Optimization of Organoleptic Methods

L.A. Konopel'ko[1], FSUE D.I. Mendeleev All-Russian Research Institute for Metrology (FSUE D.I. Mendeleev VNIIM), Prof. Dr. (Tech.)
K.K. Semenov[2], FSAEI HE Peter the Great St. Petersburg Polytechnic University (FSAEI HE SPbPU), PhD (Tech.)
I.A. Moskvina[3], FSAEI HE SPbPU
M.V. Okrepilov[4], FSUE D.I. Mendeleev VNIIM, Assoc. Prof. Dr. (Tech.), m.v.okrepilov@vniim.ru

[1] Professor of Department, St. Petersburg, Russia
[2] Associate Professor, St. Petersburg, Russia
[3] St. Petersburg, Russia
[4] Deputy General Director for Quality and Educational Activities, St. Petersburg, Russia

Citation: Konopel'ko L.A., Semenov K.K., Moskvina I.A., Okrepilov M.V. Optimization of Organoleptic Methods, *Kompetentnost' / Competency (Russia)*, 2023, no. 6, pp. 12–17. DOI: 10.24412/1993-8780-2023-6-12-17

key words

organoleptics, statistical methods, confidence interval, optimal value, group of testers, odor detection threshold

We investigated the assessment of the odor detection threshold by members of the test team using two odorants: butanol and dimethyl ether. We have determined the limits of permissible error in determining the threshold of odor detection and the optimal number of testers, taking into account the significance and material costs.
Olfactometry is engaged in the analysis of odor, which is the field of evaluation of the reaction / response of testers. Olfactometric analysis is associated with significant material costs, primarily for the training and training of testers and payment of their labor costs. Since it is necessary to involve a group of testers to perform an organoleptic analysis, the economic costs of the analysis depend on the number of people in the group. It follows from this that the number of testers in the group should be optimal in order to ensure a sufficient level of accuracy in determining the smell with minimal economic costs.
Based on the results obtained, it can be concluded that 4 participants are the most optimal number of testers in the group to determine the threshold for odor detection. This conclusion can be traced by measurements of the detection threshold of both butanol and dimethyl ether.

References

1. GOST ISO 5492–2014 Organoleptic analysis. Dictionary; https://standartgost.ru/g/%D0%93%D0%9E%D0%A1%D0%A2_ISO_5492-2014.
2. GOST R 58578–2019 Rules for setting standards and controlling odor emissions into the atmosphere; https://fpieco.ru/media/uploads/images/gost_r_%2058577-2019.pdf.
3. SanPiN 1.2.3685–21 Hygienic standards and requirements for ensuring the safety and (or) harmlessness of environmental factors for humans; https://fsvps.gov.ru/sites/default/files/npa-files/2021/01/28/sanpin1.2.3685-21.pdf.
4. GOST R 57164–2016 Drinking water. Methods for determining odor, taste and turbidity; https://internet-law.ru/gosts/gost/63576/.
5. TC 51-31323949-94–2002 Odorant natural LLC Orenburggazprom. Specifications; http://www.1bm.ru/techdocs/kgs/tu/497/info/288/.
6. GOST ISO 6658–2016 Organoleptic analysis. Methodology. General guidance; https://internet-law.ru/gosts/gost/62936/.
7. Podinovskiy V.V., Potapov M.A. Metod vzveshennoy summy kriteriev v analize mnogokriterial'nykh resheniy: pro et contra [The method of weighted sum of criteria in the analysis of multi-criteria decisions: pro et contra], *Biznes-informatika*, 2013, no. 3(25), pp. 41–48.
8. GOST R 50779.24–2005 Statistical methods; https://internet-law.ru/gosts/gost/5236/.
9. GOST 22387.5–2021 Gas for domestic consumption. Methods for determining the intensity of odor; https://files.stroyinf.ru/Data/760/76070.pdf.

Как подготовить статью для журнала «Компетентность»

Оригинал статьи и аннотацию к ней необходимо передать в редакцию в электронном виде (на магнитном носителе или по электронной почте komp@asms.ru). При передаче информации по электронной почте желательно архивировать файлы. В названиях файлов необходимо использовать латинский алфавит. Допускаемые форматы текстовых файлов — TXT, RTF, DOC.

Допустимые форматы графических файлов:

- графики, диаграммы, схемы — AI 8-й версии (EPS, текст переведен в кривые);
- фотографии — TIFF, JPEG (RGB, CMYK) с разрешением 300 dpi.

К каждой статье необходимо приложить сведения об авторах — фамилия, имя, отчество, ученая степень, ученое звание, место работы и должность, телефон служебный и домашний, адрес электронной почты.