

New analytic method for measuring saturated monoglycerides in biodiesel

Low saturated monoglycerides (SMG) are important to avoid problems with fuel filters at low temperatures as precipitation of SMG causes filter blocking. Up to now there has been no limit for SMG in the EN14214 because of difficulties to measure it. However standardization body CEN issued a method CEN-EN 17057 to measure SMG. In this context, our member BDI has shared with us the below remarks on this matter prepared by biodiesel eminence Martin Mittelbach:

The content of saturated monoglycerides (SMG) in biodiesel is important for the cold temperature behaviour of biodiesel. In EN 14214 only the content of total monoglycerides is limited with max. 0.7%. The share of saturated monoglycerides is dependent on the feedstock and the share of saturated fatty acids. So far, no specific method and limit of SMG is existing, however in Annex C of EN 14214 there is a calculation method existing using data of total monoglycerides and cloud point.

This calculation method does not really correlate with the SMG content, so the analytical method EN 17057 was developed in CEN and published in 2018.

The method EN 17057 is a gas chromatographic method analyzing 1- and 2- monopalmitoylglycerol as well as 1-mono-stearoylglycerol, the three most abundant saturated monoglycerides found in biodiesel. As internal standard 1-monononanoyl-glycerol is used. Prior analysis the sample is silylated with MSTFA. As column a 30m x 0.25 mm capillary column with 95% methylpolysiloxan is recommended. Calculation is done with the areas of the three mentioned saturated monoglycerides

in relation to the ISTD. The method was tested in a round robin test and the precision data are given.

So it is recommended for all biodiesel producers to use this method for their own production in order to get information on the exact content of SMG in their biodiesel. The measured value of SMG might be more precise to foresee the cold temperature behaviour and maybe further regulations of the content of SMG are possible in the future.

For sure, the method will be mentioned in the next revision of EN 14214.

Martin Mittelbach, March 2021



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