DIN EN ISO 12966-4:2026-11 (E)

Animal and vegetable fats and oils - Gas chromatography of fatty acid methyl esters - Part 4: Determination by capillary gas chromatography (ISO 12966-4:2026)

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Principle **2**

5 Reagents and materials **2**

5.1 Reference standards. 2

5.1.1 Reference FAMEs. 2

5.1.2 Fats and oils with certified fatty acid composition. 3

5.1.3 Quantitative FAME standard mixture containing *cis* and *trans* FAMEs from C4:0 to C22:6. 3

5.1.4 Calibration FAME standard solution at 2 mg/ml for the calculation of the correction factors. 3

5.2 Internal standards. 3

5.3 Iso-octane (2,2,4-trimethyl pentane). 4

5.4 Methyl tert-Butyl ether (MTBE) (2-Methoxy-2-methylpropane). 4

5.5 *n*-Hexane. 4

5.6 *n*-Heptane. 4

5.7 Qualitative *cis* and *trans* isomers standard mixture solution. 4

5.8 Dichloromethane (methylene chloride). 5

6 Apparatus **5**

7 Sampling **5**

8 Preparation of test sample **5**

9 Preparation of methyl esters from fats, oils, and fatty acids **6**

10 Procedure **6**

10.1 General 6

10.2 GC conditions 6

10.3 Performance check 6

11 Calculations **7**

11.1 Qualitative analysis and peak identification 7

11.2 Quantitative analysis 8

11.2.1 General 8

11.2.2 FAMEs quantification, by mass (g/100 g) 9

11.2.3 FAMEs quantification, by area % 9

11.2.4 Butyric acid and caproic acid methyl esters quantification (only), by mass (g/100 g) in fat containing short chain fatty acids 9

11.2.5 Total *trans* FAMEs quantification (only), by mass (g/100 g) 10

11.3 Expression of the results for food labelling 10

12 Precision **11**

12.1 Results of interlaboratory test 11

12.2 Repeatability 11

12.3 Reproducibility 11

13 Test report **11**

Annex A (informative) **Theoretical flame ionization detector correction factor for fatty acid methyl esters** **12**

Annex B (informative) **Examples of chromatograms** **14**

Annex C (informative) **Elution zone of the *trans* fatty acid methyl esters** **21**

Annex D (informative) **Stoichiometric factors for converting fatty acid methyl esters to fatty acids** **26**

Annex E (informative) **Determination of the composition of fatty acid methyl esters expressed by area % in liquid vegetable oils** **28**

Annex F (informative) **Results of an interlaboratory trial** **29**

Bibliography **39**