



FOOD
ANTIOXIDANTS



COMPANY PROFILE



Incorporated in the year 1985, **Yasho industries** commenced exclusive operations in 1993 for **Specialty chemicals**. Sustained R & D and process development work has resulted in the company achieving phenomenal growth in production volumes, quality and customer satisfaction.

Yasho has large-scale manufacturing facility in two production units consisting of dedicated production line with **state of the art technology**. Sustained focus on **technology upgradation** has resulted in improved quality to meet customer expectations worldwide.

As a company, **Yasho** takes great pride in contributing to community welfare and address all environmental concerns.



QUALITY CONTROL



Research and Development is our core strength. **Continuous Innovation, Process Upgradation and Product Enhancement** complements our vast experience of over 2 decades. Investments in R & D are an integral part of our progress.

Endorsed by **Bureau Veritas**, our quality assurance meets the most stringent **FSSC 22000** and **ISO 9001:2015** norms. All our **Food Anti-oxidants** are **KOSHER, HALAL & FSSAI** certified.

We adopt **GMP procedures** for various products, which have found ready acceptance in the food and pharmaceutical industries.

Our state-of-the-art laboratory uses modern quality control methods and sophisticated instrumentation such as **AAS (Atomic Absorption Spectrophotometer)**, **CHNS Analyzer**, **Differential Scanning Calorimeter (DSC)**, **FTIR**, **GC**, **HPLC**, **UV Spectrophotometer**.

Upbeat with new technological advancement taking place around the world, the Centre ensures that it has the best in terms of appliances and instruments.



YANTQ TBHQ

Tert. Butyl Hydroquinone

Preview

Fatty oils & oil-based foods are susceptible to auto-oxidation.

The result is rancid taste and bad odour. In addition, oxidation of food stuff on storage causes loss of easily oxidizable vitamins and pro-vitamins, including essential oils – giving rise to unpleasant “off” odours and flavours which make the food unpalatable.

“Oxidative rancidity” can also occur in industrial non-edible fats and waxes besides various packaging materials.

It is possible to retard the development of oxidative deterioration, by incorporating a suitable antioxidant which is capable of stabilizing the substrate.

Yasho's **TBHQ** Food Grade is an excellent antioxidant for a wide range of applications. A highly refined product, it is the culmination of extensive research and stringent quality control.

Yasho's **TBHQ** is one of the most effective Antioxidants known. Its use reach covers: vegetable oils [saturated, margarine, monounsaturated fatty acid (MUFA), polyunsaturated fatty acid (PUFA), omega-3]; fish oil; animal fats(tallow and lard); milk fat (butter, butter spread, butter oil/peanut butter/paste) and essential oils.

Fried foods may be preserved as well. These include: potato and tapioca (cassava, manioc) chips, noodles, nuts, dried copra, etc.

Yasho's TBHQ manufacturing plant is as per **GMP** guidelines and is **ISO 9001:2015** quality standards. It also conforms to **FSSC grade** and is **Kosher/Halal certified**.

Yasho's TBHQ offers :

- **Excellent Stability**
- **Increased Storage Life**
- **Easy Solubility &**
- **Carry-through Protection**

Regulatory authorities permit the use of TBHQ, or combinations of TBHQ and BHA, or BHT, or both for human consumption, at concentrations upto 0.02% by weight of the fat or oil content of the food.

Specifications

Chemical Name	Tert - Butylquinol 2 -Tertbutyl- 1,4 - Di hydroxybenzene
CAS RN	1948-33-0
Emperical Formula	C ₁₈ H ₁₈ O ₂
Molecular Weight	166.21

Sales Specifications

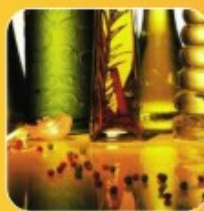
Appearance	White to light tan Crystalline Powder
Odour	Faint characteristic
Assay	99% Min.
Melting Point	126.5 -128.50C
Tert.Butyl p-Benzoquinone	0.2% Max.
2,5 Di Tert. Butyl Hydroquinone	0.2% Max.
Hydroquinone	0.1% Max.
Heavy Metals (as Pb)	10 ppm Max.
Arsenic (as As)	3 ppm Max.
Lead	2 ppm Max.
Toluene	25 ppm Max.
Ultraviolet Absorbance (Polynuclear Hydrocarbon)	Passes
Solubility	Soluble in Alcohol, ether, practically Insoluble in water

Application

Antioxidants for Edible Oils, Confectionery, Meat Products & Citrus Oils.
Polymerisation Inhibitor for Resins & Unsaturated Polyester.

Packaging & Storage

Available in 25 Kg. Fiber Drums / Paper Bags.
To be stored in a closed container in a clean cool place.



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YANTQ TBHQ

Tert. Butyl Hydroquinone

Methods of Application

Refined Vegetable Oil

AOM STABILITY (PV 70/Hrs)

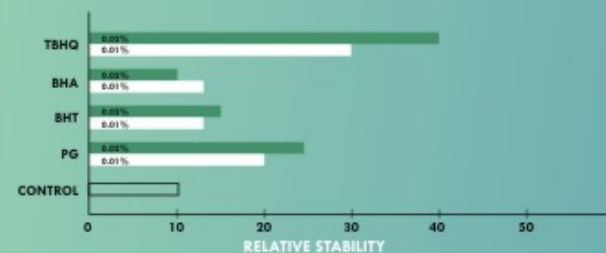
Oil	Yasho's TBHQ Antioxidant Treatment	Sample Control
Soyabean	0.02 %	3.7 : 1
Palm	0.01 %	3.3 : 1
Cottonseed	0.02 %	3.8 : 1
Sunflower	0.02 %	6.8 : 1
Peanut	0.02 %	5.1 : 1
Coconut	0.02 %	4.6 : 1
Rapeseed	0.02 %	6.1 : 1
Safflower	0.02 %	6.7 : 1

Yasho's Antioxidant Treatment of Lard Wt %

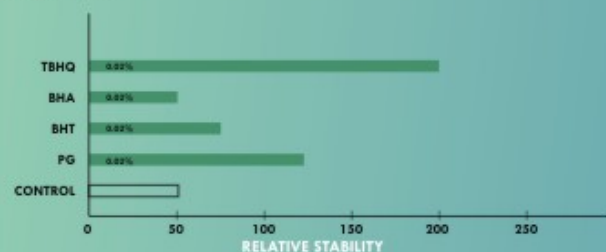
Oven Storage Life Of Baked Goods As Days To Develop Rancid Odor

	Pastry		Cracker	
	38°C	63°C	38°C	63°C
TBHQ 0.005	14	2	27	7
0.010	25	3	—	10
BHA 0.005	35	8	125	12
0.010	96	21	218	22
BHT 0.005	40	5	90	10
0.010	—	10	132	14
PG 0.005	23	2	—	3
0.010	28	5	33	6
TBHQ 0.010	236	38	236	23
+ BHA 0.010				
TBHQ 0.010	167	16	255	25
+ BHA 0.010				
CONTROL (without Antioxidant)	10	2	9	3

REFINED VEGETABLE OILS



PALM OILS



PEANUTS OILS



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Yasho's **TBHQ** antioxidant is readily soluble at use levels in fats and oils and in a number of solvents. It can be applied by the basic techniques in general use for applying antioxidants to fats and fatty foods.

The fundamental rule to follow in applying antioxidants to food products is to ensure that antioxidants are thoroughly dissolved and dispersed in the fat or oil portions. Since only small amounts of Yasho's antioxidants are required for protection of food, the method of incorporating the antioxidants may determine the success of stabilization. Choice of method depends on the product, processing methods and available equipment. Yasho's **TBHQ** antioxidant can be applied by one or more of the following techniques:

DIRECT METHOD :

A fat, oil or wax can be stabilized by heating at 60°C minimum and non-aerated agitation sufficiently to dissolve the **TBHQ**. The agitation should be continued for an additional 20 minutes to ensure uniform distribution.

CONCENTRATE METHOD :

Concentrated solutions of Yasho's antioxidant can be prepared by dissolving the **TBHQ** in a small quantity of fat at 90°C–120°C.

The hot concentrate or a pre-dissolved Yasho's antioxidant formulation can be introduced into the main body of fat, directly, or by metering. Agitation is required for thorough distribution.

PROPORTIONATE METHOD :

Yasho's **TBHQ** or antioxidant formulation may be proportioned or metered into a pipeline through which fat or oil to be stabilized is being pumped.

A stainless steel proportioning pump should be used to meter the desired amount of antioxidant into the fat or oil.

The success of this technique depends on the turbulence created within the pipeline being sufficient to thoroughly disperse the antioxidant.

SPRAY METHOD :

Food products such as nuts can be sprayed directly with a dilute antioxidant solution. The concentration of the solution is adjusted to provide the desired amount of antioxidant and to ensure uniform deposition on the surface of the products.

OTHER METHODS :

Other innovative means could be used to apply Yasho's **TBHQ** antioxidant to various food products. For instance, meat products such as sausages may be effectively stabilized by blending the antioxidant formulation along with the seasoning mix.

YANTQ BHA

Butylated Hydroxy Anisole

Preview

Applications:

BHA is an antioxidant and preservative that is used in food, food packaging, confectionery, cosmetics and various other products. It is used to slow down the deterioration of foods to prolong shelf life.

BHA exhibits antioxidant properties as a scavenger of free radicals. BHA is widely used in foods that are cooked or fried in triglyceride oils, because the antioxidant properties are carried over and not lost when heated. It is used in many products, including butter, meats, cereals, baked goods, snack foods, chewing gum, nuts, sausage, poultry. It degrades after prolonged exposure to sunlight.

In addition to preserving foods, BHA is also used to preserve fats and oils in cosmetics, especially lipstick and eye shadow and pharmaceuticals.

Vegetable & Essential Oils:

In crude vegetable oils, BHA can be used as an antioxidant at 0.02%. BHA is widely used in stabilizing essential oils such as d- limonene, orange oil, lemon oil, lime oil and myrcene and aliphatic unsaturated terpene found in many essential oils.

Baked and Fried Foods and Cereals Products:

The most important property of BHA is its ability to remain active in baked or fried foods. BHA has a stable pH values above 7.0 which contributes to its stability in baked foods. In low fat foods such as cereals, mashed potatoes and cake mixes, BHA finds a widespread use.

BHA and combination of BHA, BHT and propyl gallate increases the stabilities of wheat germ meal, brown rice, rice bran and dry breakfast cereals. The Volatility of BHA and BHT is an advantageous property in low fat foods. Small quantities of BHA or BHT added to potato or cereals slurry before cooking or drying result in dispersion by volatilization or steam distillation, resulting in the protection of the product during processing and subsequent storage. BHA is also used in Animal Feed, Dry mixes for Beverages & Desserts and as preservative in Cardiovascular drug formulations.

Another approach has been spray an emulsion of the antioxidant onto the finished product.

Specifications

Chemical Name	Tert - Butyl - 4 - Methoxyphenol
CAS RN	25013-16-5
Emperical Formula	C ₁₁ H ₁₄ O ₂
Molecular Weight	180.25

Sales Specifications

Appearance	Off White to slightly yellow waxy Solid/Flakes
Assay	98.5% Min.
Melting Range	48°C – 63°C
Heavy Metals (as Pb)	10 ppm max.
Arsenic (as As)	2 ppm max.
Sulphated Ash	0.05 % Max.

Application

Antioxidant for Edible Oils, Confectionery, Meat Products & Citrus Oils.

Packaging and Storage

Available in 25 Kg. Box.

To be stored in a closed container in a clean cool place.

Technological Aspects:

Level of BHA used in practice in Food Products:

Products	Levels %
Animal Fats	0.001 - 0.01
Vegetable Oil	0.002 - 0.02
Bakery Products	0.01 - 0.04b
Cereals	0.005 - 0.02
Dehydrated Mashed	0.001
Butter	Max 0.02 %
Lard	Max 0.02 %
Essential Oils	0.01 - 01
Chewing Gum Base	upto 0.1
Candy	upto 0.1b
Food Packaging Materials	0.02 - 0.1
Snacks	Max 0.02 %
Animal Feed	----
Lipstick	Less than 10%

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YANTQ AP

Ascorbyl Palmitate

Preview

Specifications

Chemical Name	L-Ascorbyl Palmitate 2,3,-didehydro-L-threo-hexono- 1,4-lactone-6-palmitate
Empirical Formula	C ₂₂ H ₃₈ O ₇
CAS RN	137-66-6
Molecular Weight	414.53

Sales Specifications

Appearance	White to Yellowish White Powder
Assay (Titration)	95.0 – 100.5 %.
Melting Point	107 - 117° C.
Loss on Drying	2.0% Max.
Sulphated Ash (Residue on Ignition)	0.1 % Max.
Specific Optical Rotation	+21° to +24°
Heavy Metals	10 ppm Max.
Lead	2 ppm Max.
Mercury	1.0 ppm Max.
Zinc	25.0 ppm Max.
Copper	25.0 ppm Max.
Arsenic	3.0 ppm Max.
Solubility	In alcohol and all vegetable oils

Application

Antioxidants for fat containing Cereals, Margarine and fats,
Oils & Cosmetics.

Packaging and Storage

Available in 25/50 Kg. Drum.

Technological Aspects:

Level of AP used in practice in Food Products:

Products	Levels %
Animal / Vegetable Oils and Fats	0.01 - 0.02 %
Butter Margarine	0.001 - 0.02 %
Whole Milk Powder	0.01 - 0.05 %
Mayonnaise	Not more than 0.5g/kg (500 ppm)
Infant Formula	Not more than 0.05g/l
Baby Food with Grains	Not more than 0.2g/l (200 ppm)
Other Baby Foods	Not more t Not more than 0.2g/l (200 ppm)
Nutritional Supplements	Not more than 0.1 g/kg (100 ppm)



Ascorbyl Palmitate is highly effective as an oxygen scavenger & a synergist. It is a white or yellowish white powder.

Ascorbyl Palmitate is more soluble in oils & solvents than Ascorbic Acid.

Ascorbyl Palmitate or Vitamin C Ester has been found to protect cells from oxidative damage. It is also used as a preservative in foods, vitamins, drugs and cosmetics.

Ascorbyl Palmitate acts synergistically with other antioxidants such as Vitamin E. Its antioxidant activity is proportional to its use level, even when exceeding its solubility.

It is used in pharmaceutical and in fat-based preparations.

Ascorbyl Palmitate is a fat-soluble antioxidant used to increase the shelf life of vegetable oils and fried foods (i.e. potato chips). AP is primarily used as an Antioxidant.

Ascorbyl Palmitate is also used in Vitamin Pre-mixes and in preparation of Nutraceuticals.

It is highly effective in synergistic mixtures with Tocopherols. Table given below presents the levels of Ascorbyl Palmitate used in food products.

Ascorbyl Palmitate is also a powerful antioxidant, the same as vitamin C, and is frequently used to prevent the oxidation of vegetables oils, such as on french fries and other oily snacks.

It also takes part in the biochemistry of the production of collagen and connective tissues.

YANTQ BLENDS

Preview

YANTQ brand synthetic antioxidants are synergistic blends formulated with time-tested active ingredients. At maximum performance they protect foods from oxidation that can rob your product's natural flavor, color and aroma even when solubility, heat and stability are an issue.

YANTQ blends are available in economical, easy to use, liquid forms. Liquid blends offer operational ease and uniform dispersion throughout oil-based products.

An effective liquid antioxidant system comprising of synthetic antioxidant, Tertiary Butyl Hydroquinone (YANTQ TBHQ) and the sequestrant Citric Acid specially designed for frying oil use.

Various blends are prepared with Tert-butylhydroquinone (YANTQ TBHQ), Butylated Hydroxy Anisole (YANTQ BHA), Butylated Hydroxy Toluene (YANTQ BHT), Propylene Glycol (PG) and Ascorbyl Palmitate (YANTQ AP).

- **Outstanding Antioxidative Power**
- **Dual Antioxidative System for Increased Performance**
- **Designed for Extreme Temperatures**

YANTQ Blends are produced with a variety of raw material combinations such as

- Soyabean Oil
- Rapeseed Oil
- Sunflower Oil
- Palm Oil and
- A wide variety of other sources.



PRODUCTION FACILITY





YASHO

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