

## Data Ion Chromatography Analysis

Object / Record : V86d (KN&V)

Artist : Karel Petrus Cornelis de Bazel

Title and date : Portglas - Servies H - 1918

Conservator : Mandy Slager



<b>General condition</b>	Date: 16-09-2020
2013: glasziekte, dof uiterlijk kelk, druppelvorming, mistvorming 2013: cleaned (demi:ethanol (4:1) met VAB foto's feb. 2020 2020: 17 sept: samples taken en IC analysis: cloudy binnenzijde kelk. Condition yellow = poor 2023: c1 cloudy appearance cuppa, c2 slippery interior surface of cuppa, c3 deposit dust, d1 deposit droplets interior side of cuppa	Very poor

<b>Examination and analysis</b>	Date: 01-08-2023
Analysis september 2020: samples were taken from the exterior surface of the object for analysis by means of Ion Chromatography by G. Verhaar. The results show relatively low concentrations of sodium or potassium.	Likely stable

### Concentrations (mg/L)

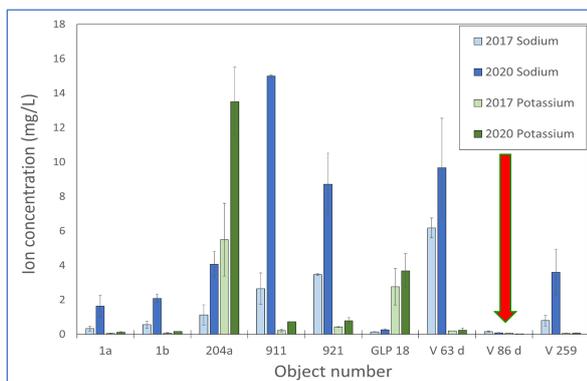
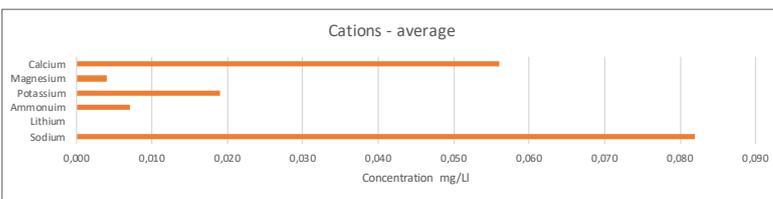
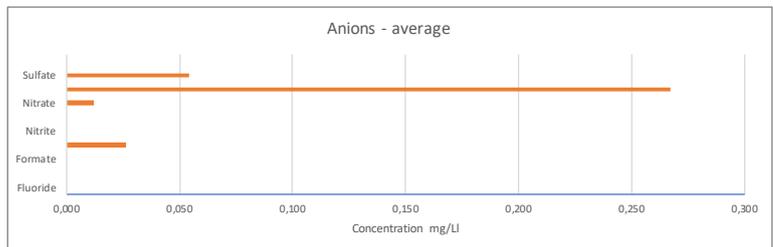
	Anions			
	U	Ave	SD	RSD
Fluoride	19,00	0,000	0,000	0,000
Acetate	60,05	0,000	0,000	0,000
Formate	45,02	0,000	0,000	0,000
Chloride	35,45	0,026	0,008	0,313
Nitrite	46,01	0,000	0,000	0,000
Bromide	111,96	0,000	0,000	0,000
Nitrate	62,01	0,012	0,017	1,414
Carbonate	60,01	0,267	0,026	0,098
Sulfate	96,06	0,054	0,004	0,072
Phosphate	94,97	0,000	0,000	0,000

	Cations			
	U	Ave	SD	RSD
Sodium	22,99	0,082	0,011	0,138
Lithium	6,94	0,000	0,000	0,000
Ammonium	18,04	0,007	0,000	0,055
Potassium	39,10	0,019	0,002	0,123
Magnesium	24,31	0,004	0,001	0,215
Calcium	40,08	0,056	0,013	0,227

Added Na and K concentrations			
Sodium	22,99	3,567	
Potassium	39,10	0,486	
<b>Total</b>	<b>µmol/L</b>	<b>4,053</b>	Likely stable

Categorisation total alkaly ion concentration	µmol/L
IC-A	Likely stable < 20
IC-B	potentially unstable >20 <50
IC-C	likely unstable > 50

### Graphs and/or Tables



**Interpretation, questions and comments on results**

The object was cleaned in 2013. The images taken by the Visual Art Box in 2013 show that the object appeared in good condition again after the cleaning treatment. In 2014 signs of cloudiness and slipperiness were noticed again. In 2020 the object was again diagnosed with a cloudy surface. The object does now, in 2023, not look as cloudy as in appeared the VAB images of the object before cleaning but looks more cloudy than the VAB images after cleaning in 2013.

The results from the IC analysis show very low concentrations of anions or cations. This is in contradiction with all the visual diagnostics that were done at several moments in history.

In the two top graphs with representation of average concentrations of anions and cations, the standard deviation can be drawn from the raw data in the left tables, but is not inserted in the graphs. They are included in the last graph. In the bottom graph the LOQ line and red line indicate that this object falls within the IC-A category. The green colour of the bar indicates that the condition was assessed as being poor during visual examination prior to sample taking. It shows that the signs visually noticed were NOT in line with the IC results.

Not detected: F<sup>-</sup>, NO<sub>2</sub><sup>-</sup>, Br<sup>-</sup>, NO<sub>3</sub><sup>-</sup>, PO<sub>4</sub><sup>3-</sup>, Li<sup>+</sup>, NH<sub>4</sub><sup>+</sup>, Mg<sup>2+</sup>.

CONCLUSION: the IC results shown above were likely wrong because the exterior of the cuppa was samples for analysis. The concentration of ions is likely on the inside of the cuppa.

**Suggestions further examination or analysis**

The object should be analysed again: this time samples should be taken from the interior side of the cuppa to see if it then matches the visual results.