SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name: Eastman Tenox(TM) 20 Food-Grade Antioxidant, Kosher

Product No.: EAN 189584. P0380109

Relevant identified uses of the substance or mixture and uses advised against

Identified uses: antioxidant (food grade)
Uses advised against: None known.

Details of the supplier of the safety data sheet

Manufacturer / Supplier

Eastman Chemical Company
200 South Wilcox Drive
Kingsport, TN 37660-5280 US
+14232292000

Visit our website at www.EASTMAN.com or email emnmsds@eastman.com

Emergency telephone number:

For emergency health, safety, and environmental information, call 1-423-229-4511 or 1-423-229-2000.

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300 or call 423-229-2000.

SECTION 2: Hazards identification

Hazard classification:

Health hazards

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Skin sensitizer	Category 1
Specific target organ toxicity - single exposure (Inhalation)	Category 3

OSHA Specified Hazards: not applicable

Warning label items including precautionary statement:

Pictogram:

Signal words: WARNING!

Hazard Statement(s):	H315: Causes skin irritation. H319: Causes serious eye irritation. H317: May cause an allergic skin reaction. H335: May cause respiratory irritation.

Precautionary statement:

Prevention:	P264: Wash hands thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection. P260: Do not breathe dust/fume/gas/mist/vapors/spray. P270: Do not eat, drink or smoke when using this product. P272: Contaminated work clothing should not be allowed out of the workplace.
Response:	P309+P311: IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician. P302+P352: IF ON SKIN: Wash with plenty of soap and water. P333+P313: If skin irritation or rash occurs: Get medical advice/attention. P363: Wash contaminated clothing before reuse. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313: If eye irritation persists: Get medical advice/attention.
Storage:	P405: Store locked up.
Disposal:	P501: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Hazard(s) not otherwise classified (HNOC): None known.

SECTION 3: Composition/information on ingredients

Substances / Mixtures

General information:

Chemical name	Concentration	Additional identification	Notes
propylene glycol	>60%	CAS-No.: 57-55-6	#
2-tert-butylhydroquinone	<25%	CAS-No.: 1948-33-0	
citric acid	<15%	CAS-No.: 77-92-9	

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
# This substance has workplace exposure limit(s).

SECTION 4: First aid measures

Description of first aid measures

Inhalation: Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention. In case of irritation from airborne exposure, move to fresh air. Get medical attention if symptoms persist.

Skin contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Seek medical advice.

Most important symptoms and effects, both acute and delayed: May irritate and cause redness and pain. May cause skin depigmentation. Allergic rash.

Indication of any immediate medical attention and special treatment needed

Hazards: None known.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards: None known.

Extinguishing media

Suitable extinguishing media: Water spray. Dry chemical. Carbon Dioxide. Alcohol foam.

Unsuitable extinguishing media: None known.

Special hazards arising from the substance or mixture: None known.

Advice for firefighters

Special fire fighting procedures: None known.

Special protective equipment for fire-fighters: Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures: Wear appropriate personal protective equipment.

Environmental precautions: Avoid release to the environment.

Methods and material for containment and cleaning up: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Large Spillages: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

Notification Procedures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

SECTION 7: Handling and storage:

Precautions for safe handling: Avoid breathing mists or vapors. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities: Keep container closed. This material may be used in food. Protect from contamination. Stir well before using. Keep from freezing. Store away from: Toxic substances. Odorous substances.

Specific end use(s): antioxidant (food grade)

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational exposure limits

Country specific exposure limits have not been established or are not applicable unless listed below.

Chemical name	Type	Exposure Limit values	Source
propylene glycol - Aerosol.	TWA	10 mg/m3	US. AIHA Workplace Environmental Exposure Level (WEEL) Guides (2009)

Exposure controls

Appropriate engineering controls: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information: Eye bath. Safety shower. Washing facilities.

Eye/face protection: Wear safety glasses with side shields (or goggles). Wear a full-face respirator, if needed.

Skin protection

Hand protection: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Other: No data available.

Respiratory Protection:	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.
Hygiene measures:	Observe good industrial hygiene practices.
Environmental Controls:	No data available.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance	
Physical State:	Liquid
Form:	Liquid
Color:	Amber
Odor:	Sweet
Odor Threshold:	Not determined.
pH:	No data available.
Boiling Point:	176 °C
Flash Point:	113 °C (Tagliabue Closed Cup)
Evaporation Rate:	Not determined.
Flammability (solid, gas):	No data available.
Flammability Limit - Upper (%)–:	No data available.
Flammability Limit - Lower (%)–:	No data available.
Vapor pressure:	Not determined.
Vapor density (air=1):	No data available.
Specific Gravity:	1.087 (20 °C)
Solubility(ies)	
Solubility in Water:	Appreciable
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Autoignition Temperature:	No data available.
Decomposition Temperature:	Thermal stability not tested. Low stability hazard expected at normal operating temperatures.
Dynamic Viscosity:	235 mPa.s (25 °C)
Kinematic viscosity:	216 mm2/s (25 °C, Estimated)
Explosive properties:	No data available.
Oxidizing properties:	No data available.

SECTION 10: Stability and reactivity

Reactivity: None known. Materials containing similar structural groups are normally stable.

Chemical stability: Not fully evaluated.

Possibility of hazardous reactions: None known.

Conditions to avoid: None at ambient temperatures.

Incompatible materials: Strong oxidizing agents.

Hazardous decomposition products: Carbon Monoxide. Carbon Dioxide.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation: May cause respiratory irritation.

Ingestion: None known.

Skin contact: Causes skin irritation. May cause an allergic skin reaction. May cause skin depigmentation.

Eye contact: Causes serious eye irritation.

Information on toxicological effects

Acute Toxicity

Oral

Product: No data available.

Specified substance(s)

propylene glycol	Oral LD-50: (Rat): 22,000 mg/kg
2-tert-butylhydroquinone	Oral LD-50: (Rat, Male.): 951 mg/kg Oral LD-50: (Rat, Female.): 1,131 mg/kg
citric acid	Oral LD-50: (Rat): 2,263 mg/kg

Dermal

Product: No data available.

Specified substance(s)

propylene glycol	Dermal LD-50: (Rabbit): > 2,000 mg/kg
2-tert-butylhydroquinone	Dermal LD-50: (Guinea Pig): > 1,000 mg/kg
citric acid	Dermal LD-50: (Rat): > 1,000 mg/kg

Inhalation

Product: No data available.

Specified substance(s)

propylene glycol	LC50 (Rat, 2 h): > 317 mg/l (highest concentration tested)

2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Repeated dose toxicity

Product:	No data available.
Specified substance(s)	
propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Skin corrosion/irritation:

Product:	No data available.
Specified substance(s)	
propylene glycol	(Rabbit, 24 h): none
2-tert-butylhydroquinone	(Guinea Pig, 24 h): moderate
citric acid	(Rabbit, 24 h): Slight

Serious eye damage/eye irritation:

Product:	No data available.
Specified substance(s)	
propylene glycol	(Rabbit): very slight
2-tert-butylhydroquinone	(Rabbit): Strongly irritating.
citric acid	(Rabbit, 24 h): moderate to strong

Respiratory or skin sensitization:

Product:	No data available.
Specified substance(s)	
propylene glycol	Skin Sensitization:, (Human) - Not a skin sensitizer.
2-tert-butylhydroquinone	Skin Sensitization:, (Guinea Pig) - slight Skin Sensitization:, (Human) - slight
citric acid	No data available.

Mutagenicity

In vitro

Product:	No data available.
Specified substance(s)	
propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

In vivo

Product:	No data available.
Specified substance(s)	
propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Carcinogenicity

Product: No data available.

Specified substance(s)

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Reproductive toxicity

Product: No data available.

Specified substance(s)

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Specific target organ toxicity - single exposure

Product: No data available.

Specified substance(s)

propylene glycol	No data available.
2-tert-butylhydroquinone	Inhalation: Respiratory tract irritation. Dermal: Skin
citric acid	Inhalation: Respiratory tract irritation.

Specific target organ toxicity - repeated exposure

Product: No data available.

Specified substance(s)

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Aspiration hazard

Product: No data available.

Specified substance(s)

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Other adverse effects: No data available.

SECTION 12: Ecological information

Toxicity

Acute toxicity

Fish

Product: No data available.

Specified substance(s)

propylene glycol	LC-50 (Oncorhynchus mykiss, 96 h): 40,613 mg/l
2-tert-butylhydroquinone	LC-50 (Fathead Minnow, 96 h): 0.6 mg/l
citric acid	LC-50 (Fish, 48 h): 440 mg/l

Aquatic invertebrates

Product:	No data available.
Specified substance(s)	
propylene glycol	LC-50 (Ceriodaphnia, 48 h): 18,340 mg/l
2-tert-butylhydroquinone	LC-50 (Water Flea, 96 h): 3.2 mg/l LC-50 (snail, 96 h): 32 mg/l LC-50 (flatworm, 96 h): 3.2 mg/l
citric acid	LC-50 (daphnid, 24 h): 1,535 mg/l

Chronic Toxicity

Fish

Product:	No data available.
Specified substance(s)	
propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Aquatic invertebrates

Product:	No data available.
Specified substance(s)	
propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Toxicity to Aquatic Plants

Product:	No data available.
Specified substance(s)	
propylene glycol	EC-50 (Alga, 72 h): 19,300 mg/l
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Persistence and degradability

Biodegradation

Product:	No data available.
Specified substance(s)	
propylene glycol	81.7 % (28 d, Ready Biodegradability: CO2 Evolution Test) Readily biodegradable
2-tert-butylhydroquinone	19 % (28 d)
citric acid	97 % (28 d, Ready Biodegradability: CO2 Evolution Test) Readily biodegradable

Biological Oxygen Demand:

Product	No data available.
Specified substance(s)	
propylene glycol	BOD-5: 1,080 mg/g BOD-20: 1,225 mg/g
2-tert-butylhydroquinone	BOD-5: 70 mg/g BOD-20: 2,000 mg/g
citric acid	No data available.

Chemical Oxygen Demand:

Product	No data available.
Specified substance(s)	

propylene glycol	1,630 mg/g
2-tert-butylhydroquinone	2,200 mg/g
citric acid	No data available.

BOD/COD ratio

Product	No data available.

Specified substance(s)

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Bioaccumulative potential

Product:	No data available.

Specified substance(s)

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Results of PBT and vPvB assessment: No data available.

propylene glycol	No data available.
2-tert-butylhydroquinone	No data available.
citric acid	No data available.

Other adverse effects: No data available.

SECTION 13: Disposal considerations

Waste treatment methods

General information: No data available.

Disposal methods: Dispose of waste and residues in accordance with local authority requirements. Incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied.

SECTION 14: Transport information

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

DOT

Class not regulated

Possible Shipping Description(s):

not regulated

IMDG - International Maritime Dangerous Goods Code

Marine pollutant.: (2-tert-butylhydroquinone)

Possible Shipping Description(s):

UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-tert-butylhydroquinone) 9 III

IATA

Class not regulated
Possible Shipping Description(s):

UN 3082 Environmentally hazardous substance, liquid, n.o.s. (2-tert-butylhydroquinone) 9 III

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.
WHMIS (Canada) Status: controlled
WHMIS (Canada) Hazard Classification: D/2/B

SARA 311-312 Hazard Classification(s):
immediate (acute) health hazard

US EPCRA (SARA Title III) Section 313 - Toxic Chemical List
NONE

OSHA: hazardous

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

DSL (Canadian Domestic Substances List) and CEPA (Canadian Environmental Protection Act): All components of this product are listed on the DSL. Any impurities present in this product are exempt from listing.

AICS / NICNAS (Australian Inventory of Chemical Substances and National Industrial Chemicals Notification and Assessment Scheme): All components of this product are listed on AICS or otherwise comply with NICNAS.

MITI (Japanese Handbook of Existing and New Chemical Substances): All components of this product are listed in the Handbook or have been approved in Japan by new substance notification.

ECL (Korean Toxic Substances Control Act): All components of this product are listed on the Korean inventory or otherwise comply with the Korean Toxic Substances Control Act.

Philippines Inventory (PICCS) : All components of this product are listed on the Philippine inventory or otherwise comply with PICCS.

Inventory of Existing Chemical Substances in China: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC).

SECTION 16: Other information

HMIS® Hazard Ratings: Health - 2, Flammability - 1, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Revision Information:	Not relevant.
Key literature references and sources for data:	No data available.
Training information:	No data available.
Issue date:	06/05/2014
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