

## How to evaluate the performance of additives to reduce or mask odour

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The evaluation of the performance of additives to reduce or mask odour can be a complex task. This lecture aims to give an overview of state of the art sensory and analytical approaches.

Consumers pay more and more attention to scents, and to a healthy environment. Often the presence of malodours is perceived as compromised hygiene or even as health threats. The increasing use of highly functional products reflects how much consumers care about their health, their appearance, and their daily environment.

There are different possibilities to measure the performance of a additives: sensory and analytical odour measurement techniques and also combinations thereof.

It is very important to select the method carefully in order to provide meaningful answers to the product developers. The odour measurements can be targeted to monitor scent-signature stability over the products shelf-life or measurements to support and document product claims. In many cases, it is important that the testing environment is as close as possible to the real product usage. For all sensory odour measurements, it is very important to have appropriate screening and training protocols in place. When performing odour related measurements, it is very important to understand fundamentals about the human sense of smell as well to know the detection capacities of the chosen analytical detector. A characteristic measure is the odour threshold concentration according EN 13725. Odour intensity, hedonic tone and odour description can be also measured to assess the odour.

The assessing of odour measurement by panellists is very fast, and allows capturing sensory related information based on the human perception. Nevertheless, the measurement of molecular based information is mandatory for revealing important facts, which determine the performance over time. Over the last decades, Molecular Spectroscopy methods to analyze headspace compositions have evolved tremendously. Today's GCMS/TOF instruments can detect molecular traces at concentration levels of 100 times smaller than standard GC-MS Instruments. The combination with the human nose as complementary detector, allows recording the GC-Olfactometry trace. Linking the molecular information from GC-MSTOF with the perceived intensity and perceived odour quality, allows detailed understanding of how additives impact molecules presences and so global odour.

Some case studies can illustrate, the set up of these methodologies to evaluate the performance of additives: Activated carbon is added in some polymers to reduce odour in car interior. It is used also used in wound-dressing to reduce odour of injuries. Clays or other mineral agent can be used in deodorant to reduce sweat odour but also in kitty litter to absorb urin odour. Other examples are about masking products added in formula to improve the global odour of product when we use it, it is the case of some catalyst for industries but also of some capillary products.