

BNX[®] MT

Mixed Tocopherol Antioxidant

Introduction:

BNX[®] MT (Mixed Tocopherol) is a new liquid hindered phenolic antioxidant, which is highly active and can be used at low concentrations. BNX[®] MT is produced from natural products such as corn and soybeans, and is considered to be GRAS (Generally Recognized As Safe) under FDA regulations for Food Contact Applications. It has been shown to give superior antioxidant performance in a variety of polymer systems including polyolefins, ABS, and styrenic block copolymers compared to conventional hindered phenol AO's, and also compared to Vitamin E (pure alpha-tocopherol). The superior performance of the BNX[®] MT allows it to be used at lower addition levels making it a cost-effective alternative to traditional stabilizer systems. BNX[®] MT also offers improved taste and odor properties in the final package. It is available in both the pure liquid form as well as in the form of free-flowing masterbatch pellets using a variety of different polymeric carriers.

Material Description:

Primary (phenolic) antioxidant

Chemical Name:

Mixed Tocopherols

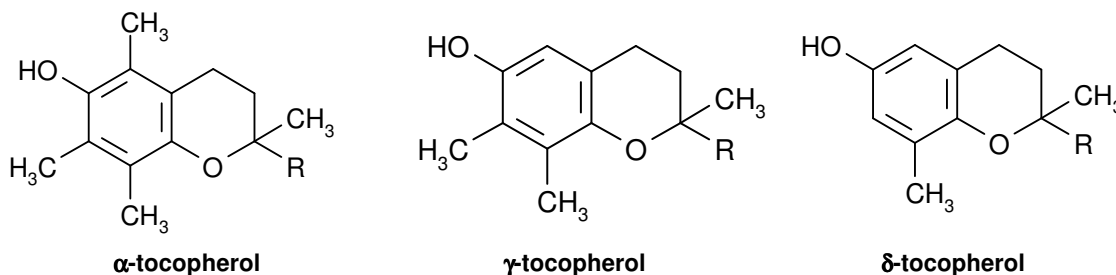
Empirical Formula:

A mixture of α -Tocopherol (12%), β -Tocopherol (1%), γ -Tocopherol (65%), and δ -Tocopherol (20%)

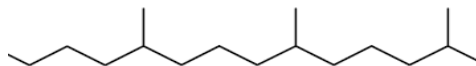
CAS#:

59-02-9 (α), 148-03-8 (β), 54-28-4 (γ), 119-13-1 (δ)

Chemical Structure:



R =



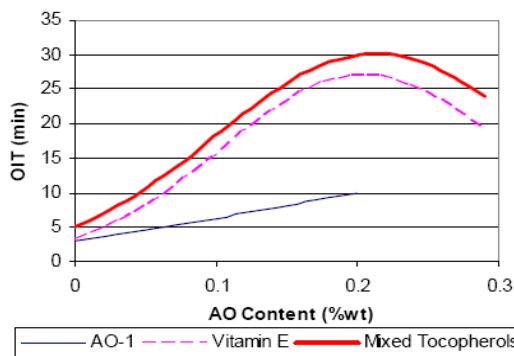
Physical Properties:

Appearance:	Brown viscous oil
Color:	Yellow-brown
Molecular Weight:	400-430
Solidification Point:	2.5 – 3.0°C
Specific Gravity @ 20°C:	0.94
Boiling Point:	>200 °C

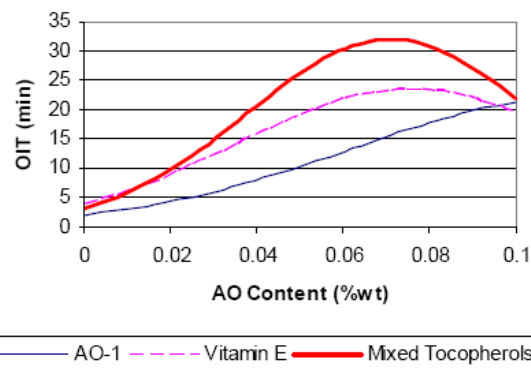
OIT (Oxygen Induction Time) Data in Various Polymer Systems:

1. Polyolefinsⁱ:

Polypropylene at 220 °C with 0.1% Phosphite Co-stabilizer



Polyethylene at 210 °C with 0.05% Phosphite Co-stabilizer

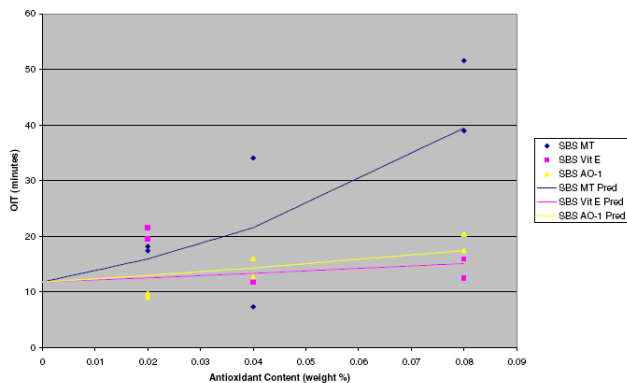


AO-1 is BNX 1010 (CAS# 6683-19-8)

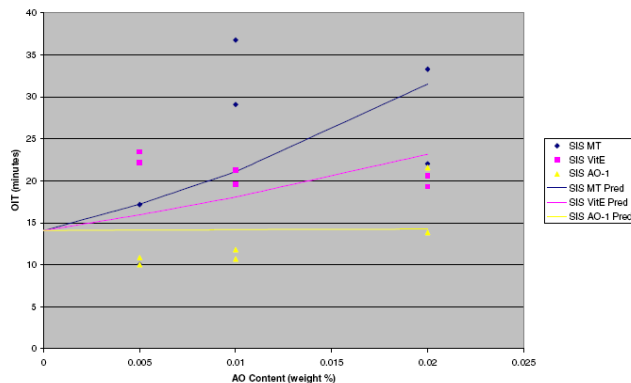
Phosphite is Benefos 1680 (CAS# 31570-04-4)

2. Styrenic Block Copolymersⁱⁱ:

OIT at 165 °C vs AO Content in SBS



OIT at 165 °C vs AO Content in SIS



AO-1 is BNX 1010 (CAS# 6683-19-8)

Applications:

BNX[®] MT can be used as a stabilizer for white oils, lubricants, hot melt adhesives, styrenic block copolymers (SIS, SBS SIBS), ABS, polystyrene, polyolefins, labels (including direct food contact), coatings, paints, and inks.

Advantages:

- Highly effective antioxidant and thermal stabilizer for a wide variety of polymers.
- Low volatility: permits reduced AO losses under high temperature operating conditions
- BNX[®] MT outperforms standard AO's and Vitamin E in ABS, styrenic block copolymers, and polyolefins
- BNX[®] MT can be used at much lower levels in polyolefins compared to that of standard hindered phenols to achieve equivalent thermal stabilization.
- BNX[®] MT is classified as GRAS (Generally Recognized As Safe) under FDA regulations for Food Contact Applications
- BNX[®] MT is derived from agricultural products and is perceived as a "Green" alternative to petrochemical-derived antioxidants
- BNX[®] MT offers improved taste and odor properties

Loading**Instructions:**

The loading data and results are based on laboratory work (and field-testing) under controlled conditions and do not necessarily indicate the result that the buyer or user will attain. For this reason we strongly recommend testing of your own system under the actual conditions of processing and end-use prior to full scale testing. The recommended loading concentrations range between 0.01% and 0.2% depending on substrate, processing conditions, and long-term stability requirements. Exact loading must be determined by compositions of the specific polymer system.

Packaging:

BNX[®] MT is available in 5 and 50 gallon drums.

Storage:

BNX[®] MT will remain stable with normal handling. Drums should be stored in a cool, dry area. Extended storage at elevated temperatures or exposure to direct sunlight could reduce the product life. Keep Drums closed/sealed when not in use.

Toxicity & Safety:

This material is not intended for use in products for which prolonged contact with mucous membranes or abraded skin, or implantation within the human body is specially intended, unless the finished product has been tested in accordance with the Food and Drug Administration and/or other applicable safety testing requirements. Because of wide range of such potential uses, Mayzo, Inc. is not able to recommend this material as safe and effective for such uses and assumes no liability for any such uses. Read and understand the Material Safety Data Sheet before using or handling this product.

FDA Regulations:

This product has GRAS status by the FDA for use in direct food contact applications. For further information, please call or write your Mayzo representative.

ⁱ R.M. Suffield, S. H. Dillman, J. E. Harworth; pp 2709-2713; ANTEC 2003

ⁱⁱ R.M. Suffield, S. H. Dillman, J. E. Kiesser; pp 3351-3350; ANTEC 2005

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