

## Data Ion Chromatography Analysis

Object / Record : V2466 (KN&V)

Artist : Ettore Sottsass - Vistosi

Title and date : Orsete - schaal 1972, glas appliqueren

Conservator : Mandy Slager



### General condition

Date: 16/09/2020

2013: slecht, binnenzijde voelt zepig aan, wweeping, druppels zichtbaar binnenzijde schaal

2013: cleaned (gedemineraliseerd water:ethanol (4:1) met VAB foto's feb. 2020

2020: 17 sept: samples taken and IC analysis: *vettig oppervlak* Condition red = very poor (more based on 2013 results then 2020 apparently)

2023: c.2 slippery, c.3 dust,

Very poor

### Examination and analysis

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 and M. Slager + uva. The results show relatively high concentrations of sodium. Most likely the samples have been taken from the top side of the object, whereas the bottom is more slippery. Possible that there are droplets, but on milky glass surface hard to notice.

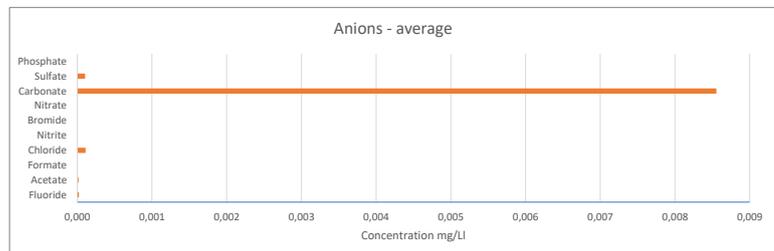
XRF analysis carried out in 2023 during the RCE erfgoedlabdag. No results yet received (2023)

Likely unstable

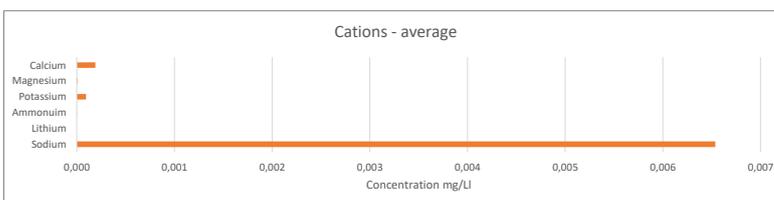
### Concentrations (mg/L)

Anions				
	U	Ave	SD	RSD
Fluoride	19,00	0,021	0,003	0,120
Acetate	60,05	0,016	0,002	0,121
Formate	45,02	0,000	0,000	0,000
Chloride	35,45	0,111	0,010	0,088
Nitrite	46,01	0,000	0,000	0,000
Bromide	111,96	0,000	0,000	0,000
Nitrate	62,01	0,000	0,000	0,000
Carbonate	60,01	8,554	0,238	0,028
Sulfate	96,06	0,105	0,006	0,050
Phosphate	94,97	0,000	0,000	0,000

### Graphs and/or Tables



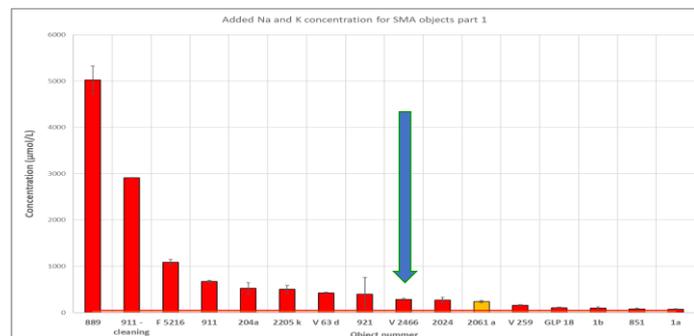
Cations				
	U	Ave	SD	RSD
Sodium	22,99	6,537	0,333	0,051
Lithium	6,94	0,000	0,000	0,000
Ammonium	18,04	0,001	0,000	0,156
Potassium	39,10	0,095	0,007	0,078
Magnesium	24,31	0,007	0,001	0,113
Calcium	40,08	0,190	0,021	0,110



### Added Na and K concentrations

Sodium	22,99	284,344
Potassium	39,10	2,430
Total	µmol/L	286,774

Likely unstable



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

### Intepretation, questions and comments on results

The object was cleaned in 2023. There were no images taken by the VAB in 2013. The object has shown signs of glass instability since the 2013 project: slippery. But in 2013 actual droplets were detected. It is very likely that the slippery interior surface of the object in 2023 was also due to droplet formation, but not detected as such.

The results from the IC analysis show relatively high concentrations of Sodium. Also peaks for chloride and calcium. Large peak for the carbonates. Although carbonates are often found on unstable glass as well, the method of IC analysis is not very sensitive for carbonates (therefore high default margin). The high concentration of Sodium is in line with the characteristics noticed during examination now: slippery and droplets.

In the two top graphs with representation of avarage 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-C category. The red colour of the bar indicates that the condition was assessed as being very poor during visual examination prior to sample taking. It shows that the signs visually noticed were in line with the IC results.

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

### Suggestions further examination or analysis

\* More information about the manufacturing process (artist interview) and comparison with possible similar objects in other collections

\* Compositional analysis (XRF or other) to be able to combine data from visual examination with IC data and composition informatipon for even deeper understanding of condition.