

Data Ion Chromatography Analysis

Object / Record : V63 d (KN&V)

Artist : Karel Petrus Cornelis de Bazel, Glasfabriek Leerdam

Title and date : Wijnglas servies F, 1921 - 1923 Annagroen loodglas

Conservator : Mandy Slager



General condition

Date: 16/09/2020

2013: slecht, weeping, na fotografie duidelijk te zien dat voorwerp aan het uitdrogen is: kristallen waargenomen. Gevaar van schommelingen duidelijk te zien hier. Later in 2013: kristallen en niet meer weeping. Images were taken by the Visual Art Box showing extreme cloudiness and crizzling before cleaning and only crizzling left afterwards.
 2013: cleaned (demi:ethanol (4:1)). After cleaning it became apparent that object is crizzled (pattern very much resembles V 61 a 1!)
 2020: 17 sept: samples taken en IC analysis: cloudy, vreemde verticale lijntjes vanaf bovenrand 1,5 cm. naar beneden. Vettig, veel vuil aan vastgeplakt, netwerk van scheurtjes en krasjes.
 2023: d.1 .1 deposit of droplets, d.2.1 incipient crizzling, c.2 slippery surface

Very poor

Examination and analysis

Date: 01/08/2023

Analysis June 2017: samples were taken by G. Verhaar (likely from exterior surface of the cuppa). The results show relatively high alkali concentrations.

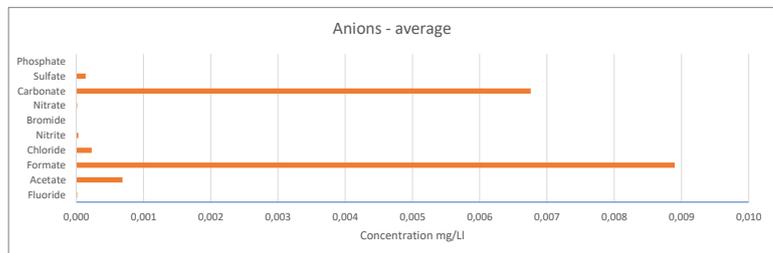
Analysis september 2020: samples were taken from the exterior surface of the object for analysis by means of Ion Chromatography by G. Verhaar, M.Slager. The results show relatively high alkali concentrations.

Likely unstable

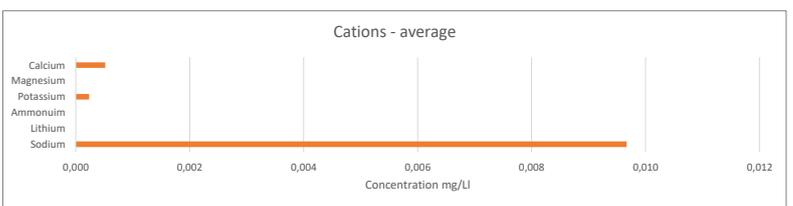
Concentrations (mg/L)

Anions				
	U	Ave	SD	RSD
Fluoride	19,00	0,012	0,009	0,716
Acetate	60,05	0,688	0,618	0,898
Formate	45,02	8,900	4,344	0,488
Chloride	35,45	0,229	0,125	0,547
Nitrite	46,01	0,032	0,046	1,414
Bromide	111,96	0,000	0,000	0,000
Nitrate	62,01	0,012	0,017	1,414
Carbonate	60,01	6,758	3,565	0,528
Sulfate	96,06	0,139	-0,070	0,502
Phosphate	94,97	0,000	0,000	0,000

Graphs and/or Tables

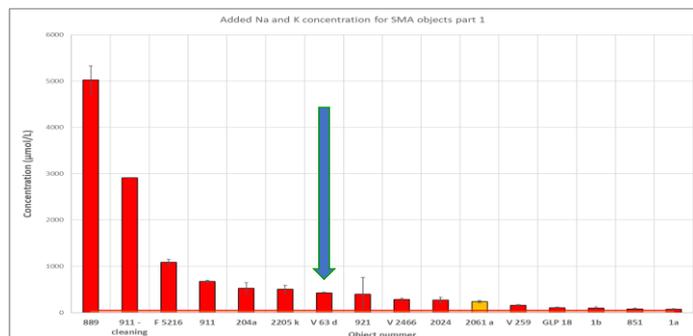
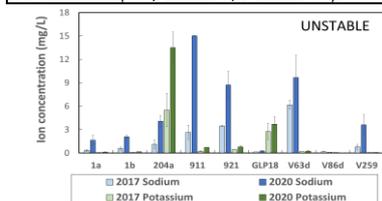


Cations				
	U	Ave	SD	RSD
Sodium	22,99	9,668	2,877	0,298
Lithium	6,94	0,000	0,000	0,000
Ammonium	18,04	0,000	0,001	1,414
Potassium	39,10	0,235	0,125	0,531
Magnesium	24,31	0,000	0,000	0,000
Calcium	40,08	0,518	0,074	0,468



Added Na and K concentrations

Sodium	22,99	420,535
Potassium	39,10	6,010
Total	µmol/L	426,545



Categorisation total alkali 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 2013. Interesting info see general condition. Images taken by the Visual Art Box in 2013 show that the object is very cloudy before cleaning. Both before and after cleaning it is clear that there is also crizzling. During the condition check prior to sampling in 2020 the crizzling was noticed again, also the cloudiness seemed to have returned. When checked in 2023 it was clear that there are droplets on the surface and the crizzling is apparant, also the particular pattern along the rim as mentioned in 2020.

The results from the IC analysis show relatively high concentrations of Sodium and Formate. Also a peak for carbonate. 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 cloudy (formation of droplets on the glass surface) and incipient crizzling.

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-A 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

- * More information about the manufacturing process (colour and time period in Leerdam history).
- * 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.
- * Fractography