

EASTMAN

Prevent biodiesel oxidation.
Drive toward new markets.

Eastman **BIOEXTEND™** 30 HP
antioxidant solution



The results of **insight™**

Eastman BioExtend™ 30 HP antioxidant solution

A certifiably better alternative

Increasingly, biodiesel is becoming the alternative fuel choice for organizations and individuals looking for renewable and sustainable resources. For those looking to sell their biodiesel in European markets—and who need an antioxidant additive to protect fuel stability—there is an additional option: Eastman BioExtend™ 30 HP high-performance additive.

A no-harm certified solution, BioExtend 30 HP is designed to extend the shelf life of biodiesel by inhibiting biodiesel's tendency to react with oxygen. Oxidation can result in polymer formation that leads to clogged fuel filters, damaging deposits, and residues in engines and fuel lines. With superior performance at low concentrations, BioExtend 30 HP impedes the oxidation process to prolong the shelf life of your biodiesel and help you reach more markets.

BioExtend 30 HP has the certification needed for sale in Europe because it is no-harm certified by the Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e. V. (AGQM).

The innovation of invigoration

BioExtend 30 HP is a combination of MTBHQ, a powerful antioxidant, with an effective metal chelating agent. This specific dual-functioning system significantly boosts antioxidative performance.

Eastman BioExtend™ 30 HP high-performance additive

- No-harm certified by AGQM for sales in Europe
- Outstanding performance at low concentrations
- Metal chelator protects against metal contamination
- Low-viscosity liquid solution—no premixing
- Low odor
- Formulated for extreme cold—stable at $<-25^{\circ}\text{C}$
- Flashpoint $>60^{\circ}\text{C}$
- Amenable to conventional pumping systems

AGQM no-harm certified for European markets



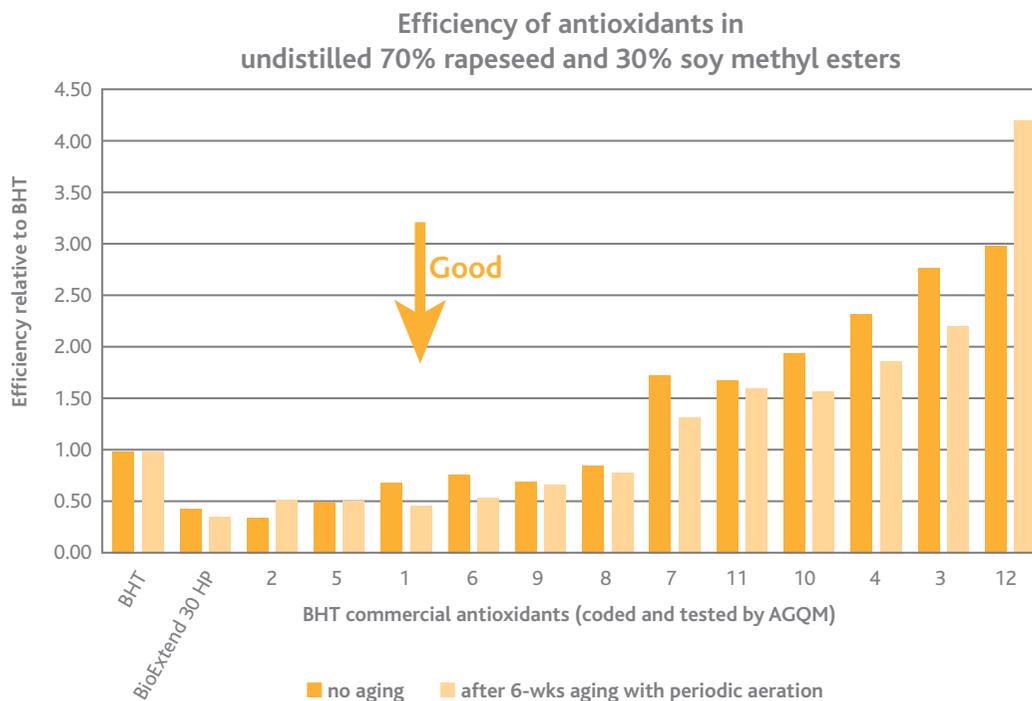
No-harm certification opens new markets

Through independent testing by AGQM, BioExtend 30 HP earned no-harm certification and even outperformed other tested products (see Figure 1). This certification is based on predetermined criteria for compatibility with biodiesel and B10 blends, engine oil, engine nozzle fouling, and diesel additives.

Increasingly, international markets are requiring no-harm certification for biodiesel to be eligible for sale. Coupled with the solution's excellent performance, AGQM's accreditation makes BioExtend 30 HP the product of choice for improving the oxidative stability of biodiesel and blends up to B10.

In fact, Eastman BioExtend 30 HP outperforms BHT and 12 other commercial antioxidants in providing excellent initial and long-term oxidative stability in an undistilled 70% rapeseed/30% soy biodiesel.¹

Figure 1: Amount of antioxidant required relative to BHT



As a result, use of BioExtend 30 HP not only opens up new markets but—as an additive that helps you produce a superior product—can also open doors to new market share, as well.

The importance of a metal chelator

Because biodiesel is derived from vegetable oils and animal fats, it can start to oxidize as soon as it is produced. Furthermore, it can also be susceptible to metal contamination from a number of sources, including materials of construction, hard water, and the biodiesel production process itself (which typically uses a metal catalyst).

Some metals might only modestly affect the oil stability index (OSI). Others, however, can have a dramatic effect. In particular, transition metals can cause a deleterious effect on OSI. In all cases, metal contamination can accelerate free radical oxidation and render antioxidants without a metal chelator less effective.

Get high performance at low concentrations

Eastman BioExtend 30 HP is a ready-to-use solution with excellent miscibility in biodiesel. It does not require dilution with biodiesel or other solvents. Typical addition levels range from 100–800 ppm, depending on the source and quality of the biodiesel, as well as the targeted OSI. Biodiesel

manufacturers and distributors use less antioxidant—with fewer steps—to make a superior product available to the market.

Because the amount of required antioxidant can vary from production to production, *Eastman offers free stability testing* to help producers get the most out of their biodiesel. To request stability testing, visit www.EastmanBioExtend.com.



Get extra mileage out of your markets.
To request free stability testing or for more information, visit www.EastmanBioExtend.com.

Energized to help you

From food to cosmetics markets, Eastman has produced best-in-class and easy-to-use antioxidants for over half a century. Today, we leverage that experience and expertise to help preserve biodiesels, an increasingly in-demand alternative for organizations seeking greater sustainability.

When you take advantage of our broad scope of technical capabilities and analytical testing, you can be assured you'll get a high-quality antioxidant solution—and know the exact quantity to add to protect your biodiesel from oxidation. Additionally, when you use no-harm certified BioExtend 30 HP, you will also protect your biodiesel's viability in an ever-changing marketplace.



¹Evaluation of No-Harm Properties and Relative Efficiency of Oxidative Stabilizers for Fatty Acid Methyl Ester as Fuel Component (Dec. 2008), AGQM Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e.V. (Association Quality Management Biodiesel reg. Ass.), Berlin, Germany

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