No-Harm List

Oxidation stabilisers

for FAME as blend component in Diesel fuel

As by: 19.04.2021

The no-harm tests are performed with the dosing rate recommended by the producer. The maximum dosing rate however is 1200 ppm. Products that fulfil all criteria of the no-harm test are published in this no-harm list of Association Quality Management Biodiesel (AGQM). Additional information can be found on the website (http://www.aqqm-biodiesel.com).

The no-harm tests are carried out with B100 (FAME, 70% RME, 30% SME) and B10 blends (10% (V/V) FAME in diesel fuel) and all requirements of the test must be met at a dosage rate recommended by the producer. The maximum dosage rate is 1200 ppm. Please note that the No-Harm properties of the additive are only valid for the indicated dosage rate or lower dosages. The No-Harm properties were only tested in the fuel mixture specified above and the test results only apply to this accordingly.

Dilutions: If a modified additive has the same ingredients and ratio of active components as a product that passed the no-harm test successfully and only the ratio between the active components and the solvent is changed, the no-harm test does not have to be repeated. The additive will be added to the no-harm list, if the producer declares bindingly that it is a dilution of a product already tested. This will also be mentioned in the no-harm list.

The no-harm test for oxidation stabilisers for FAME as blend component in Diesel fuel comprises the following test criteria:

- Minimum requirements (B100)
- XUD9 test according to CEC F-23-1-01 (nozzle fouling) (B10)
- DGMK filtration test 663 (B10)
- Check of compatibility with engine oil (derived from DGMK 531-1) (B10)
- Relative efficiency (B100)

With the revision of EN 14214 (EN 14214:2010) in 2012, the requirements for the oxidation stability increased from min. 6 h as stipulated by the previous standard to min. 8 h according to the at that time new standard EN 14214:2012. This alteration led to corresponding consequences regarding the required achievable oxidation stability for the no-harm test. Since 2013 the requirement of the no-harm test is that a minimum oxidation stability of 8 h +1 h must be achieved by additivation. The achievement of an extra hour is meant to provide the customer with a safe time reserve for any possible stability loss due to contact with oxygen during transport or prolonged storage times, for example.

Since all products listed in the no-harm list had already achieved the required oxidation stability of 8 h prior to the alteration of the standard, those products were not re-tested especially regarding the extra stability time reserve.

Since the development of the no-harm test in 2008, test methods and techniques for testing quality properties have developed further or have been newly developed. In order to take this technical progress into account and to meet future requirements and challenges with the no-harm test, all products that have successfully passed the no-harm test since 2019 must be tested again every 5 years if the no-harm test procedure changes significantly. Significant changes include, for example, newly developed test methods that replace methods from the no-harm test, higher requirements due to changes in the limit values or the implementation of

new parameters that are necessary to ensure the no-harm properties of a product. Products that have not been retested will be removed from the no-harm list.

AGQM carried out the project with the greatest possible scientific accuracy and care. Nevertheless, no guarantee can be given for the correctness, completeness and topicality of the content provided. For this reason, we exclude any liability in connection with the use of the no-harm list. It is recommended to obtain the information directly from the manufacturer.

The products listed hereafter have been tested according to the no-harm conditions introduced in 2019 and will be tested again after 5 years if the no-harm test procedure has changed significantly.

Reg. no.	Filed	Company	Brand name	Test level
2020-01	26.10.2020	Scandinavian Oil Services AB	Hydradd AO40	B10
2020-02	26.10.2020	Scandinavian Oil Services AB	Hydradd BHT	B10
2019-03	26.04.2019	Dorf Ketal B.V.	SR 1529	B10
2019-04	26.04.2019	Rodanco BV	AO 1202	B10

All products listed hereafter were tested for a minimum oxidation stability of **8 h + 1 h** according to the no-harm test conditions introduced in 2013.

Reg. no.	Filed	Company	Brand name	Test level
2021-01	19.04.2021	Baker Hughes (Nederland) BV	P2R AO217	B10
2019-01	28.01.2019	GLACONCHEMIE GmbH	GLYCAFUEL	B10
2019-02	12.06.2019	Innospec Ltd.	BioStable™ 635[1]	B10
2018-01	28.05.2018	Baker Hughes (Nederland) BV	DBM AO217 IMP	B10
2018-02	28.05.2018	EcosMetique S.L.	OXIBIOL	B10
2018-03	28.05.2018	Baker Hughes (Nederland) BV	TOLAD 372159[1]	B10
2017-01	06.06.2017	CFS do Brasil	Xtendra BL100	B10
2017-02	06.06.2017	CFS do Brasil	Xtendra BL200	B10
2017-03	06.06.2017	LANXESS Deutschland GmbH	Baynox Ultra	B10
2017-04	06.06.2017	Pachemtech sp z o.o.	Pachem-BL	B10
2016-01	17.05.2016	Callington Haven PTY LTD	ROX 7500 BF	B10
2016-02	17.05.2016	Yasho Industries Limited	YAPOX 2200	B10
2016-03	17.05.2016	INAChem GmbH	inaAOX	B10
2015-01	28.04.2015	Lanxess Distribution GmbH	Baynox Ultra	B10

[1] Dilution of an additive already successfully tested in the No-Harm Test (for explanation see p. 2).

2015-02	28.04.2015	SI Group-UK, Ltd.	Ethanox 4740R	B10
2015-03	28.04.2015	SI Group-UK, Ltd.	Ethanox 4760R	B10
2014-01	24.04.2014	Afton Chemical	HiTEC®4174A	B10
2014-02	24.04.2014	Afton Chemical	HiTEC®4174E	B10
2013-02	16.07.2013	LANXESS Deutschland GmbH	Vulkanox 4005	B10
2013-03	16.07.2013	Innospec Ltd.	BioStable™600	B10

All products listed hereafter were tested for a minimum oxidation stability of **6 h + 1 h** according to the no-harm test conditions introduced before 2013. Please also note the information on page 2.

Reg. no.	Filed	Company	Brand name	Test level
2012-01	01.06.2012	Ensolfood S.A.	ENSOLANT TB 1	B10
2012-02	01.06.2012	Innospec Ltd.	BioStable™501	B10
2012-03	01.06.2012	LANXESS Deutschland GmbH	Baynox Solution 50%	B10
2012-04	01.06.2012	OJSC Sterlitamak Petrochemical Plant	Agidol-12B	B10
2012-05	20.08.2012	Inmobal Nutrer S.A.	INSA B30 NH	B10
2011-01	30.06.2011	Evonik RohMax Additives GmbH	Visocoplex® 10-780	B10
2011-02	30.06.2011	International Fuel Technology	PerfoLIFT BD-4	B10
2011-03	30.06.2011	Nalco Energy Services	Nalco®5300A	B10
2011-04	30.06.2011	Taminco Higher Amines Inc.	Vitera™ XT	B10
2011-05	30.06.2011	WRT B.V.	HFA 8042A	B10
2010-01	24.03.2010	Oxiris Chemicals S.A.	IONOL BF 350	B10
2010-02	24.03.2010	Chemtura Corporation	Naugalube® 403	B10
2010-03	24.03.2010	Vitablend	Bioprotect 350	B10
2010-04	24.03.2010	Oxiris Chemicals S.A.	IONOL BF 1000	B10
2010-05	17.09.2010	Baker Hughes	BIOQUEST 9900HF	B10
2010-06	17.09.2010	Infineum UK Ltd.	FAPK1003294	B10
2010-07	17.09.2010	Innospec Ltd.	BioStable™ 8006	B10
2009-01	26.11.2009	Inmobal Nutrer	INSA B40 (NH)	B10
2009-02	26.11.2009	Chemtura Corporation	Naugalube FAO 32	B10
2009-03	26.11.2009	WRT B.V.	HFA 8030	B10
2009-04	26.11.2009	WRT B.V.	HFA 8032	B10
2009-05	26.11.2009	ALBEMARLE S.P.R.L.	Ethanox 4760E	B10
2009-06	26.11.2009	LANXESS Deutschland GmbH	Baynox	B10
2009-07	26.11.2009	LANXESS Deutschland GmbH	Baynox molten	B10
2008-01	05.12.2008	BASF SE	Kerobit 3627	B10

2008-02	05.12.2008	CHIMEC S.p.A	CH4636	B10
2008-03	05.12.2008	CHIMEC S.p.A.	CH R-876 HFP	B10
2008-04	05.12.2008	Ciba Corporation	IRGASTAB BD 100	B10
2008-05	05.12.2008	Ciba Corporation	IRGASTAB BD 50	B10
2008-06	05.12.2008	Infineum UK Ltd.	Infineum R120	B10
2008-07	05.12.2008	Infineum UK Ltd.	Infineum R130	B10
2008-08	05.12.2008	Innospec Ltd.	BioStable ™ 403E	B10
2008-09	05.12.2008	International Fuel Technology	PerfoLIFT BD-3	B10
2008-10	05.12.2008	Kemin	BF320R	B10
2008-11	05.12.2008	LANXESS Deutschland GmbH	Baynox plus	B10
2008-12	15.12.2008	Eastman Chemical Deutschland GmbH	BioExtend 30 HP	B10
2008-13	29.12.2008	Oxiris Chemicals S.A.	IONOL BF200	B10