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**SHELF LIFE IMPROVEMENT OF C 18:2 RICH BIODIESEL WITH BAYNOX
ANTIOXIDANTS - AN EVALUATION OF EQUIVALENT EFFICACY
ACCORDING TO THE EU DRAFT DIREC. 2008/0016**

Dr. Axel Ingendoh

Lanxess Deutschland GmbH, Build. B 108 D-51369 Leverkusen

The draft of the EU specification for Biodiesel blends B7 with fossil diesel requires the addition of 1.000 ppm of BHT to the biodiesel or any other antioxidant equivalent to 1.000 ppm BHT. Information, tests procedures or limits on which effects and test results equivalency should be based on are lacking.

We have designed an equivalency test program for the laboratory to fill the lack. It lead to a rational conclusion on which parameters the equivalency should be based upon. The first is the achievable starting stability of 1.000 ppm BHT the second the resulting shelf life of the blend treated with 1.000 ppm BHT.

The extensive laboratory tests revealed the following parameters:

1. Rancimat value of 1.000 ppm BHT = min 12 h
2. Shelf life of Biodiesel with 1.000 ppm = min 150 days.

The tests revealed that rape seed oil biodiesel differs from soybean oil biodiesel in the response to the 1.000 ppm dosage of BHT. SME is far more oxidation sensitive and the parameters developed from RME biodiesel value can be only fulfilled with a double increase in dosage, that is 2.000 ppm BHT instead of 1.000 ppm.

These specification now serve as new parameters to evaluate the equivalency of the new highly efficient antioxidant Baynox[®] plus to the new EU specification.

The test results are documented in the report and they show, that in pure RME 400 ppm Baynox[®] plus are equivalent to 1.000 ppm of BHT.

In pure SME the same results as with 1.000 ppm BHT in RME can only achieved with 2.000 ppm BHT or 800 ppm Baynox[®] plus as equivalent.

We recommend Biodiesel from rape seed oil – RME – to be stabilized with 400 ppm of Baynox[®] plus minimum and from soy bean oil – SME- with 800 ppm Baynox[®] plus minimum. This relates to a relative efficiency of Baynox BHT vs Baynox plus of 1: 0.4.

The dosage of any blends of RME and SME should be evaluated by linear correlation of SME content in RME. Biodiesel from different producers might response differently on the antioxidants and the above recommendations should be corrected accordingly.