

Report 2019-08-00189

Analysis of Volatiles Organic Compounds in 'Clay' Samples

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To
Graniet Import Benelux BV

Our reference
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Summary

Based on static headspace GC-MS analysis (50°C for 30 minutes) it can be concluded that the release of individual volatile organic compounds:

- From the sample 1 (Granuliet droog) and 2 (Granuliet vers), are below the limit of detection, which is estimated to be 10 ppm.
- In sample 3 (Flocculant) a series of saturated hydrocarbons (wax) are detected.
- Acrylamide was not detected in all 3 samples.



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1. Introduction

The analytical question is to identify volatile organic compounds (VOCs) released from 'clay' samples when heated to 50°C for 30 minutes. It was specially requested to check the presence of acrylamide which could originate from polyacrylamide; for this an acrylamide reference was also analyzed.

2. Experimental

2.1. Sample information

No	Label
1	Granuliet droog
2	Granuliet vers
3	Flocculant"
4	Reference acrylamide (Sigma)

2.2. Technique

About 5 grams of sample (or 0.2 gram of reference acrylamide) is weighted into a 20 mL headspace vial and capped. The vial is heated to 50°C for 30 minutes (static headspace). The headspace is sampled (loop 0.5 mL) and directly analyzed by gas chromatography mass spectrometry (GC-MS). A GC column is used which is suitable for the analysis of volatiles.

2.3. Statistical information

The method is qualitative and not validated.

3. Results and discussion

An overlay of the TD-GC-MS chromatograms of all samples, the reference acrylamide and a blanc is shown in figure 1, including identifications of the main peaks.

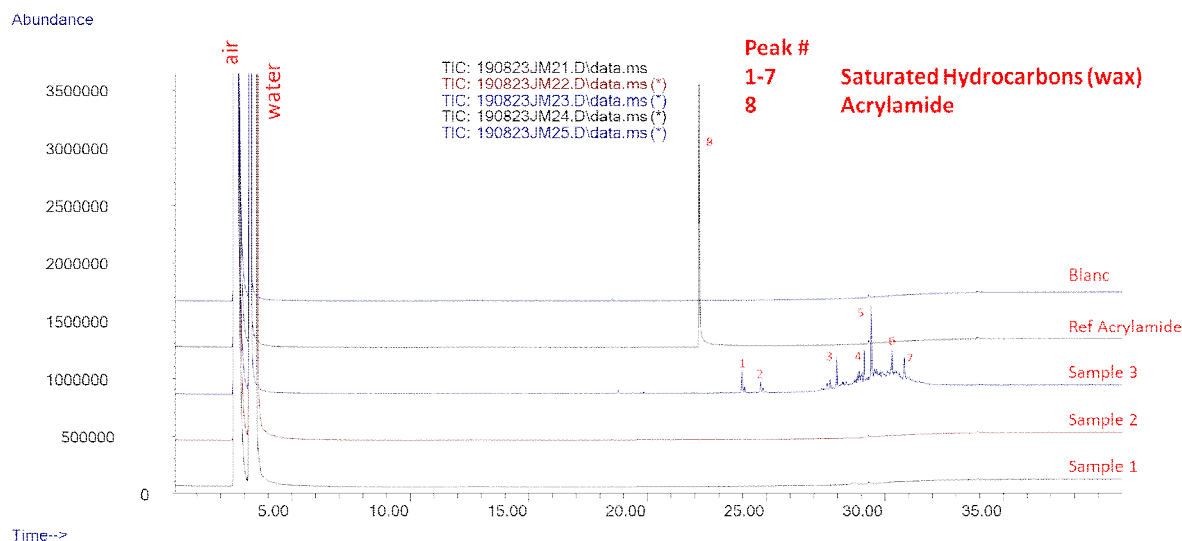


Figure 1 SH-GC-MS chromatograms of all samples

In the chromatogram of the sample 1 and 2, no significant peaks are detected. In the chromatogram of sample 3, a series of saturated hydrocarbons (peaks 1 to 7) are detected. Acrylamide (peak 8) was not detected in all 3 samples. The used method is qualitative; however, based on the acrylamide reference, the limit of detection (LOD) was estimated to be 10 mg/kg (ppm).

4. Conclusion

Based on static headspace GC-MS analysis (50°C for 30 minutes) it can be concluded that the release of individual volatile organic compounds, from the sample 1 (Granuliet droog) and 2 (Granuliet vers), are below the limit of detection, which is estimated to be 10 ppm. In sample 3 (Flocculant) a series of saturated hydrocarbons (wax) are detected. Acrylamide was not detected in all 3 samples.