Contact:
Product Referral
1-800-652-6013

Product Safety Summary

SUBSTANCE NAME

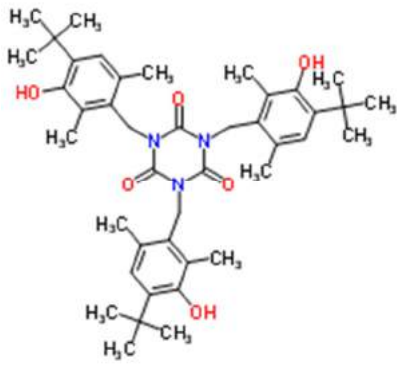
CYANOX® 1790 Antioxidant
1,3,5-triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tris[[4-(1,1-dimethylethyl)-3-hydroxy-2,6-dimethylphenyl]methyl]-
1,3,5-Tris(4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl)-1,3,5-triazine-2,4,6-trione
Tris(4-tert-butyl-3-hydroxy-2,6-dimethylbenzyl) isocyanurate
1,3,5-tris[[4-tert-butyl-3-hydroxy-2,6-xylyl]]methyl]-1,3,5-triazine-2,4,6(1H,3H,5H)-trione
tris[(4-tert-butyl-3-hydroxy-2,6-dimethylphenyl)methyl]-1,3,5-triazinane-2,4,6-trione

GENERAL STATEMENT

CYANOX® antioxidants are designed to help protect plastics during processing and use.

CHEMICAL IDENTITY

EC Name:	1,3,5-tris[[4-tert-butyl-3-hydroxy-2,6-xylyl]methyl]-1,3,5-triazine-2,4,6(1H,3H,5H)-trione
EC-No. :	254-996-9
CAS-No. :	40601-76-1
REACH Registration No.:	01-2119946744-28-0000
CAS Name	1,3,5-triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tris[[4-(1,1-dimethylethyl)-3-hydroxy-2,6-dimethylphenyl]methyl]-
IUPAC Name:	tris[(4-tert-butyl-3-hydroxy-2,6-dimethylphenyl)methyl]-1,3,5-triazinane-2,4,6-trione
Molecular formula:	$C_{42}H_{57}N_3O_6$
Structural formula:	



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USES AND APPLICATIONS

CYANOX® 1790 antioxidant is a hindered phenolic molecule that is used to protect plastics during processing, fabrication and end use.

PHYSICAL CHEMICAL PROPERTIES

CYANOX® 1790 Antioxidant is an odorless off white powder.

Melting point	157.9 °C
Boiling point/boiling range:	Decomposes
Vapor pressure:	9.4 x 10-5 Pa @ 20C
Molecular Weight:	699.9 Da
Specific gravity:	1.15 g/mL @ ~25C
Flammability:	May form flammable/explosive dust-air mixture
LogPow:	15.3 (estimated by EPIWIN Kowwin)
Viscosity, kinematic:	not applicable
Viscosity, dynamic:	not applicable

HEALTH EFFECTS

Based on the classification of the substance **(**REGULATION (EC) No 1272/2008) CYANOX® 1790 antioxidant is not classified for toxicity, irritation or sensitization. As is the case with any industrial chemicals, workers should be properly instructed and supervised in the handling of the substance.

EFFECT ASSESSMENT	RESULT
Acute Toxicity (oral/dermal/inhalation)	CYANOX® 1790 does not cause acute toxicity.
Irritation/Corrosivity (skin/eye/respiratory tract)	CYANOX® 1790 is not classified as irritating to the eyes and skin.
Sensitization (skin/respiratory tract)	CYANOX® 1790 is not classified as a skin sensitizer.
Repeated Exposure	CYANOX® 1790 is not classified as harmful by single or repeated exposure.
Mutagenicity	CYANOX® 1790 is not classified as causing mutagenicity.
Carcinogenicity	CYANOX® 1790 is not classified as a carcinogen.
Reproductive Toxicity	CYANOX® 1790 is not classified as causing reproductive toxicity.

ENVIRONMENTAL EFFECTS

CYANOX® 1790 antioxidant is not classified as dangerous/hazardous to aquatic life, but is not readily biodegradable and is considered to be somewhat persistent in the environment.

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EFFECT ASSESSMENT	RESULT
Aquatic Toxicity	The aquatic toxicity of CYANOX® 1790 is difficult to assess because of low water solubility. It is unlikely that water column concentrations that would result in toxicity of moderate or high concern could be achieved.

FATE AND BEHAVIOR	RESULT
Biodegradation	CYANOX® 1790 is not readily biodegradable (25% degradation after 28 days)
Bioaccumulation potential	CYANOX® 1790 has a low potential for bioaccumulation based on the molecular structure, calculated log P_{ow}, and the estimated low water solubility (2.4×10^{-11} mg/L).
PBT/vPvB conclusion	CYANOX® 1790 is not ready biodegradable and considered somewhat environmentally persistent. CYANOX® 1790 has a low potential for bioaccumulation and is not highly toxic to aquatic organisms. Therefore, CYANOX® 1790 is not a PBT material or considered very persistent nor very bioaccumulating (vPvB).

EXPOSURE

Human Health
CYANOX® 1790 antioxidant is used in industrial facilities only. When the recommended risk management measures and operational conditions are observed, worker exposures are not expected during the manufacture and use of CYANOX® 1790 antioxidant or in its industrial uses. As CYANOX® 1790 antioxidant is fully incorporated into a polymer matrix; there is no expected consumer exposure to CYANOX® 1790 antioxidant even through the handling of finished products.

Environment
Due to a low potential for bioaccumulation and the fact that the substance is somewhat biodegradable, a significant accumulation in aquatic organisms is not expected. No direct release of CYANOX® 1790 to soil is expected during manufacturing or industrial use. If a release does occur it is important to use the risk management recommendations provided.

RISK MANAGEMENT RECOMMENDATIONS

CYANOX® 1790 antioxidant is not classified for toxicity, irritation or sensitization. As with any industrial chemical practices the use of appropriate chemical resistant gloves, protective clothing and suitable eye protection if any skin/eye contact should be followed. Industrial workers should receive task specific training on how to use the protective equipment. Workers should be warned to avoid skin and eye contact, to wash off any skin contamination immediately and to report any skin or eye problems that may develop.

Contains finely divided material. Dust suspended in air may ignite with static discharge, sparks or flame. Equipment, including venting systems, should be grounded. Provide adequate ventilation in areas of use to

remove dust. Handling of material should be in accordance with standards for venting of deflagrations (e.g. NFPA-68). If handled with flammable or combustible materials the explosion hazard may increase.

Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. The following are first aid measures that should be taken if exposure should occur:

- Ingestion: The material is not expected to be harmful by ingestion. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
- Skin Contact: Wash immediately with plenty of water and soap. Do not reuse contaminated clothing without laundering.
- Eye Contact: Rinse immediately with plenty of water for at least 15 minutes. Obtain medical advice if there are persistent symptoms.
- Inhalation: The material is not expected to be harmful by inhalation. Remove to fresh air. Obtain medical advice if there are persistent symptoms.

For the environment do not allow entry into drains, water courses, or soil. Contain contaminated water. If disposal is necessary, it is recommended that organic materials, especially when classified as hazardous waste, be disposed of by thermal treatment or incineration at approved facilities.

STATE AGENCY REVIEW

CYANOX® 1790 antioxidant has been registered under REACH (EC) No. 1907/2006.

CYANOX® 1790 antioxidant is listed in the following Chemical Inventories: TSCA, ENCS, ISHL, AICS, DSL, KECI, PICCS, IESCS, and NZIoC.

REGULATORY INFORMATION/CLASSIFICATION AND LABELING

Classification according to Regulation (EC) No 1272/2008 and amendments:
Aquatic Environment Chronic Hazard Category 4

Classification according to EU Directives 67/548/EEC or 1999/45/EC
R18A - May form flammable/explosive dust-air mixture.
R53 - May cause long-term adverse effects in the aquatic environment.

Labeling according to REGULATION (EC) No 1272/2008 and amendments:
Aquatic toxicity: H413 – May cause long lasting harmful effects to aquatic life

CONCLUSION

CYANOX® 1790 antioxidant is used by workers in the manufacturing and industrial setting. Before using CYANOX® 1790 antioxidant, consult the Material Safety Data Sheet for additional information on safety and handling procedures, and recommended personal protective equipment. Taking these measures into account, the degree of exposure to CYANOX® 1790 antioxidant is considered low.

CONTACT INFORMATION WITHIN COMPANY

For further information on this substance or product safety summaries in general, please contact:

Company: Cytec Industries Inc.
Address: 5 Garret Mountain Plaza
Town/Country Postal code: Woodland Park, NJ 07424 (USA)
E-mail: custinfo@cytec.com
Worldwide Contact Info: www.cytec.com

GLOSSARY

Acute toxicity	Harmful effect resulting from a single or short term exposure to a substance.
Biodegradation	Decomposition or breakdown of a substance under natural conditions (actions of micro organisms etc).
Bioaccumulation	Progressive accumulation in living organisms of a chemical substance present in the environment.
Carcinogenicity	Substance effects causing cancer.
Chronic toxicity	Harmful effect after repeated exposures or long term exposure to a substance.
Flash point	The lowest temperature at which vapor of the substance may form an ignitable mixture with air.
Genotoxicity	Substance effect that causes damage to genes, including mutagenicity and clastogenicity.
Hydrolyze	Undergo hydrolysis; decompose by reacting with water.
Mutagenicity	Substance effect that cause mutation on genes.
PBT	Persistent, bioaccumulative, toxic chemical.
Persistence	Refers to the length of time a compound stays in the environment, once introduced.
Reprotoxicity	Including teratogenicity, embryotoxicity and harmful effects on fertility.
Sensitizing	Allergenic.
Sediment	Topsoil, sand and minerals washed from land into water forming in the end a layer at the bottom of

	rivers and sea.
Vapor pressure	A measure of a substance's property to evaporate.
vPvB	Very persistent, very bioaccumulative.

DATE OF ISSUE

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REVISION

Version 1.0

ADDITIONAL INFORMATION

Further information can be found in the SDS and the disseminated REACH registration Dossier.

DISCLAIMER

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk. No representations or warranties are made with regards to its completeness or accuracy and no liability will be accepted by Cytec Industries for damages of any nature whatsoever resulting from the use of or reliance on the information.