

QC Procedure - GLASS BOTTLE SPECIFICATIONS

INTRODUCTION

In order to specify the the specifications of glass bottle defects that determine the Acceptability of any batch inspected, we created the standard operating procedure of quality control system both in the processing of production and delivery.

We specified

- That each glass bottle will be inspected by experienced worker on the production line accordance with the specifications
 - That each batch is declared to be "Acceptance" can not entail the responsibility of GPBottles for any damage which may occur subsequently , whatever the defect's nature is.
 - That a sampling inspection cannot guarantee no defect bottle appeared in the whole batch, but basis of acceptance
- In the sampling inspection, both of the GPBottles and our customer will incur a certain risk depending on the standard used.
- Risk for GPBottles is the risk that the decision made by the result of QC or that of rejection for an "Acceptance" batch, risk set at 5%
 - Risk for customer is the risk that the decision of "Acceptable" for an "Unacceptable" batch, risk set at 10%
- Without any written agreement by GPBottles, customer who undertake the specifications cannot transmit it to any one.

QC PRINCIPLE

Level of Defects

- Hyper Critical Defect

These defects cause the glass bottle cannot be used for filling the perfume, such as broken body or neck, sharp fins on the surface, choked neck, deformation, bent neck etc.

- Critical Defect

These defects may cause the lack of safety both in filling process and consumer using, such as cracked bottom, fire marks, burrs etc.

- Major Defect

These defects may cause the malfunction or errors in the purpose of in production and using, such as split finish, internal fragment , non-conforming weight and volume etc.

- Minor Defect

These defects will not cause any issue in production and using, but may reduce the general quality of the products, most of them are on the appearance, such as oil marks, open marks, orange peel etc.

SIMPLE SAMPLING METHOD

1. A simple sampling method determine the number of bottles to be inspected in each batch of goods (sample size) and the acceptability criteria (acceptance or rejection criteria) corresponding to selected AQL (acceptable quality limit) standard.
 2. The AQL specified the tolerated number of defect bottle at different level of defects detected in the sample size.
 3. While the inspection level of AQL determine the relationship between the sample size and the batch size for normal control.
 4. In simple sampling method, the number of bottles to be inspected should to be equal to the sample size given in the method.
- if the number of defect bottle found in the sample size is equal or less than the acceptance criteria, the batch is consider to be acceptable.
 - Otherwise, if the number of defect bottle found in the sample size is equal or more than the rejection criterial, the batch is consider to be rejected.
- The sample size need to be sampled evenly distributed from cartons that equal to square root +1 of the total cartons which match up the batch.

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IMPORTANT NOTES

On a same bottle, the most important defect will be take into account but not the accumulate of defect.

When a bottle received a label and placed to a specified place, it becomes imperfection i.e. they are no longer subject to AQL

Note that the certain imperfections are consider to be a defect that from:

1. is of a certain threshold illustrated on the part of bottle
2. is of a certain amount visible at a glance

A defect can only be considered as such if it belongs to a defined class.

SAMPLING TABLE & AQL LEVEL

Batch Size	AQL - Norma Control									
	Sample Code	Sample Qty	Hyper Critical		Critical		Major		Minor	
			0.15		0.65		1.5		4.0	
			A	R	A	R	A	R	A	R
281 to 500	H	50	↓	↓	↓	↓	2	3	5	6
501 to 1200	J	80	0	1	1	2	3	4	7	8
1201 to 3200	K	125	↓	↓	2	3	5	6	10	11
3201 to 10000	L	200	↓	↓	3	4	7	8	14	15
10001 to 30000	M	315	1	2	5	6	10	11	21	22
30001 to 1500000	N	500	2	3	7	8	14	15	↑	↑

Sampling Standard: ISO2859

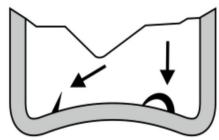
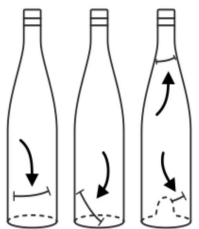
Level II Norma Control

A=Acceptance R=Rejection

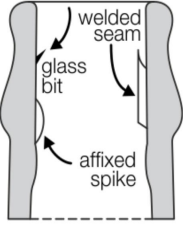
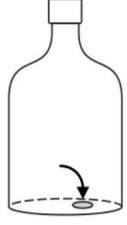
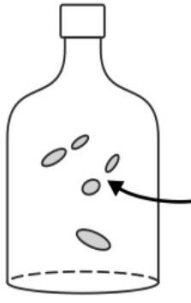
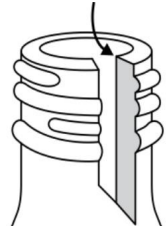

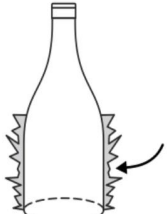
Use the first sampling plan located below the arrow. If sample equals or exceeds lot size, perform 100% inspection

Use the first sampling plan located above the arrow

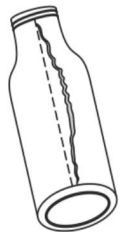
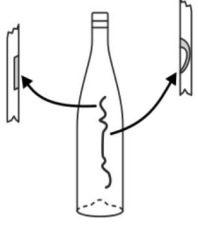
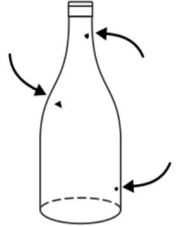
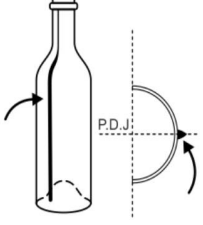
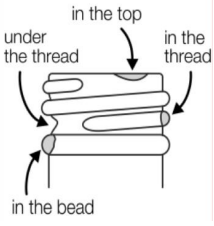
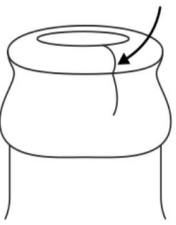
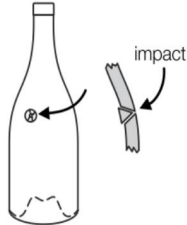
GLASS BOTTLE - DEFECT & AQL CONTROL

Defects	Image	Description	AQL0.15	AQL0.65	AQL1.5	AQL4.0
Spike		A projection of glass extending upwards from the bottom on the inside of the jar or bottle.	X			
Bird swing		A thin strand of glass across the inside of a container either between the walls or between the wall and the bottom.	X			

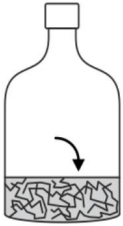
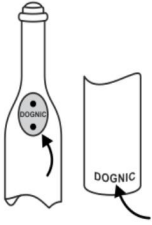


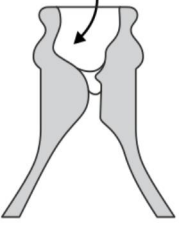
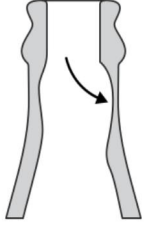
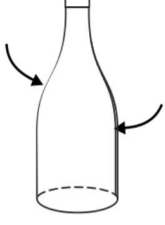
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Neck Spike		A small projection of glass at the finish or irregular wall thickness with a crater-like depression in the center, whose edges are in relief and can chip easily.	X			
Internal Fragment		A fragment of glass of any size, attached or loose, inside the container.	X			
Internal Blisters		Air bubbles trapped inside the glass mass to be found on the internal surface. Number of bubble <3				X
		Number of bubble >3			X	
		0.7mm<Single Bubble<1.4mm				X
		Single Bubble>1.4mm			X	
		Surface Broken Bubble		X		
Overpress		A finish which has excessive glass projecting upward from the inside edge of the finish. This is a critical defect in all types of finish.		X		
Stuckware		Two articles are attached while hot and separated while cold. This separation causes a sharp or cutting edge (rough glass edges on the side, lacerations on the contact area between the bottles).	X			
Burrs		Sharp edges along the lines of the mould seams.	X			


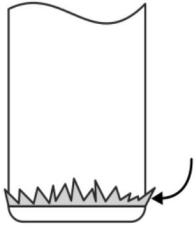
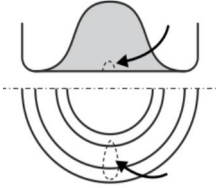

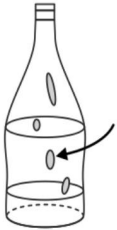
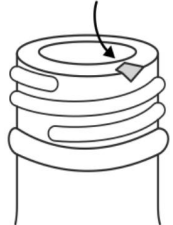
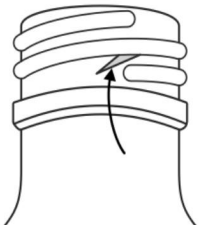
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Cracked Seam		A fracture which usually occurs in the body of the article. It doesn't always cause breakage.	X			
Discontinuous Cracks		Discontinuous surface cracks with one or more shiny parts (straighter crack: no protruding glass can be felt).		X		
Inclusion		Foreign body in the glass	X			
Mould Seam with Pinched		When the finishing mold closes it blocks the structure and produces a heavy seam.				X
Unfilled Finish		The finish is not completely regular; the thread profile has not been formed properly. There is glass missing from the top surface.		X		
Split Finish		A small vertical crack starting at the top of the finish and going downwards. This defect is difficult to detect because it does not reflect light.				X
Impact Cone		Impact point from a knock that extends into the glass mass in a cone shape.		X		

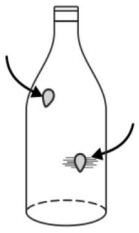
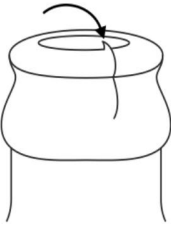
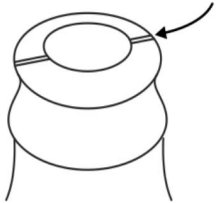
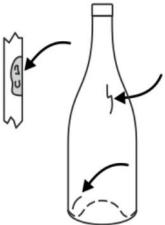
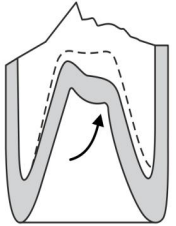
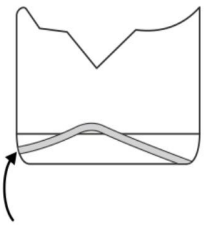
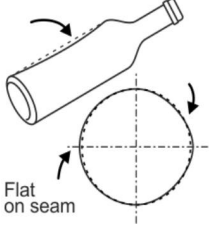
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Internal Marks		Internal marks of any kind (water, dust, cardboard, grease etc.) which cannot be removed by the preliminary washing procedure.		X		
Engravings (Missing or Incorrect)		Any missing or incorrect engravings meaning that it is not possible to sell the article (capacity indication, spelling mistakes, etc.).	X			
Excessive Hot End Surface		Tin: visible iridescence on the empty article, more obvious when filled; Titanium: barely visible or invisible mark on empty article, it gives the product a dark/purplish color (DE).				X
No Cold End Surface Treatment		Excessive treatment causes slippery bottles, no treatment causes friction on contact between containers.				X
Choked Neck		Excess of glass in the neck which partially or completely obstructs the bore and doesn't allow the filling tube to be introduced.	X			
Hollow Neck		Depression in the thickness of the glass in the neck of a bottle.				X
Thin Walls		The thickness of the glass does not meet the specifications.				X


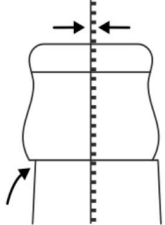
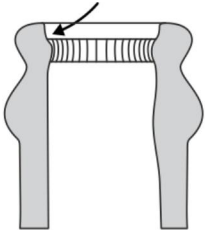
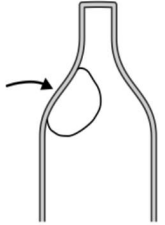
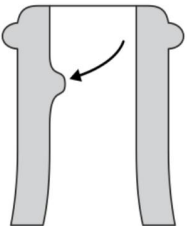
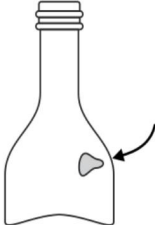
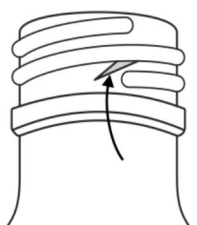
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Bent Neck		The vertical axis of the neck is at an angle to the vertical axis of the body.	X			
Flash		A projection of glass > 0.5 mm that runs around the seam between the finishing mold and bottom plate, due to incorrect join between the mold and the bottom plate leading to protruding glass		X		
Orientation Marks (non-conforming)		The marks do not conform to the drawing or are missing.	X			
Stuck Glass		Unwanted pieces of glass, which may or may not be sharp, stuck to the external surface of the item.			X	
External Blisters		Usually elongated, they may be: Cracked (the outer surface is broken) or Not Cracked (but with a thin skin).	X			
Chipped Finish		A small fragment of glass has been chipped off the finish (scratched), sometimes not completely detached.			X	
Checks on the Finish		Horizontal Threads – small crack running from the top of the finish in a downward direction. It can be seen by looking at the light reflection while turning the bottle.				X

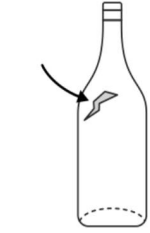
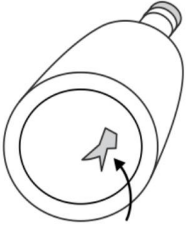
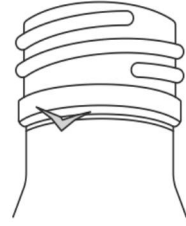
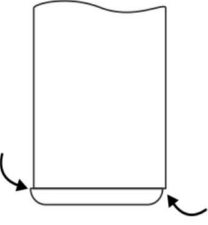
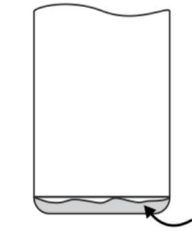

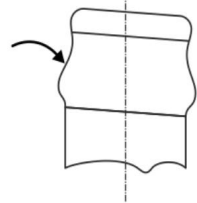
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Different Drop		On the glass mass with radial crizzles, or on the external surface of the glass mass without crizzles.				X
Lump		Small glass protuberance on top surface of the finish, only in one point of the finish. <0.3mm not significant, ≥ 0.3 mm: defective.				X
Offset Finish		When the offset is up to or more than 0.3 mm.				X
Shoulder Check		Beginning of a crack that does not pass through the entire thickness of the glass (usually in a straight line).				X
Sunken or Deformed Punt		Slough or deformation of glass in the punt, making the bottle below capacity.			X	
Baffle Mark		Imprint on the bottom due to poor fit between the baffle plate and the blank mold.				X
Out of Round Item		The article is misshapen, or the circumference is imperfectly round.			X	

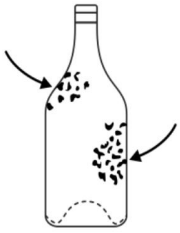
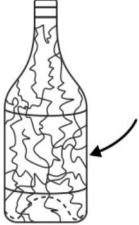
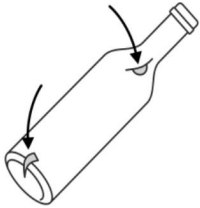

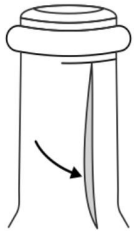
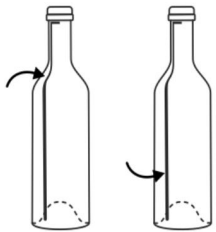
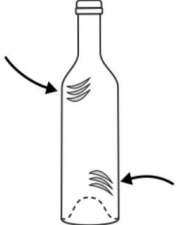
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Deformed Item		An item that, while corresponding to the shape in the technical drawing, has anomalies in the shape that may cause problems during filling and packing (sunken shoulder, misshapen body, etc.)		X		
Out of Vertical Finish		The finish axis is not aligned with the body, even though the finish and body axes are parallel and vertical	X			
Bulged Finish		Protuberance on the inside of the finish which can affect the finish during uncorking; no risk of scratching.			X	
Light Spots		A markedly thinner area in the thickness of the glass which may cause fragility in the bottle.			X	
Neck Lump		Round protuberance inside the neck, not fragile.			X	
Butterfly Wing Chip		An impact point on the body of the item (generally on the shoulder or near the bottom), usually surrounded by concentric circles giving it a scaly look (similar to a butterfly wing) and leaving the glass wall weakened			X	
Shell Shaped Chip		An impact point on the body of the item (generally on the shoulder or near the bottom), usually surrounded by concentric circles giving it a scaly look (similar to a shell) and leaving the glass wall weakened.			X	

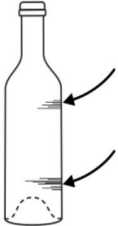
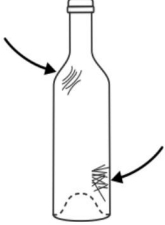
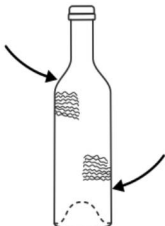
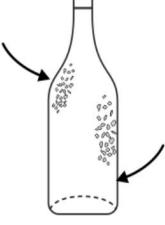
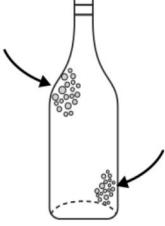
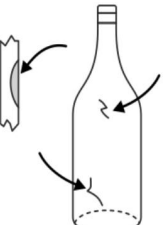
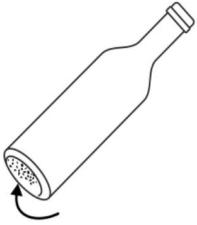
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Open Mark		Superficial and external mark with two separated, irregular rims. It can be situated on the bottom, and is normally not visible.				X
Shear Marks		A mark on the surface of the bottle caused by the shears				X
Checks Under Finish		A surface crack under the finish, at the join between the finish mould and the preparatory mould.			X	
Shifted Bottom Plate		The whole body of the article has shifted at one side by $\geq 1\text{mm}$, the bottom axis is not aligned with the body axis.			X	
Inclined Bottom Plate		The bottom is not completely perpendicular to the axis of the bottle. It may be inclined to one side or wavy				X
Deformed Bottom		The center of the bottom is lower than the external rim of the bottom.	X			
Bent Finish		The vertical axis of the finish is at an angle to the vertical axis of body.			X	

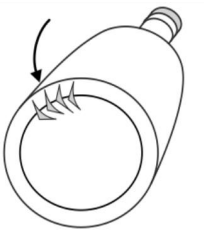
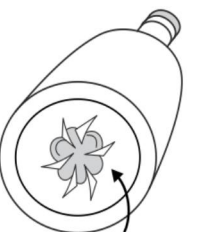
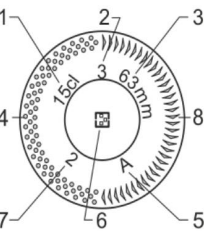
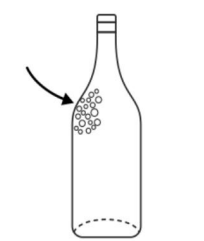
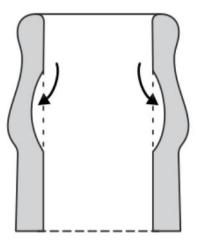
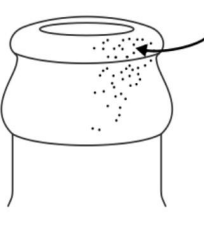
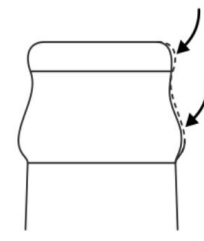
QC Procedure - GLASS BOTTLE SPECIFICATIONS

Dirt on Outside Surface		Article has dirt deposits on the external surface (for example oil marks), or a rough or scaly appearance, on the shoulder or on the body.		X		
Hammered Appearance		Irregular external surface. The body looks rough and wavy, with fine undulations.		X		
Tear		An open mark/crack on the glass surface.		X		
Cord		A thread of a different type of glass in the mass (a thin glass ripple that can be seen through the glass)				X
Mould Seam		A thin ridge of glass along the parting line, caused by the mould joint.				X
Ruined Baffle		Excess of glass (flash) appearing whitish in color (like crushed glass), situated on the baffle line.		X		
Folds		Almost horizontal concavities on the outer surface of the item; shallow, open wrinkles.				X

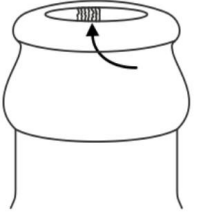
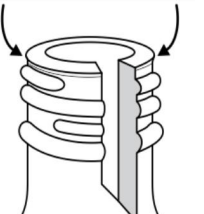


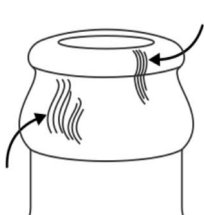
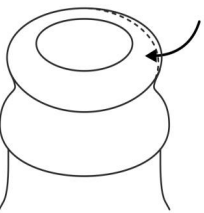
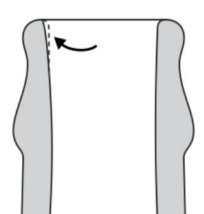
QC Procedure - GLASS BOTTLE SPECIFICATIONS

Washboard Marks		Fine horizontal ripples on the glass surface				X
Brush Marks		Numerous fine vertical marks, often on the shoulder				X
Orange Peel Marks		Rough, bumpy surface that resembles the texture of an orange.				X
Toad Skin Marks		Glass is regularly distributed, but the exterior is not smooth (covered with small plates) and it is characterized by a grainy and dirty aspect, similar to the skin of a toad.				X
Seeds		Very small gas bubbles in the glass mass, < 0.8 mm				X
Fire Cracks		A discontinuous, open surface crack, dull in appearance, caused by local changes in temperature. Unlike a split, it is an open crack and can be felt when touching the bottle.			X	
Chain Marks		Marks on the bottom of the bottle caused by contact with the conveyor belt immediately after manufacture.				X

QC Procedure - GLASS BOTTLE SPECIFICATIONS

Crizzled Bottom		Small axial grooves grouped around the baffle line.				X
Cracked Bottom		Web-shaped cracks.		X		
Bad Engravings		The engravings on the glass are difficult to read to a greater or lesser extent.			X	
Oil Marks		String of grey bubbles inside the glass.			X	
Neck Hollow Finish		Depression in the thickness of the glass in the finish or neck				X
Dirty Neck		Black spots (grainy aspect).				X
Bulged or Unfilled Finish		Bulged out of shape finish, either by blowing or mechanical action. May prevent good capping of the container.			X	

QC Procedure - GLASS BOTTLE SPECIFICATIONS

Folds Inside Finish		Vertical marks inside the finish				X
Glass Trimming		Protruding ridge of glass around the upper part of the finish (thin rim of glass) > 0.2mm.				X
Seam Under Finish		A seam $\geq 0.5\text{mm}$, situated on the joint between the finishing mould ring and the blank molds.			X	
High Finish Seam		A seam of glass $\geq 0.2\text{mm}$, on the joint between the two sections of the neck ring mould.			X	
Folds On Finish		Vertical or horizontal external marks on the finish, purely an aesthetic defect				X
Out of Round Finish		The finish is not round			X	
Rolled In Finish		Entry slough or extra thickness of the glass inside the finish			X	