

Data Ion Chromatography Analysis

Object / Record :	569 (KN&V)
Artist :	anoniem
Title and date :	kom, à la façon de Venise - 1600/1700
Conservator :	Mandy Slager



General condition	Date: 16/09/2020
2013: slecht, beschadigd, barst op buik en bij aanzet voet. Onderzijde voelt zepig aan, doffe plekken en vingerafdrukken binnenzijde 2013: cleaned (demi:ethanol (4:1) no images were taken by VAB. 2017: barst voet en crizzling. 2020: 17 sept: samples taken for IC analysis: roze kleur, grote barst, krasjes en kleine barstjes op het oppervlak. Condition red = very poor 2023: b.2 cracks in the glass, c.1 cloudy area bottom half of the object (clear part), c.4 pinkish colour of bottom half, d.2 crizzled	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 in collaboration with M. Slager and UvA students. The results show relatively high alkali concentrations.	Likely unstable

Concentrations (mg/L)

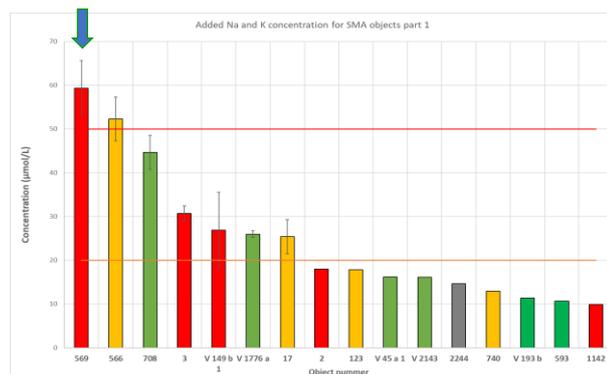
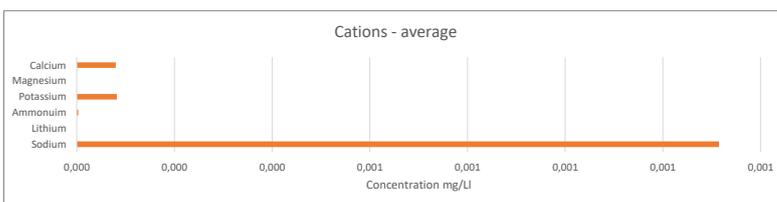
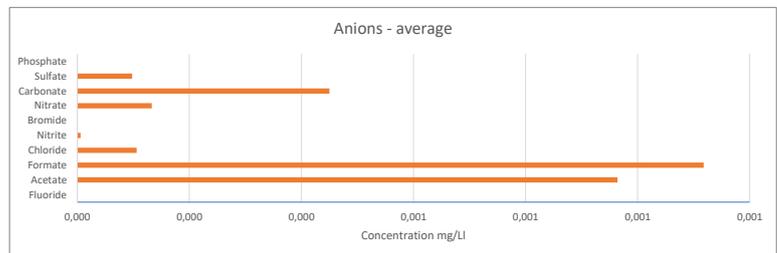
Anions				
	U	Ave	SD	RSD
Fluoride	19,00	0,000	0,000	0,000
Acetate	60,05	0,964	0,315	0,327
Formate	45,02	1,118	0,667	0,596
Chloride	35,45	0,106	0,021	0,198
Nitrite	46,01	0,006	0,004	0,597
Bromide	111,96	0,000	0,000	0,000
Nitrate	62,01	0,133	0,046	0,350
Carbonate	60,01	0,450	0,398	0,884
Sulfate	96,06	0,098	0,026	0,266
Phosphate	94,97	0,000	0,000	0,000

Cations				
	U	Ave	SD	RSD
Sodium	22,99	1,315	0,399	0,303
Lithium	6,94	0,000	0,000	0,000
Ammonium	18,04	0,003	0,001	0,463
Potassium	39,10	0,082	0,021	0,258
Magnesium	24,31	0,000	0,000	0,000
Calcium	40,08	0,080	0,023	0,285

Added Na and K concentrations			
Sodium	22,99	57,199	
Potassium	39,10	2,097	
Total	µmol/L	59,297	Likely unstable

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

Graphs and/or Tables



Intepretation, questions and comments on results

The object was cleaned in 2013. No images were taken by the Visual Art Box in 2013. In 2020 a pink colour was noticed, crcks, scratches and small cracks ON the surface. In 2023 it is mentioned that the object is cloudy, pinkish, cracked and crizzled. The pattern of the crizzling in the clear glass seems different than the pattern of the blue glass. The composition seems to relate to the morphology of the micro cracks. The scratches students saw in 2020 most likely refer to the crizzling (the objects were sampled in a dark storage facility with day light lamp). The crizzling is not noticed in 2013 (in 2017 it is). But in 2013 a slippery bottom was mentioned (not noticed now anymore). The object is definitely changing all the time and seems to have gotten worse in 10 years time. The cloudy bottom can also be related to use (more like lime scaling issue). The cracks in the object could just as well be from an incident, but could be from tension as a result of instability of glass: further research.

The results from the IC analysis show a relatively high concentrations of Sodium: this is in line with the characteristics noticed during examination.

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 indicaties 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.

Sodium concentration is dominant compared to the concentration of Potassium. One species being dominant is usually the case when both species are present in unstable glass

Suggestions further examination or analysis

* 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.

* Very closely keep track of the different condions over time: perhaps possible to watch if cracks are forming, extending, and pattern analysis of blue and clear part.