
**Vegetable fats and oils — Determination
of cocoa butter equivalents in milk
chocolate**

*Corps gras d'origine végétale — Détermination des équivalents au
beurre de cacao dans le chocolat au lait*



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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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ISO 11053 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

Vegetable fats and oils — Determination of cocoa butter equivalents in milk chocolate

1 Scope

This International Standard specifies a procedure for the detection and quantification of cocoa butter equivalents (CBEs) and milk fat (MF) in milk chocolate by triacylglycerol (TAG) profiling using high-resolution capillary gas-liquid chromatography (HR-GLC), and subsequent data evaluation by simple and partial least-squares regression analysis. CBE admixtures can be detected at a minimum level of 0,5 g CBE/100 g milk chocolate and quantified at a level of 5 % mass fraction CBE addition to milk chocolate with a predicted error of 0,7 g CBE/100 g milk chocolate.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

milk fat content of milk chocolate

mass fraction of milk fat in milk chocolate determined by the procedure specified in this International Standard

NOTE The mass fraction is expressed in grams per 100 g of milk chocolate.

2.2

cocoa butter equivalents

non-cocoa vegetable oils and fats detected in milk chocolate in accordance with the procedure prescribed in this International Standard

NOTE The result is expressed qualitatively, i.e. CBEs present/CBEs not present (YES/NO).

2.3

cocoa butter equivalent content of milk chocolate

mass fraction of substances determined by the procedure specified in this International Standard

NOTE The mass fraction is expressed in grams per 100 g of milk chocolate.

3 Principle

Test samples, i.e. chocolate fats obtained from milk chocolate using a rapid fat extraction procedure, are separated by HR-GLC into TAG fractions according to their relative molecular mass and degree of unsaturation. Individual TAG fractions, i.e. 1-palmitoyl-2-stearoyl-3-butyroyl-glycerol (PSB), 1,3-dipalmitoyl-2-oleoyl-glycerol (POP), 1-palmitoyl-2-oleoyl-3-stearoyl-glycerol (POS), 1-palmitoyl-2,3-dioleoyl-glycerol (POO), 1,3-distearoyl-2-oleoyl-glycerol (SOS), and 1-stearoyl-2,3-dioleoyl-glycerol (SOO) are used:

- to calculate the MF content in the chocolate fat (grams of MF per 100 g chocolate fat);
- to determine the presence/absence of CBEs in chocolate fat using a simple linear regression model based on the three TAGs, POP, POS, and SOS, corrected for the TAG contribution originating from MF, and if this procedure indicates that the sample is not pure cocoa butter (CB);