



**KAVALIER**

# CERTIFICATE OF CONFORMITY

340/25

Issuer's name/ producer: **KAVALIERGLASS, a.s.**

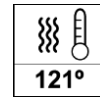
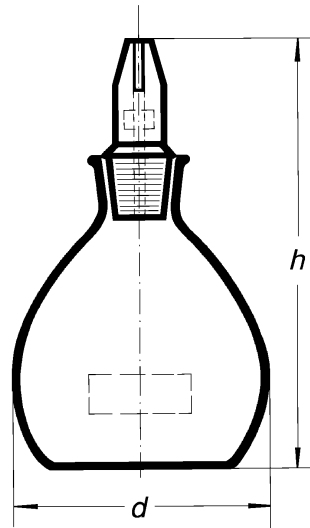
Issuer's address/Producer: **Křížová 1018/6, Prague 5**

Production plant: **Sklářská 359, 285 06 Sázava, Czech Republic**

Object of the declaration: **PYKNOMETERS acc. to Gay-Lussac**

<u>Catalogue Nr.</u>	<u>Product IDN</u>	<u>Capacity/ ml</u>	<u>d [mm]</u>	<u>h [mm]</u>	<u>SJ/ NS</u>
1621	1632431722030	100	57	100	10/ 13

Scheme of the glass item



<b>Material specification:</b>		
<b>Pycnometer</b>	clear	Borosilicate glass SIMAX®
<b>Print</b>	white	in fired-on, chemically resistant ceramic enamel
<b>Purpose of use</b>	Pycnometers also known as density bottles or specific gravity bottle or SG bottle. Pycnometers are used for determining the particle density and specific gravity of filler in fine aggregates.	

The object of the certificate described above is in conformity with the requirements of the following Standards and Regulations:

- **General Product Safety Regulation 2023/988 (GPSR)** of 13 December 2024 Ensuring product safety in the EU

**Glass characteristics:**

- ISO 3585 Borosilicate glass 3.3 – Properties
  - Chemical durability (art. 4.1, 4.2, 4.3, 4.4)
  - Physical properties (art. 5.1, 5.2, 5.3, 5.4, 5.5, 5.6)
- ISO 4794 Laboratory glassware — Methods for assessing the chemical resistance of enamels used for colour coding and colour marking
- ISO 3507:1999 Laboratory glassware — Pyknometers

Table 1 – ISO 3507: Types and sizes of pyknometers

Type	Designation	Nominal capacity [ml]	Actual capacity, ref. T [20 °C]
1	Lipkin	1 2 5 10	Between zero lines of the two scales
2	Sprengel	5 10 25	From tip of jet to graduation line
3	Gay-Lussac	1 2 5 10 25 50 100	To top of bore of stopper
4	Reischauer	10 25 50 100	To zero line of scale
5	Hubbard	25 50	To top of bore of stopper
6	Ground -in thermometer	10 25 50 100	To top of capillary side tube

The actual capacity of the pyknometer shall be determined at the 95% confidence level ( $k'2$ ) with the uncertainty of measurement which does not exceed the following values:

Table 2 – ISO 3507:

Type	Designation	Value [ $\pm\mu$ l]
1	Lipkin	5
2	Sprengel	5
3	Gay-Lussac	10
4	Reischauer	5
5	Hubbard	50
6	Ground -in thermometer	15

Maximum permissible errors in capacity fulfill the values specified in Table 3

Table 3 – ISO 3507:

Nominal capacity [ml]	1	2	5	10	25	50	100
Accuracy limits [ $\pm$ ml]	0,1	0,3	0,5	1,0	2,0	3,0	3,0

**No heavy metals (lead, cadmium, mercury and hexavalent chromium):**

- Regulation (EC) No. 987/2008 of 8 October 2008 amending Regulation (EC) No. 1907/2006 – REACH as regards Annexes IV and V – glass was exempted from the obligation to register.
- **Chemical characteristics (acc. to Regulation No 1907/2006/EC):**

Composition:	<b>CAS No.</b>	<b>EINECS No.</b>	<b>Component:</b>	<b>Concentration /Percent:</b>
	65997-17-3	266-046-0	Glass, oxide, chemicals	100%

**Chemical stability:** Stable

- **Chemical characteristics of borosilicate glass** (approximate values)

Component	Content (percentage by weight)
SiO <sub>2</sub>	80,3%
B <sub>2</sub> O <sub>3</sub>	13,0%
Al <sub>2</sub> O <sub>3</sub>	2,4%
Na <sub>2</sub> O + K <sub>2</sub> O	4,3%

### Characteristics of Borosilicate glass SIMAX®

- **Acid resistance** Class I. ISO 1776
- **Hydrolytic resistance** Class I. HGB1 to ISO 719;  
HGA1 to ISO 720
- **Alkali resistance** Class II. ISO 695
- **Coefficient of mean linear thermal expansion  $\alpha$ :**  $3,3 \times 10^{-6} \text{ K}^{-1}$  ISO 7991; (20/300 °C)
- **Pharmaceutical use**

	<i>European Pharmacopoeia (EP)</i>	<i>US Pharmacopoeia (USP)</i>	<i>Japanese Pharmacopoeia (JP)</i>
<b>Glass</b>	Eur. Ph.10 <sup>th</sup> – 3.2.1	USP <660>	JP16

#### Supporting data:

TEST / European Pharmacopoeia 10, Art. 3.2.1	UNIT	LIMIT	RESULT
Hydrolytic resistance - inner surfaces, test A	ml 0,01 mol/l HCl/100ml of leachate	max 0,40	0,04
Hydrolytic resistance - glass grains, test B	mol 0,02/l HCl/g	max 0,1	0,038
Arsenic content	$\mu\text{g As/g}$	max 0,1	< 0,001

- **Sterilization**

Hot air sterilization, in the oven	up to 140 °C
Steam sterilization, in an autoclave	121 °C/ 20 min/ 2,05 bar
	134 °C/ 10 min/ 3,04 bar

#### Additional information:

The producer declares that the products are safe when used in usual and proper way.

This document was issued based on the accredited Test Report Ref. No. 472114281-01 by ITC Zlín, CZE.

The validity of the declaration ends if the requirements are changed.

The producer has installed the Quality Assurance System according to ISO 9001 and thus guarantees that all products delivered to the market are in full conformity with the technical documentation and with all fundamental requirements for such products. Certificate No. 3258 100 23 52 0132 issued by TÜV CERT, Certification Body at TÜV NORD CERT GmbH.

The certificate is issued for the customer: **AUXILAB S.L.**

Sázava, 05. 06. 2025  
Place and date of issue

Ing. Kristýna Machová  
Project Quality Engineer

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