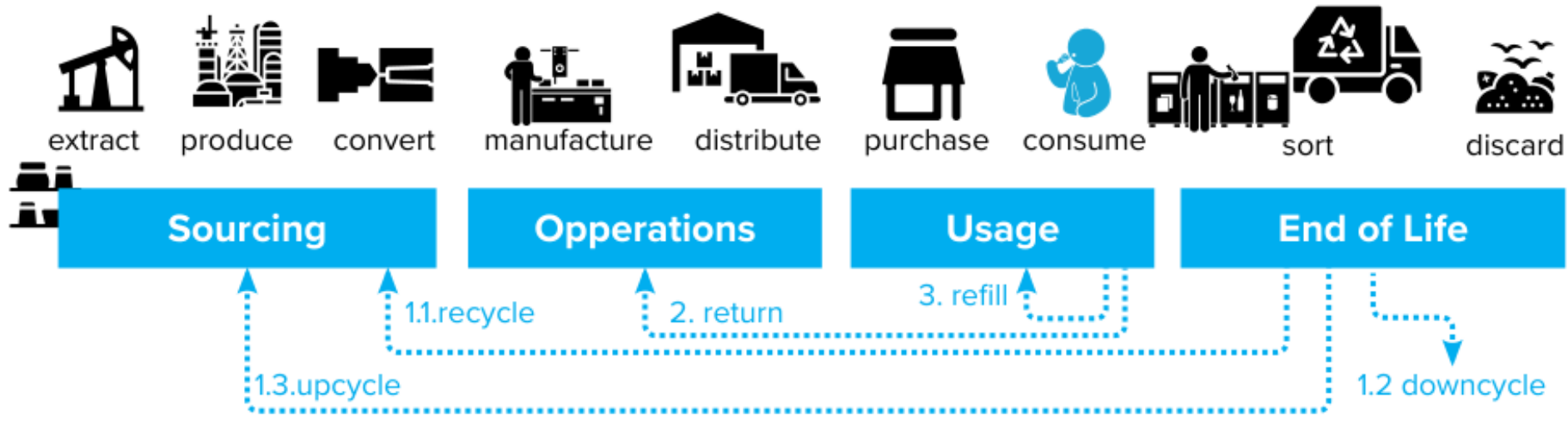
Label Panel: The body part where labels or printings can be applied.

Base: The bottom part of the plastic bottle where recycling codes, material mark or other decorations can be applied. Plastic bottles can stand stably on the shelf with base.

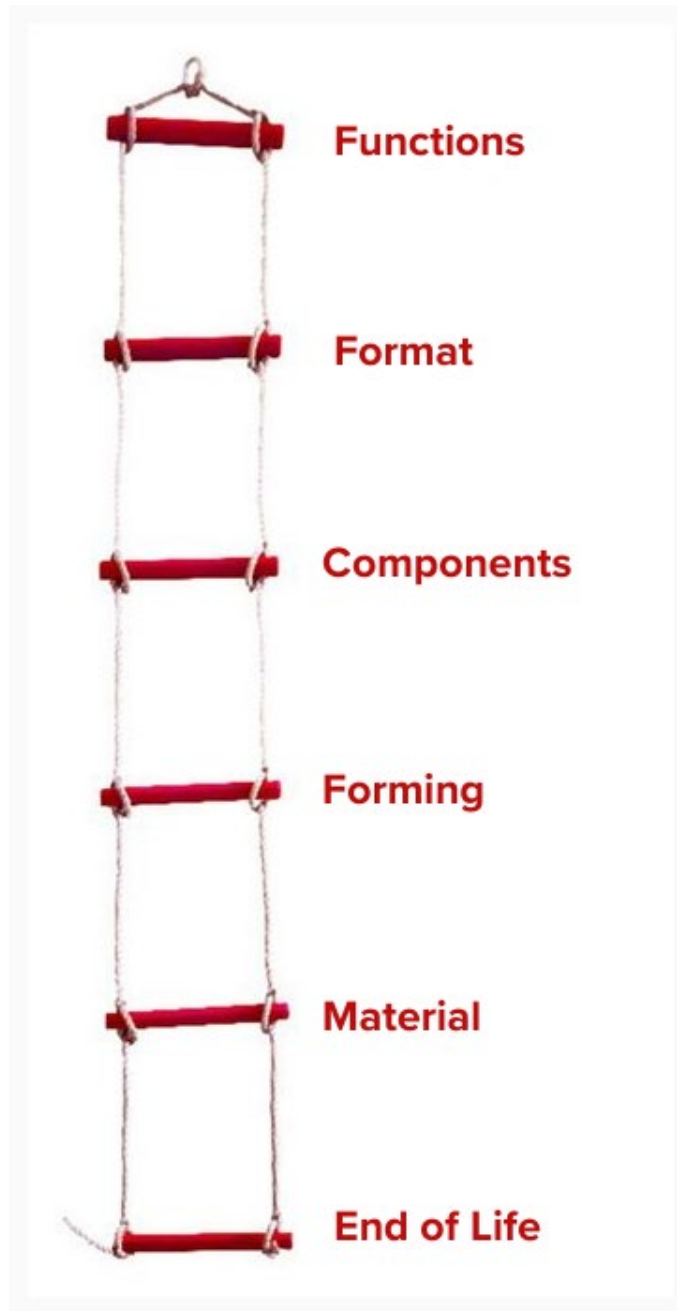


Requisitos funcionales y emocionales





Conectados

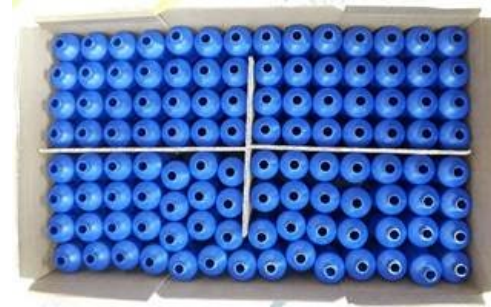


Requerimientos y ensayos

Ensayos logísticos
Transito y caída



Despacho / recepción

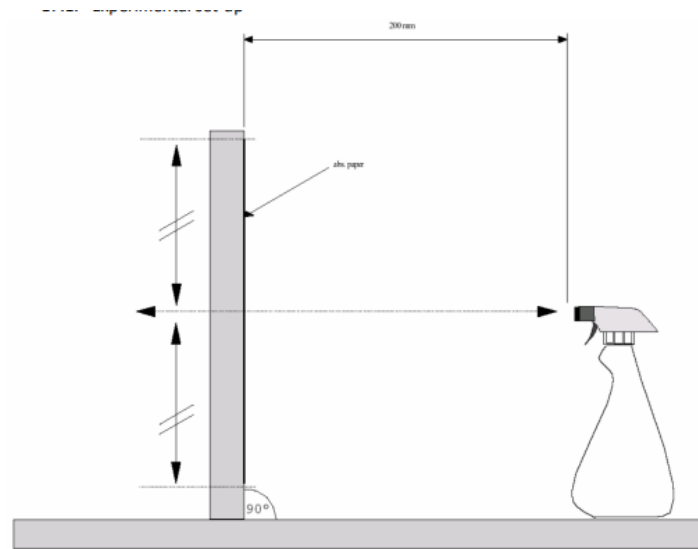


Uso / Riesgo

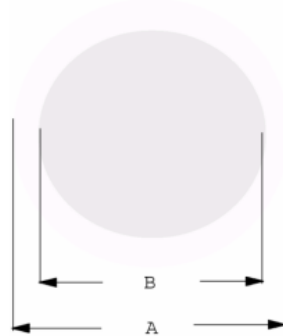


Ensayo de llama

atomización

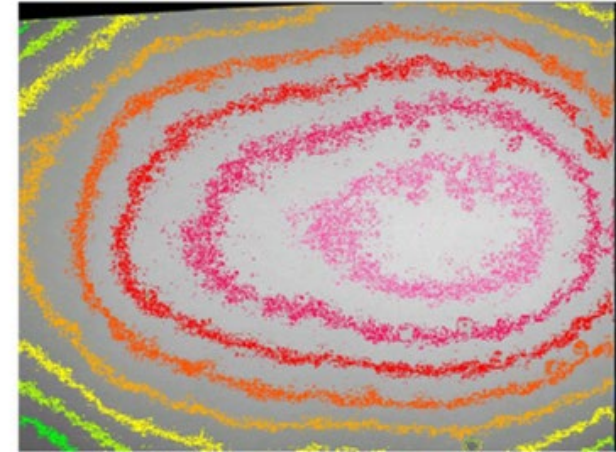


17.2. Example spray area

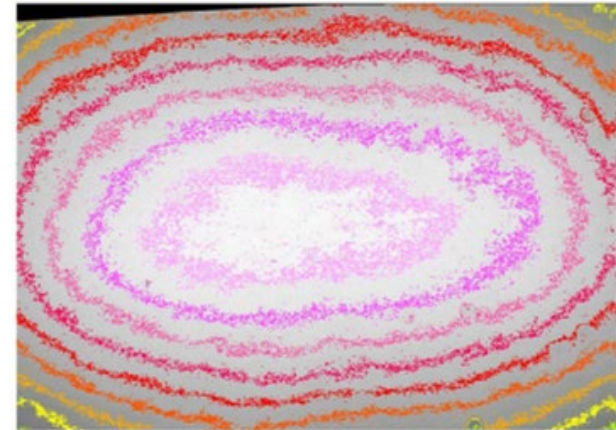


Maximum dimension of the spray pattern = length and width of area A
The dimension of spray pattern where the density of product distribution is homoger = length and width area B

Bad Pattern:



Good Pattern:



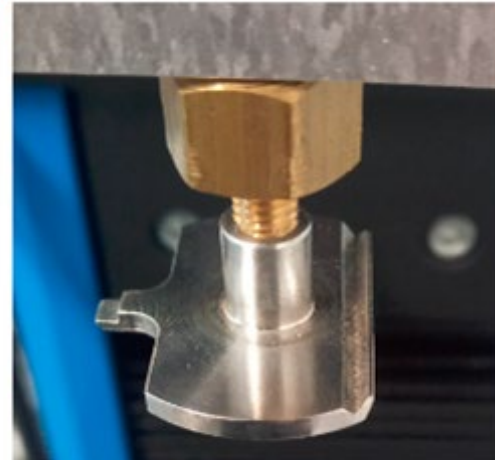
apertura



* Speed: 33 mm/min

* Metal device should touch the wall of the cap (standardization of the test)

* Apply the cap until the stopper on the PET neck finish



Torque



Que mantenga torque

1. Después del transito
2. Después de un golpe
3. Días calurosos
4. Ante variaciones de presión

Estructurales

Resistencia a la compresión

Estando vacío

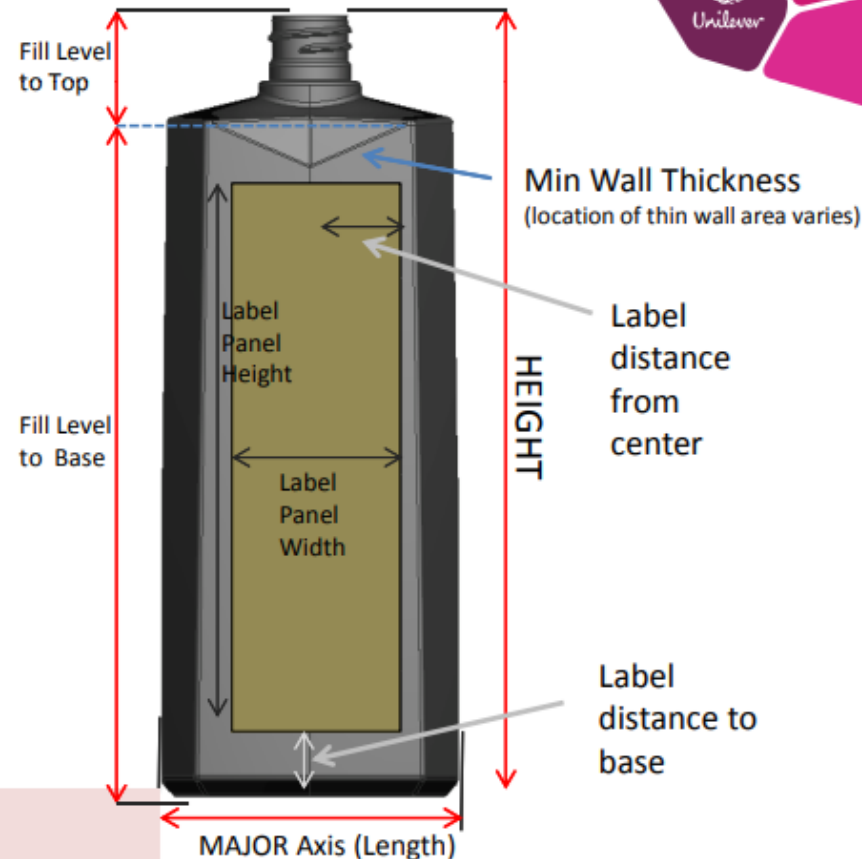
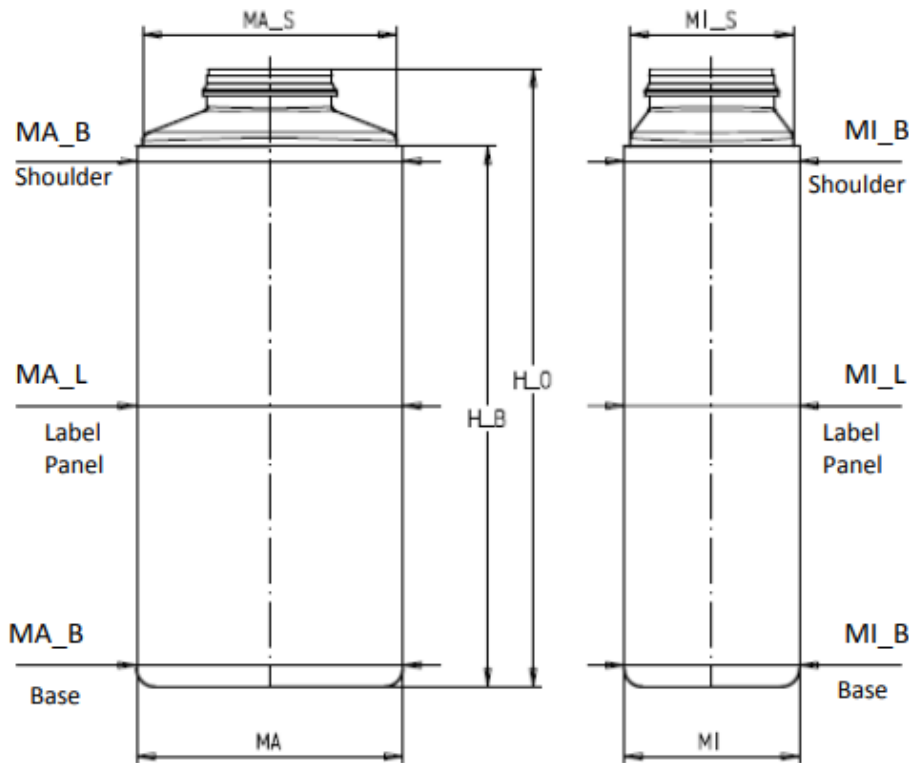
Estando lleno



Top Load



G-Bottle Plastic; Main Bottle Dims without Neck



- H_O Overall Height
- H_B Body Height
- MA_L Major Axis Label Panel (could be same as MA_B, depends on shape)
- MA_B Major Axis Bottle (symmetrical bottles = same at base & shoulder)
- MA_H Major Axis Housing (For bottle fit to SC requirement or a housing assembly/bracket. Not commonly specified.)
- MI_L Minor Axis Label Panel (could be same as MI_B, depends on shape)
- MI_B Minor Axis Bottle (symmetrical bottles = same at base and shoulder)
- MI_H Minor Axis Housing (For bottle fit to SC requirement or a housing assembly/bracket. Not commonly specified.)
- Diameter (Used for cylindrical bottles. Not shown)

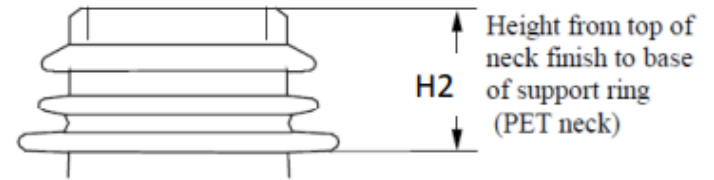
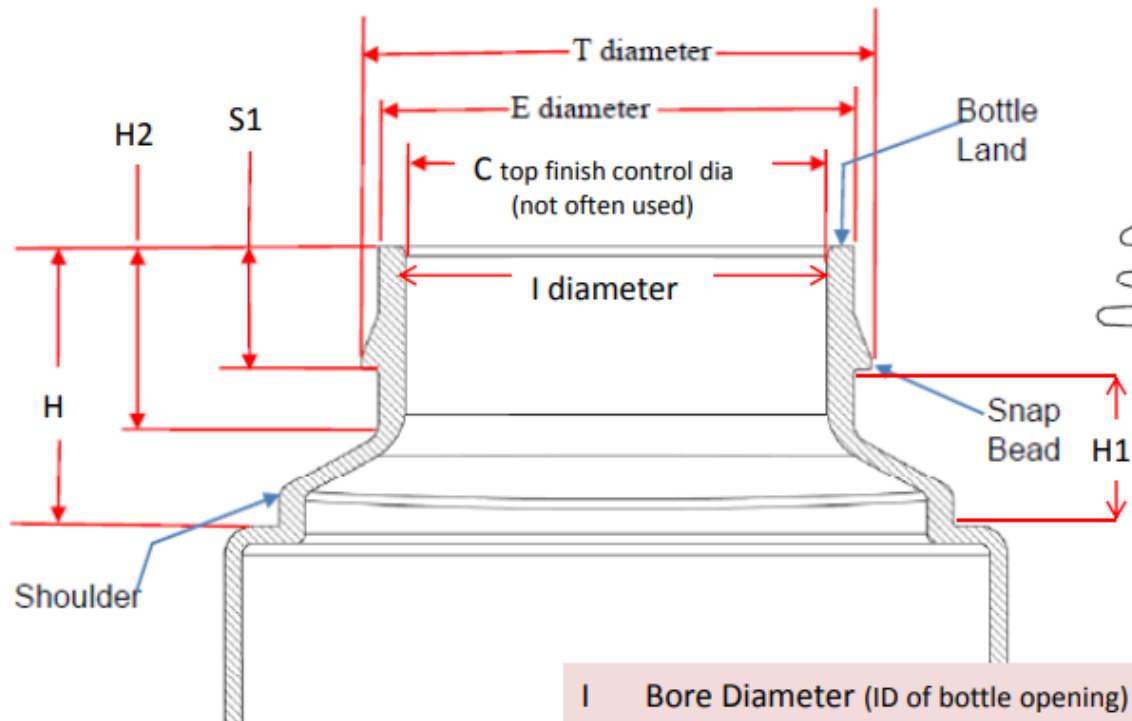


Estanqueidad

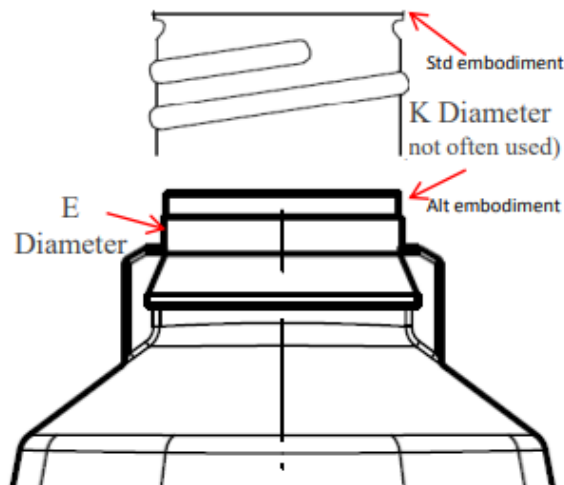
Que sea hermético



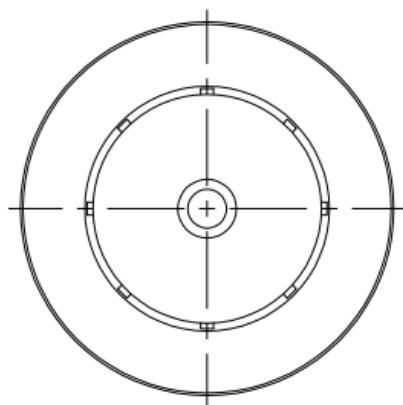
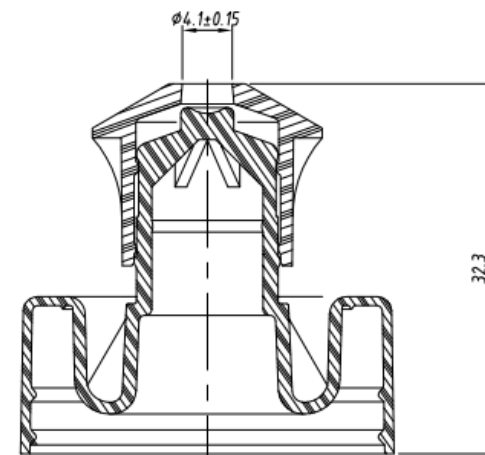
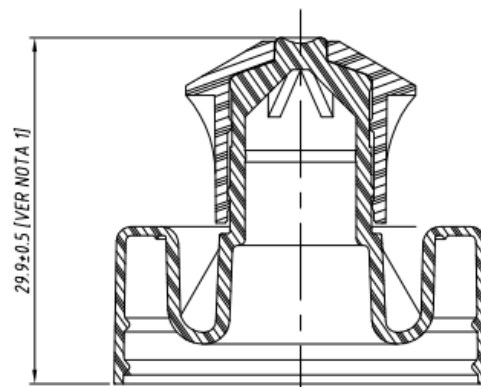
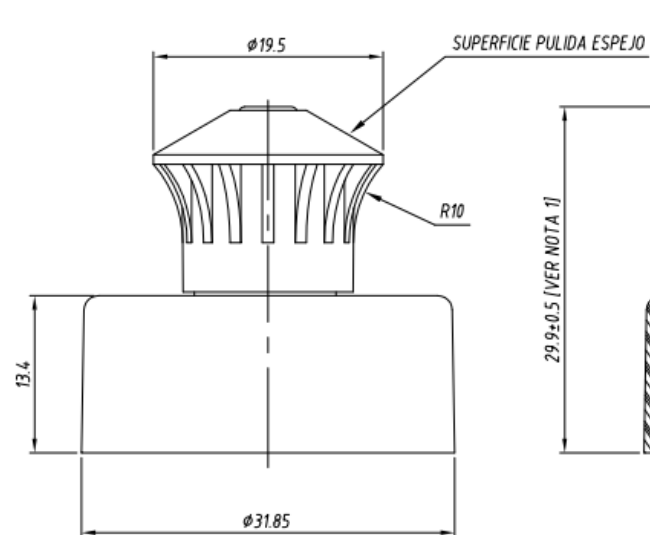
G-Bottle Plastic, Technology Type = Snap-On Neck



If closure skirt must stop above the support ring because cap diameter will not fit over the ring, then the effective H for cap clearance will be to the top of the support ring. H2 as shown could be important for bottle conveyance.



- I Bore Diameter (ID of bottle opening) (Often I=C)
- BO Bore Ovality = mm of allowed ovality from round (not shown)
- H Neck Finish Height (top of finish to bottom shoulder for closure clearance)
- S1 Snap Ring Height top of finish to bottom of ring (can use S1 or H1)
- H1 Snap Ring Height shoulder to bottom of snap ring (alternate approach vs. S1)
- H2 Height top of finish to top of shoulder slope or to base of neck support ring if present
- T Snap Ring Diameter
- E Root of Thread (neck dia at root of thread)
- K Neck Diameter K Dim (for necks with top lip ring diameter or stepped ext. diameter)
- C Top Finish Control Diameter (Controlled diameter at top of opening. Seldom specified. Often C=I)
- Q Internal Finish Calibration (vertically controlled height of C or ID opening. Seldom specified)



PESO
3.8g

TOLERANCIAS
OVALIZACION $\pm 2\%$
ESPESOR ± 0.10
LINEAL ± 0.25
PESO $\pm 3.0\%$

NOTA 1: LA TOLERANCIA EN
ESTA DIMENSION ES ACUMU-
LATIVA DE LAS TOLERANCIAS
DE LAS PIEZAS PARTES

CONJUNTO TAPA Y CAPUCHÓN

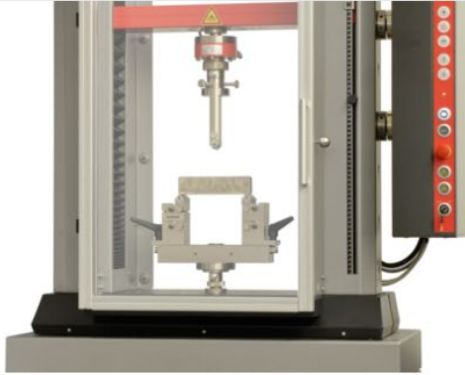
01004017

Top Load -> Snap On



Top Load

The right solution for any test requirement



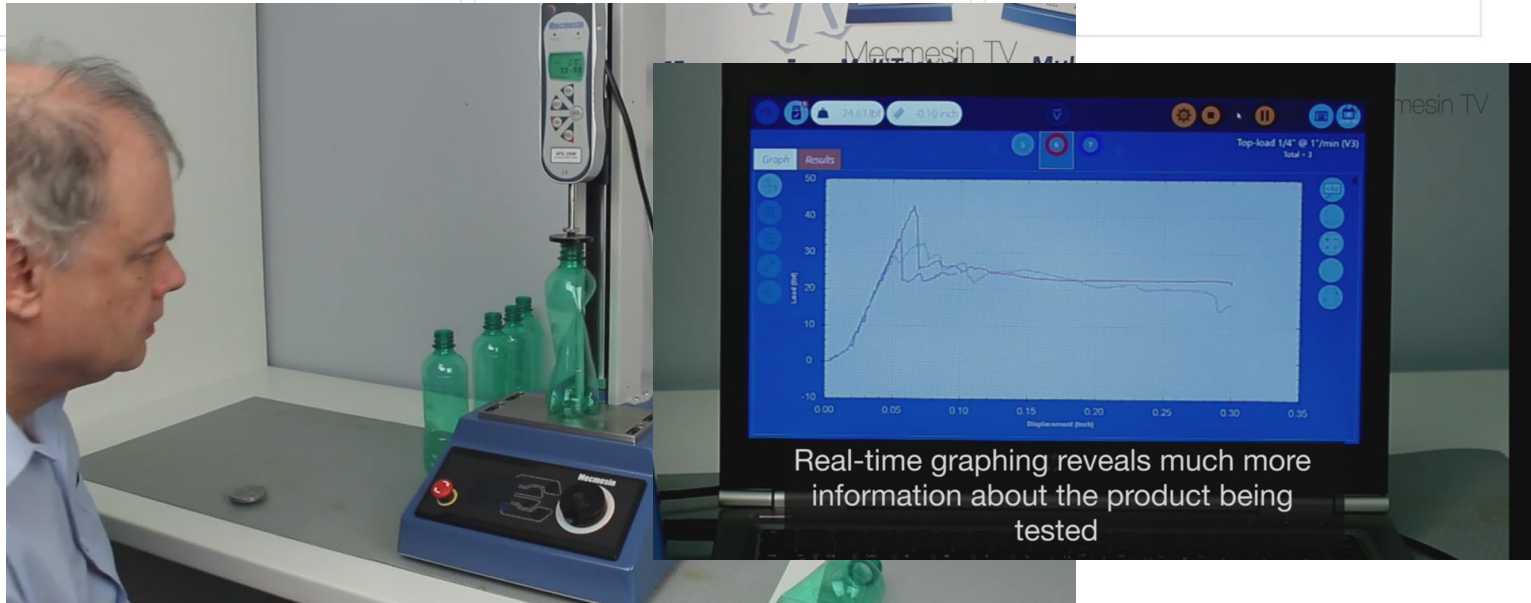
Flexure test kit for sandstone testing



Compression test on springs

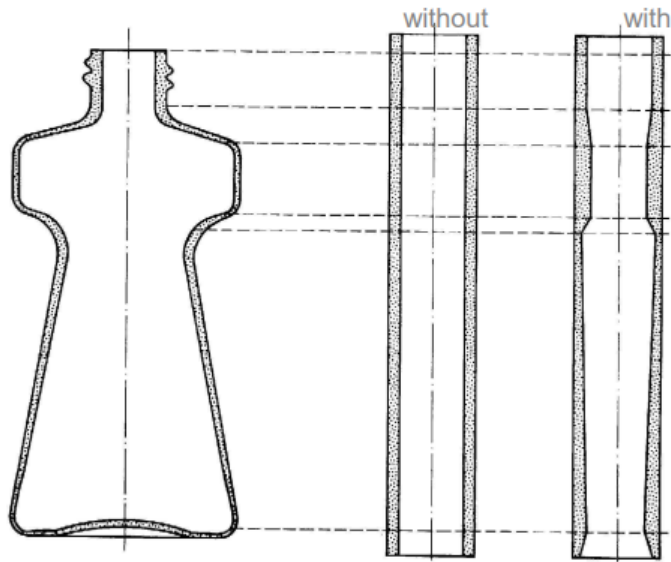


Compression test on packaging



Espesor medido

Parison Programming Wall thickness change



Simulación de Espesor Espesor

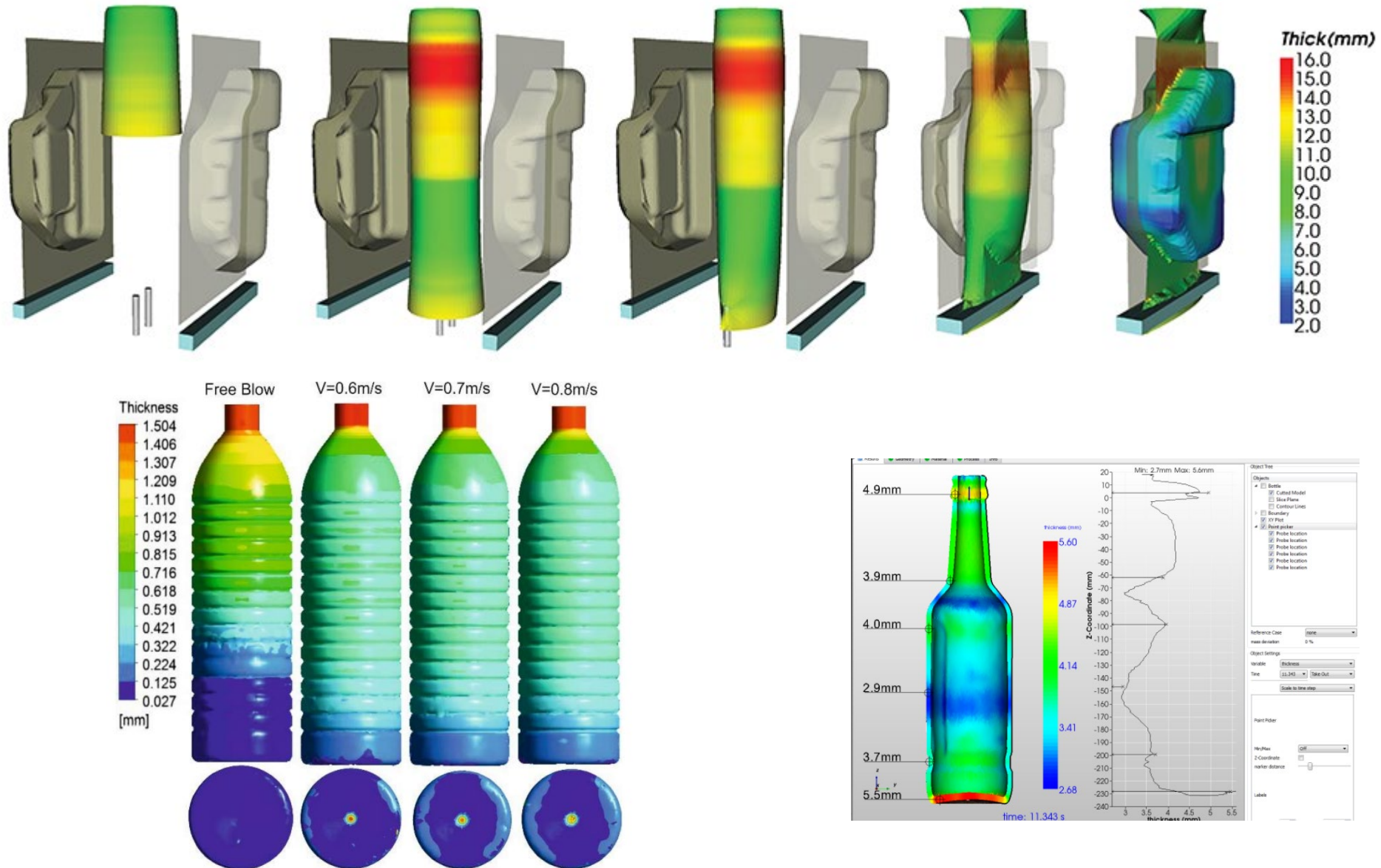


Fig. 3. Simulated final product with thickness contours for Cases 1-4.

Material

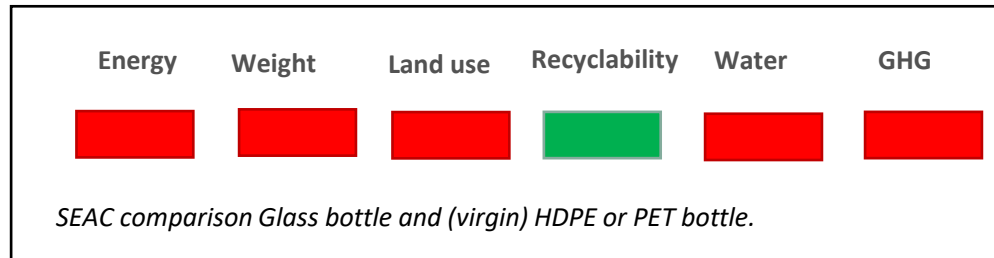


Glass Packaging are one of the first packaging materials reported since bronze age. It can have different composition, but for packaging it usually consists in sand (~70%), soda ash (~20%), limestone (~10%) and cullet, or recycled glass (depending on availability). It requires a huge amount of energy to melt the sand, what can be offset up to 30% by cullet inclusion. Colors are obtained by adding metal and metal oxides in the glassy matrix in the furnace or in the exit of it.

As material, it has a good oxygen, grease and moisture barrier, as well as good top load – not possible to squeeze, though, therefore a pump is required for thick products. If colored, it has a good UV protection too. In general, a normal development consist in the brief, the validation of a pilot mold (~10 weeks development time) and a production mold (~16 weeks, 35k€).

Conversion – The raw materials are melted together in the furnace in a continuous operation (up to 700tons). The forming process consist in the form and blow the molten glass (2 steps). Depending on the neck diameter (wide-mouth or bottle necks) it can be Press&Blow or Blow&Blow. After the forming, a coating is applied to reduce friction and increase resistance for breakage, and it follows to cool slowly and release the internal stress (annealing). Next step is the decoration by printing (the color is achieved in the furnace by raw materials or in the exit of the furnace in the feeder).

Sustainability – As the overall sustainability analysis shows worst results when compared to plastics bottles (both PE and PET). As the weight of glass packaging is higher than the plastic equivalent, it has a big impact in markets where the Recycling Rates are low.



Spec Material viscosidad



Laser+® 7000 (B92A) polyethylene terephthalate resin

General

Laser+® 7000 (B92A) polyethylene terephthalate (PET) resin is a copolymer formulated for conversion to PET bottles by conventional single or two-stage processing technology. This product is made using IntegRex® Technology.

Product Description

Bi-orientation of Laser+® 7000 (B92A) by injection/stretch blow molding provides optimal barrier and mechanical properties, including superior stress crack resistance. It performs exceptionally well in the manufacture of CSD bottles made from thick-wall preforms, where heat up rate and temperature profile through the wall are important. DAK Laser+® 7000 (B92A) is engineered to improve acetaldehyde (AA) performance without sacrificing intrinsic viscosity (IV), to meet increasing demand for CSD applications. Laser+® 7000 (B92A) offers superior heat absorption and processing control, even at higher blowing speeds. A slower crystallization rate enables high injection molding output.

Sales Specifications

Property	Value	Test Method
Intrinsic Viscosity	0.84 ± 0.02	DAK-QAR-SOP-0012
Color L* CIE	67 min	DAK-QAR-SOP-0011
Color b* CIE	-4.5 ± 1.4	
Acetaldehyde	2 ppm max	DAK-QAR-SOP-0010

Product Information

Certification

Laser+® 7000 (B92A) is ideally suited for food packaging applications and is considered in compliance with the Food and Drug Administration (FDA) Food Contact Notification (FCN) 000635, and Health Canada Health Products and Food Branch (HPFB) file KS 06111304 for PET polymers.

Typical Properties

Property	Value	Test Method
Moisture Content ¹	0.25% max	DAK-QAR-SOP-0013
Fines ¹ , +24 Mesh	0.05% max	DAK-QAR-SOP-0014
Pellet Size, nominal	30 chips/g	DAK-QAR-SOP-0015
Crystallinity	>35%	DAK-QAR-SOP-0016
Spherical Shape	3.5 mm	DAK-QAR-SOP-0017
Melt Point, nominal	242°C	DAK-QAR-SOP-0016
Bulk Density	52 lb / ft ³	DAK-QAR-SOP-0018

¹ As packaged

These values represent the anticipated performance data for these polyester resins and intermediates; they are not intended to be used as design data. We believe this information is the best currently available on the subject. It is offered as a possible helpful suggestion in the experimentation you may care to undertake along these lines. It is subject to revision as additional knowledge and experience is gained. DAK Resins makes no guarantee of results and assumes no obligation or liability whatsoever in connection with this information. This publication is not a license to operate under, or intended to suggest infringement of, any existing patents.

CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DAK Medical Caution Statement".

TABLE 1: POLYETHYLENE (PE) RESINS FOR BLOW MOLDED RIGID PACKAGING APPLICATIONS⁽¹⁾

RESIN NAME	PRODUCT DESCRIPTION; MARKET APPLICATION(S)	MELT INDEX ⁽²⁾ (I ₂), g/10 min	MELT FLOW RATE ⁽³⁾ (I ₃), g/10 min	DENSITY ⁽⁴⁾ , g/cc	TENSILE STRENGTH @ YIELD ⁽⁵⁾ , psi	2% SECANT FLEXURAL MODULUS ⁽⁶⁾ , psi	TENSILE IMPACT STRENGTH ⁽⁷⁾ , ft.-lb./in. ²	ESCR ⁽⁸⁾ , 122°F (50°C), F50, 100% IGEPAL, hrs.	FDA COMPLIANCE - U.S. FDA 21 CFR 177.1520 (c) ⁽⁹⁾
UNIVAL™ HDPE COPOLYMER PRODUCTS									
UNIVAL™ DMDA-6200 NT 7 HDPE Resin	Household & Industrial Chemicals (HIC), Personal Care, Food Packaging	0.38	33	0.953	3,900	150,000	80	50	3.2a

Aditivos -> impacto - UV - color

Polymer additives

There are many additives that can be included with the resins to improve aesthetics or processing performance. Below are examples

Masterbatch

- Liquid or solid concentrate of pigment encapsulated into a carrier resin
- Costs 10-20 times more than virgin; white cheapest up to gold most expensive
- Colours make components shrink different amounts
- Let down ratio (LDR %) displaces virgin resin = 97% virgin resin & 3% mb.

UV filter/absorber

- Liquid or solid additive which prevents the oxidation of photosensitive products

Anti-static

- Liquid or solid additive which reduces or eliminates static build up, prevents static build up on packaging lines and dust attraction

•Antioxidants

- Prevents thermo-oxidative degradation from occurring when processing plastics at high temperatures

MASTERBATCH



What is it ? **A concentrate of pigment or dye carried by a polymer base.**

How much does it cost ? **Ten to 20 times the cost of the base resin. White is the cheapest, then yellow....with red and then pearlescent being the most expensive.**

How much is used in production (letdown ratio)? **1-5%**



Aditivos -> impacto



PETROQUIMICA CUYO S.A.I.C.
Avenida Madero 942 - Piso 10° (C1106ACW)
Ciudad Autónoma de Buenos Aires, Argentina
Tel.: (54-11) 5167-2700

Technical Data Sheet

Random Copolymer 3240 H

MAIN USE: BLOW MOULDING/EXTRUSION

- ◆ Recommended for the manufacturing of blow-moulded containers for water, juice, oil and cosmetics
- ◆ Also suitable for extrusion of sheets for thermoforming

GENERAL PROPERTIES

- ◆ Excellent transparency and gloss
- ◆ High melt strength
- ◆ Good thermal strength which makes this grade apt for the hot-packed processes
- ◆ Good impact resistance at room temperature

PROPERTIES	METHOD	UNIT	VALUE
Melt Flow Index (230°C/2.16 kg)	ISO 1133	g/10 min	1,5

MECHANICAL PROPERTIES

Flexural Modulus (1)	ISO 178	MPa	1100
Tensile strength at yield (2)	ISO 527-2	MPa	26
Elongation at yield (2)	ISO 527-2	%	12
Charpy notched Impact Strength (1) @ 23°C	ISO 179	KJ/m ²	10
@ 0°C	ISO 179	KJ/m ²	2

THERMAL PROPERTIES

Heat Deflection Temperature HDT/A (1,80 MPa) (1)	ISO 75-2	°C	50
Heat Deflection Temperature HDT/B (0,45 MPa) (1)	ISO 75-2	°C	80

1) DESARROLLO DEL ENSAYO DROP TEST (Método UMA 1341)

1. Llenar las botellas con el producto y tapar (tapa snap on).
2. Colocar muestras en máquina drop test para hacer caída a 1 m del piso.
3. Dejar caer y Verificar que no haya rastro de roturas y/o perdidas en ningún lado de la tapa.

RESULTADOS / OBSERVACIONES.



Máquina Drop test con muestra tapa PCR



1. Definir Función
2. Diseño / test de desarrollo
3. Especificación / protocolo
4. Control de Calidad s/protocol
5. *Aguarde reclamos del cliente*
6. *Feliz? Bueno, vaya y reduzca costos.*