Standard Quality Conditions

Agreed between:

Sklárny Moravia, akciová společnost

Úsobrno č.p. 79

679 39 Úsobrno

and

A. Required bottle parameters

A.1 General requirements

1. Bottles and jars („bottles“ hereinafter) are produced from transparent (flint) or coloured glass (amber, black). The transparent glass (flint) is made with low content of cullet - up to 30 %. It may have a slight hue of grey, pink, green, yellow or blue, which is noticeable mainly in larger thickness of the glass. The colouring is measured in the CIE system under D65 light and is related to the wall thickness of **4 mm**.
   The glass parameters are the following:

Parameter L (%)	Parameter „a“ red/green	Parameter „b“ yellow/blue
> 85	< -0,8; 0,1 >	< -0,2; 2 >

   Amber glass allows for a slight diversity in the colour saturation. In one bottle, a slight diversity in the saturation is only allowed within a range caused by the wall thickness.
   The glass parameters are the following (D65 light, **4 mm** wall):

Parameter L (%)	Dominant wavelength ƛ (nm)
40 - 65	575 - 610

   Black glass is non-transparent glass that can have a hue from brownish black to bluish black when seen against a strong light. The maximum black glass light permeability in visible spectrum (400-720 nm) is **4 %** (measured on a sample with the wall thickness of 3.5 - 4 mm).

   Transition glass is glass produced in transition from one glass to another and it has no specified colour parameters.

2. The bottles are made from third**,** possibly at third and fourth class interface, hydrolytic glass resistance against water at **98°C** (ISO 719).
3. The bottles are produced and supplied in accordance with (EU) 2025/40 and (EC) 1935/2004.
4. Warranty for our bottles is **6** months from delivery date, max. **12** months from production date, if it wasn´t agreed different condition (in part C).

A.2 Physical properties

1. It is required that the bottles are well cooled; sharply unconfined permanent internal stress corresponding to the path difference, max. **100 nm/cm** is allowed for bottle up to 1 l included and **120 nm/cm** for bottle over 1 l (with determination uncertainty of 10%). It is possible to test only bottles made of transparent glass.
2. It is required, that the bottles have to withstand the resistance test against sudden temperature change by **45°C**. (bottles are tested for temperature change from 65°C to 20°C, with method according to ISO 7459). Bottles are not intended for filling by content with temperature higher than **80°C**.
3. Bottles without complicated patterns have to withstand internal pressure test by pressure of **0,5 MPa**. Bottles with rotational shapes, without emphasized punt in the bottom, and simpler square bottles may be produced with pressure resistance up to **1,2 MPa**, but this requirement has to be consulted in advance. (Bottles with internal pressure resistance higher than 0,5 MPa are tested according to ISO 7458)
4. Bottles are by default coated by hot-end coating (SnO_2) and cold-end coating (TEGOGLASS T5 or RP 40 LT) to improve surface resistance against scratching. If client requires bottle with no hot-end coating or cold-end coating applied, for example by reason of consecutive bottle decoration, this request have to be mentioned in the order.
5. Bottles are produced with resistance for consecutive process of decoration and burning up to **583°C**. For bottles made of black glass, bottles with complicated shape and bottles with uneven glass thickness (bottles with thick bottom), it is necessary to appoint longer heat-up time and also longer cool-down time (Total process duration is min. **240 minutes**).
6. Internal surface of bottles not older than **6 months** from production date must not show glass corrosion.

A.3 Dimensional and volumetric tolerances

1. Unless otherwise stated in technical documentation (product drawing), total bottle height tolerance is calculated: ± (**0,6 + 0,004 * H**), where H is bottle height in mm and the value is rounded up the entire tenth.
2. Unless otherwise stated in technical documentation (product drawing), the tolerance for bottle diameter in the widest part of bottle is calculated: ± (**0,5 + 0,012 * D**), where D is bottle diameter in mm and the value is rounded up the entire tenth. Ovality of bottle body may be within limits given by permitted tolerances of bottle diameter.
3. Deviation from the vertical axis of the bottle higher than 120 mm incl. must not be higher than **0,3 + 0,01 * H** (value rounded to the entire tenth), where H is bottle height in mm. For bottles lower than 120 mm, the deviation from vertical axis must not be higher than **1,5 mm**. For bottles higher than 300 mm, the deviation from vertical axis must not be higher than **3,5 mm**. Exceptions from this rule have to be mentioned on particular product drawings.
4. Unless otherwise stated in technical documentation (product drawing), tolerances for dimensions of finish are set by following table:

Nominal dimension for finish diameter values (mm)	Tolerance (mm)	Nominal dimension for finish height values (mm)	Tolerance (mm)
0 - 20	± 0,4	Lower than 20 (incld.)	± 0,3

20,1 - 25	± 0,5	Higher than 20	± 0,4
25,1 - 30	± 0,6		
30,1 - 40	± 0,7		
40,1 - 50	± 0,8		
50,1 - 60	± 0,9		
Higher than 60	± 1,0		

5. Finish dimensions have to be in accordance with bottle drawing, or separate drawing of finish detail. In this case, bottle drawing is set over drawing of finish. Unless otherwise stated, inner dimension in finish is measured in depth of 3 mm from upper edge of finish. Unless otherwise specified in the drawing, the tolerance of the inner dimension of the cork finish must be maintained at a depth of 3 mm and at a depth of 3 to 15 mm, the inner dimension of the finish must not be below the lower tolerance.
   Ovality of the outer bottle finish may be within the tolerances of the respective diameter. The inner finish of the bottles may have slight ovality and the inner dimension of the finish is determined as: $Di = (Di_{max} + Di_{min}) / 2$.

6. Dimensions without specified tolerance in the drawing have the following tolerances specified:

Nominal dimension (mm)	Tolerance (mm)
0 - 10 (incld.)	± 0,5
10 - 50 (incld.)	± 1,0
50 - 150 (incld.)	± 2,0
150 - 250 (incld.)	± 2,5
250 - 350 (incld.)	± 3,0

7. The bottles put on the smooth horizontal surface must not sway and spin around.
8. Side seams and seams near the bottom are not allowed higher than **0,5 mm**, seams in the label area must not exceed **0,3 mm**. Seams on the sealing surface of finish must not exceed **0,2 mm**; on the outer side of threaded finish must not exceed **0,3 mm**; on other types of finish must not exceed **0,5 mm**.
9. The sealing surface of the finish must not be distorted. Misalignment of the finish in the vertical and horizontal planes must not be more than **0,2 mm**. For finishes intended for cork stoppers, the misalignment must not be more than **0,4 mm**.
10. Deviation in parallelism between the finish and bottom plane is not allowed for more than **0,5 mm** at the finish with average up to 30 mm and **0,7 mm** at the finish over 30 mm.
11. The labelling area unevenness in a vertical direction must not be larger than **0,7 mm per 100 mm** of the labelling area. The labelling area location must be specified by the customer in advance.
12. Thickness of bottle wall and bottom is set by following table:

	Filling capacity of bottle (l)			
	≤ 0,2 (incld.)	0,2 – 0,5 (incld.)	0,5 – 1,25 (incld.)	> 1,25
Walls of rotational bottle without handle	> 1,2 mm	> 1,4 mm	> 1,4 mm	> 1,8 mm

Walls of non-rotational bottle or with handle	> 1 mm	> 1,2 mm	> 1,4 mm	> 1,6 mm
Bottom thickness	> 1,8 mm	> 2 mm	> 2 mm	> 3 mm

Note 1: For a minimal wall thickness / bottom are considered 2/3 values listed in the table.

Note 2: Bottles with thick bottom have bottom thickness marked on drawing and unless otherwise stated, are measured from the flat surface visually.

13. Unless otherwise stated in product drawing, for filling and brimfull capacity of bottle is set following capacity tolerance:

Filling capacity of bottle (ml):	Tolerance (ml):
Up to 100	± 4
100 – 200 (incl.)	± 6
200 – 400 (incl.)	± 8
400 – 1000 (incl.)	± 10
1000 – 1300 (incl.)	± 12
1300 – 2000 (incl.)	± 15
2000 – 3000 (incl.)	± 20

14. The volume is determined as the weight difference between an empty bottle and a bottle filled with 18-22 °C water.

A.4 Identification

1. Bottles have identification marks in bottom or near bottom, according to product drawing.
2. Fundamental identification mark for backtracking of bottle in one delivery is pallet label. Each pallet is supplied with two pallet labels. If client wants to use own design of pallet labels, it is necessary to mention this in the order.

   The bottles can be identified by invisible printing (date + time) near bottle bottom. Usually, clear and amber bottles, which are not intended for decoration, are marked. The print is invisible at first sight. It is visible under UV light or blue light.

A.5 Packaging and storage

1. Packaging of bottles is performed according to requirement of the client. By default, pallets are packed in that way, so the bottles will be protected from weather conditions. Pallets are not hermetically sealed.
2. Although the bottles are made at very high temperatures, they cannot be automatically considered sterile for the following reasons:
   - The pallets are not hermetically sealed
   - There is a risk of contamination by carton particles when using carton inserts and boxes.
   - Water vapour condensation can develop due to temperature differences when storing outside tempered areas.

   The customer is expected to rinse/blow the bottles before filling.

B. Inspection of deliveries

B.1 Way of delivery inspection at client's side

Delivery is inspected by statistical inspection in accordance with ISO 2859-1, more specifically by inspection through one selection for control level I.

Delivery quantity	Scope of selection	Maximum admissible quantity of defective products			
		AQL=0,025	AQL=0,65	AQL=2,5	AQL=4
3 201–10 000	80	0	1	5	7
10 001-35 000	125	0	2	7	10
35 001-150 000	200	0	3	10	14
150 001-500 000	315	0	5	14	21

B.2 Admissibility of individual defects in delivery – AQL

Critical defects – defects which might threaten consumer's health, or which can cause health damage during the filling process.

AQL = 0

Types of defects in this category:

- glass fibers inside of bottle (“bird swing”), which can easily break
- spikes inside of bottle, which can easily break
- stuck glass inside of bottle, it is impossible to remove it by compressed air, flushing out, or turning the bottle upside down
- contamination of the inside of bottle by dangerous chemical substances.

AQL = 0,025

Types of defects in this category:

- glass filaments inside of bottle (“bird swings”), which can not easily break
- spikes inside of bottle, which can not easily break
- partially or fully choked finish
- overpress on the inside finish
- significant light spots with wall thickness lower than 0,5mm, which can cause easy destruction of bottle
- torn finish
- sharp seam in finish or body, which expressively overlaps the bottle surface.

Major defects 1 – severe defects, which can lead to bottle breakage or degradation of the content
AQL = 0,65

Types of defects in this category:

- damage of finish seating area, which provably obstructs the gasproofness of closure
- finish deformation, which obstructs the application of closure
- split in finish and under finish, fissures in seating area of the finish, finish chipped
- overpress in finish, which can lead to ineffectivity of closure sealant material
- split in neck, body, handle and bottom
- open blister bigger than 4 mm *
- stone and inclusion in glass bigger than 2 mm
- insufficient internal through bore up to depth of 70 mm, measured from upper edge of finish
- reduced sudden thermal shock resistance
- product not comply with previously agreed internal pressure resistance.
- significant deformation bottles, which does not allow fulfillment

Major defects 2 - severe defects, which can lead to bottle breakage or reduce the usability of bottle.
AQL = 2,5

Types of defects in this category:

- capacities out of tolerances for simple shape of bottles, less volume for flat bottles
- bottle height and maximum bottle width outside tolerance (A.3.1 a A.3.2)
- deviation from the axis is higher than allowed limit (A.3.3)
- bottle finish non-parallel with the bottom (A.3.10)
- wall or bottom thickness lower than 2/3 of thickness mentioned in part A.3.12
- fissures in finish (except seating area of the finish), neck, body and bottom, which can lead to bottle breakage (surface fissures up to 2 mm in the pattern and lettering are not considered a defect)
- sharp groove inside the finish
- stones and inclusion in glass of size 1-2 mm
- open blister of size 1-4 mm.

Minor defects – defects, which can particularly reduce usability of bottle and appearance defects, which are less important and does not affect the usability parameters of bottle.
AQL = 4,0

Types of defects in this category:

- more capacities for flat bottles
- poor shaping and non-compliance of dimensions (except height and maximum width) which affect decoration and labelling of bottles
- deformed thread or bead, if it does not affect the application of closures
- inner dimension of the thread finish up to 3 mm is outside the tolerance, Guala up to 4 mm, Vinolok up to 6 mm; cork up to 15 mm.
- narrow bore below the minimum inner diameter of the neck at a depth of 70 mm and more
- bigger mould seams and shifts (A.3.8 a A.3.9)
- uneven glass distribution in the bottom - height difference of more than 1.5 mm at a distance of 50 mm
- rocker bottom (fallen bottom) (A.3.7)
- encapsulated blisters with diameter higher than 4 mm *; encapsulated blisters with diameter 1 – 4 mm *, if their quantity is higher than 4 pcs and they make clumps.
- encapsulated blisters with diameter higher than 4 mm * in a thick bottom (ice bottom)
- dust bubbles (less than 1 mm) in a number larger than 8 per 40 mm^2; in bottles from transition glass, dust bubbles are allowed without restriction
- defects in the handle (grooves, seams,..)
- deep seams from blank moulds – longer than 1/3 of the bottle body
- accentuated and sharp wrinkles in body or bottom
- area with visible scratches (loading marks) and wrinkles (wash boards) bigger than 20 mm^2 for bottles up to 0,20 l, 40 mm^2 for bottles from 0,21 l to 0,75 l, 60 mm^2 for bottles bigger than 0,75l.
- cords in body longer than 20 mm for bottles up to 0,20 l, 40 mm for bottles from 0,21 l to 0,75 l, and 60 mm for bottles with capacity bigger than 0,75 l
- scabby bottom
- distinctive cat scratches
- contaminated outside surface of bottle (emulsion, lubricants)
- “maps” on surface, orange surface, pitted surface, dent on surface, matte surface,… more than 25% outside on the visible surface **
- lettering, engraving and emboss not well-shaped **.

Note: * Size is valid for round blisters. Oval-shaped blisters are calculated according to: B = (width+length)/2
** The quality of the surface as well as shaping of the lettering and the emboss deteriorates with increasing wear of the moulds.

Max number of bottle with defect is 4% while number of defects must not exceed the AQL of the given group. Exceeding of applicable AQL for above mentioned defects is reason for complaint.

B.3 Admissible % of bottle breakage during filling and packaging

Admissible % of bottle breakage during filling and packaging is set by following table:

Bottle shape	Flint and extra-flint glass	Amber glass	Black glass
Simple, rotational bottle without complex engraving/inscriptions, without orientation mark	0,3 % (0,2 %)	0,4 % (0,2 %)	0,5 % (0,4 %)
Simple, rotational bottle without complex engraving/inscriptions, with orientation mark	0,4 % (0,3 %)	0,4 % (0,3 %)	0,6 % (0,5 %)
Simple, rectangular bottle without complex engraving/inscriptions	0,4 % (0,3 %)	0,5 % (0,4 %)	0,7 % (0,6 %)
Bottle with complex shape and engraving/inscription	0,6 % (0,5 %)	0,7 % (0,6 %)	1 % (0,8 %)

Note: Value in bracket is valid only for bottles which were produced on moulds designed by Sklarny Moravia. Sklarny Moravia arrange maintenance and corrections/modifications of moulds. And these moulds are using only for productions in Sklarny Moravia.

B.4 Supplied bottles of other shapes

In case that uncomplete set of moulds is supplied by the customer and bottles have to be manufactured together with other bottle shape to utilize the whole manufacturing machine, then the share of different bottle shape in the delivery is max. 0.2%.

C. Additional requirements agreed with client

D. Rules for complaints

Our target is to supply bottles in agreed quality. In case, that there will be appearance of bottles with defects beyond these agreed standard quality conditions in the delivery, the client has the right to complaint. Warranty for our bottles is 6 months from delivery date, max 12 months from production date, if it wasn´t agreed different condition (in part C).

The procedure for complaint is following:

1) The complaint is placed to the attention of company salesperson, who takes care of particular business case.
2) The complaint has to be placed in written form (fax, letter, e-mail). A letter of complaint has to contain following information:
   - delivery note identification number
   - number of filled bottles
   - total quantity of delivered bottles
   - quantity of defective bottles
   - The reason of complaint (defect description). It is very helpful, if there's also an information, if the problem appears on particular mould number (mould number is located in the bottom or near the bottom of bottle), or if the appearance of defect is not related with mould number
   - copies of pallet labels
   - photos of complained bottles with defect, or samples of defective bottles will be sent to Sklárny Moravia (at supplier costs)
   - Heat-treatment curve for bottles which were decorated.

   All this information´s are important for complaint qualification and for determination of defect cause. Without these data and information, it is not possible to accept the complaint!
3) It is not allowed to scrap or waste the bottles – this decision have to be made by supplier's salesperson. Salesperson have to inform the client within 3 work days, if supplier wants to withdraw the bottles, or to propose following steps in complaint.
4) The result of complaint (if it was accepted or rejected) will be sent to client within 14 days after all information´s about complaint were received (this includes also delivery of samples, if requested, and also visit at client's place, if it is necessary). The client will also obtain proposal of steps, which will be taken by supplier to prevent future appearance of complained problem by supplier salesperson, or supplier quality representative.

It is not possible to apply the complaint, if the bottles damage cause is:

- unappropriate warehousing and manipulation at client's side
- by effect of big temperature shock (this is valid especially for the winter time, when the bottles are transported from non-heated warehouse and filled by hot content, where the difference of temperatures is higher than 45°C)
- the damage appears during decoration of bottles arranged by client (for example by cause of incorrect parameters set for decoration process).

Date of agreement:

Supplier representative: Client representative:

…..... …....

(signature) (signature)