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NUMERICAL METHODS FOR CORRECT DETERMINATION OF VOLATILE COMPOUNDS IN THE ALCOHOL-CONTAINING PRODUCTS

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Determination of the volumetric content of ethanol in alcohol products, in practice, is usually carried out using a hydrometer or pycnometer. However, this method can be applied only to binary ethanol-aqueous solutions. The presence of significant concentrations of volatile compounds in the alcohol-containing products leads to a significant contribution of these compounds in the density of alcohol-containing sample. Therefore the direct calculation of the volumetric content of ethyl alcohol [1] for such alcohol products gives the value of the strength, which may differ significantly from the true one. Use of incorrectly calculated volumetric content of ethyl alcohol leads to incorrect results determining the values of the concentrations of volatile organic compounds in alcohol-containing products.

We proposed [2] new method "Ethanol as Internal Standard" for determination of volatile compounds in alcohol products by gas chromatography.

Here we offer numerical methods and algorithms for correct calculation of quantitative content of volatile compounds, including ethanol, on the basis of chromatographic data and indications of hydrometer. Proposed algorithms are realized in on-line calculator available on the Internet at http://inp.bsu.by/calculator/vcalc.html (in English) and http://inp.bsu.by/calculator/vcalcr.html (in Russian).

REFERENCES

[1] International Organization of Vine and Wine. *Compendium of international methods of wine and must analysis.* OIV, 2009. Vols. 1 and 2

[2] S. Charapitsa et al.. Direct Determination of Volatile Compounds in Spirit Drinks by Gas Chromatography. *Journal of Agricultural and Food Chemistry*, **61** (12):2950–2956, 2013.