

An Qualitative fragrance throw evaluation & smell intensity (candle blends)

THE INTERNATIONAL GROUP, INC. (IGI) is an international leader in petroleum wax technology, development and manufacturing of petroleum based wax products. They are the leading supplier of blended wax products for the candle market in North America.

“The ranking obtained by the panel and the Electronic Nose showed excellent correlation.”

«The customer’s perception of a candle’s smell is one of the main selling features of a candle, so evaluating the fragrance throw is important, both when the candle is not burning (“cold” “throw”) and when the candle is burning (the “hot” throw, from the melt pool).»

At a meeting of the NCA (National Candle Association) (Orlando,

Florida), IGI presented a paper which included the evaluation of the fragrance throw of candle blends.

Two approaches used to evaluate this smell feature

1. Human Odour Panel – at French Color and Fragrance Co. This was a subjective method, and it basically assessed the cold throw of the fragrance blended in different waxes.
2. Electronic Nose – Alpha M.O.S. FOX. This was an objective method which evaluates the entire odour without any separation of components. It enabled us to measure the fragrance throw from the molten wax (in this particular case, at 70°C).

An earlier investigation, in which fragrance throw from different candle blends was evaluated with an Electronic Nose, indicated that a blend’s composition can affect the fragrance throw. In order to expand on this work, a wider variety of blends were evaluated in the present study using the Electronic Nose technology.

In addition to the Electronic Nose technology, the more traditional Human Odour Panel approach was

used as well. The same ranking for the throw of various candle blends, containing various raw materials (paraffin, vegetables or a mixture of both). and with two different fragrances (Cinnamon Vanilla and Wildberry) was obtained: the best throw was exhibited by the pure petroleum wax based blends and the poorest from 100% vegetables blends.

The International Group, Inc. (IGI)



THE INTERNATIONAL GROUP, INC.

Activity

Production of various types of waxes: paraffin, microcrystalline, petrolatum, non petroleum,

Context

Evaluation of the fragrance of candles

Equipment

FOX Electronic Nose

Users contact

Joey Viljoen
R&D Manager, Product Applications and Development

Website

<http://igiwax.com>

Discriminant Factorial Analysis was used to evaluate the character of the throw from the different blends. This analysis showed that the composition of the candle blends affected its fragrance throw:

- the throw of the paraffin blends were similar,
- the paraffin-vegetable blends similar,
- 100% vegetable wax was different from both other groups.

Intensity of candle blends: same results for Electronic Nose and Human Odour Panel



To rank the smell intensity of the different candle blends, a Statistical Quality Control Model was used.

The unfragranced samples were used as “calibration” samples, and the fragranced samples were treated as “unknown” samples. The distance of the fragranced samples from the band of unfragranced samples gave an indication of the intensity of the smell: the further away from the unfragranced band the unknown sample was, the stronger the smell.

Although the Human Odour Panel and the Electronic Nose evaluations were done at different temperatures, the ranking obtained by the two methods showed excellent correlation.

«We are currently working on a project to implement the use of the Gemini Plus (the routine analytical version of the Alpha M.O.S Electronic Nose) as part of our daily quality control of waxes.»

The Alpha M.O.S Electronic Nose is an objective and powerful tool for wax fragrance throw assessments with an excellent correlation with sensory panel ones