

## Analysis of surfactants & disinfectants at Triskelion

Maintaining a clean facility while ensuring efficient processes is crucial in the manufacturing of food and feed products. Contamination issues may arise, and Triskelion is here to assist. We can screen your products and identify the failing component in your process. Triskelion has extensive experience in the quantitative analysis of surfactants and disinfectants, particularly quaternary ammonium compounds (QAC), alkyldimethyl betaines (ADB), alkyldimethyl ethoxylates (ADE), alkylamine oxides (AO), alkylbenzene sulfonates (ABS) and alkyl polyglycosides (APG), in several matrices. These analyses can also be offered in a 24/7 emergency response service subscription.



### Experimental

The method of analysis is liquid chromatography – (tandem) mass spectrometry LC-MS(/MS). Quantitative analysis is performed using triple quadrupole MS, on a Qtrap 6500 (Sciex) or a Xevo TQ-S (Waters). Method development is conducted using Orbitrap MS on an Exploris 240 (Thermo Scientific). Typical chromatograms (of AO) are shown in Figure 2. Due to differences in polarity and other molecular properties, the sample preparation, analytical column, chromatography and ion mode are adapted to the analytes of interest.

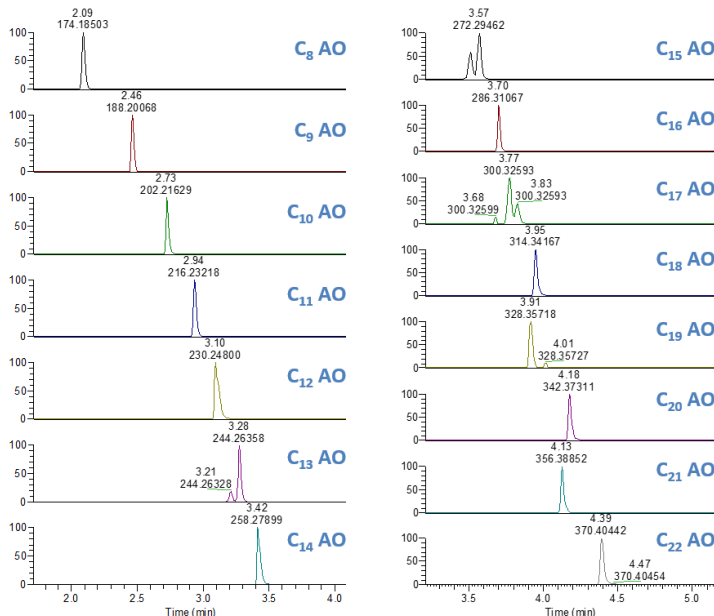


Figure 2: Typical chromatograms of alkylamine oxides (AO).

### Compound types

Multiple classes of molecules are used as surfactants and disinfectants (see Figure 1) and often the molecular modules are heterogenous. For example the alkyl part can be linear or branched. Typically, we quantify the compounds per individual alkyl length. The applied LOQ is always below the lower limit value. For QACs, which can be subdivided in benzalkonium chlorides (BAC) and dialkyldimethyl ammonium chlorides (DDAC), the limit of detection is at the low- or sub-ppb level. Triskelion has experience with various matrices, such as milk, whey and membrane filters. During each run we include spiked samples of each matrix to assess recovery.

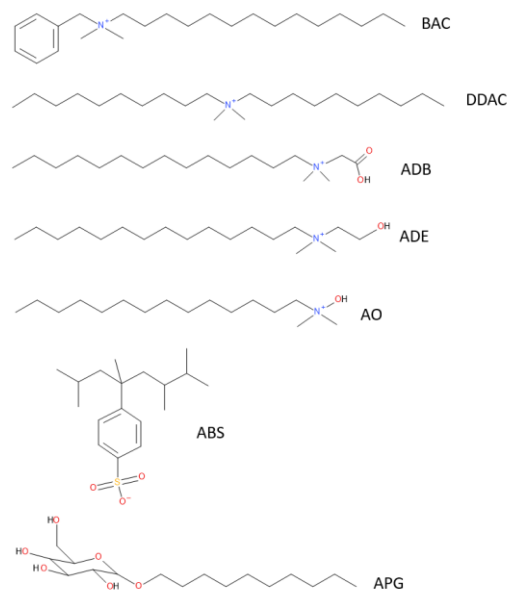


Figure 1: Examples of molecule classes.

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