

MATERIAL SAFETY DATA SHEET

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Version 1.4

Section 1 - Product and Company Information

Product Name 2,6-DI-TERT-BUTYL-4-METHYLPHENOL,
99+%

Product Number 240028

Brand ALDRICH

Company Sigma-Aldrich

Street Address 3050 Spruce Street

City, State, Zip, Country SAINT LOUIS MO 63103 US

Technical Phone: 314 771 5765

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Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313 No
BUTYLATED HYDROXYTOLUENE	128-37-0	No

Formula C15H24O

Synonyms Advastab 401 * Agidol * Agidol 1 * Alkofen BP *
Antioxidant DBPC * Antioxidant 4 * Antioxidant 29
* Antioxidant 30 * Antioxidant 4K * Antioxidant
KB * Antrancine 8 * AO 29 * AO 4K * BHT * BHT
(food grade) *
2,6-Bis(1,1-dimethylethyl)-4-methylphenol * BUKS
* Butylated hydroxytoluene * Butylhydroxytoluene
* Butylhydroksytoluenu (Polish) * CAO 1 * CAO 3
* Catalin cao-3 * Chemanox 11 * Dalpac * DBMP *
DBPC * DBPC (technical grade) * Deenax * Dibunol
* Dibutylated hydroxytoluene *
2,6-Di-tert-butyl-p-cresol (ACGIH) *
2,6-Di-terc.butyl-p-kresol (Czech) *
2,6-Di-tert-butyl-1-hydroxy-4-methylbenzene *
3,5-Di-tert-butyl-4-hydroxytoluene *
2,6-Di-tert-butyl-p-methylphenol *
2,6-Di-tert-butyl-4-methylphenol *
4-Hydroxy-3,5-di-tert-butyltoluene * Impruvol *
Ionol * Ionol 1 * Ionol (antioxidant) * Ionol CP
* Ionole * Kerabit * 4-Methyl-2,6-di-terc.
butylfenol (Czech) * Methyldi-tert-butylphenol *
4-Methyl-2,6-di-tert-butylphenol * NCI-C03598 *
Nocrac 200 * Nonox TBC * P 21 * Parabar 441 *
Paranox

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Harmful.

Harmful if swallowed. Irritating to eyes, respiratory system and skin.

HMIS RATING

HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 0

NFPA RATING

HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 0

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE

In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

Section 5 - Fire Fighting Measures

FLASH POINT

260.6 °F 127 °C Method: closed cup

AUTOIGNITION TEMP

470 °C

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.
Hand: Compatible chemical-resistant gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	10 MG/M3
New Zealand	OEL		
Remarks: check ACGIH TLV			
USA	NIOSH	TWA	10 MG/M3

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Solid	
Property	Value	At Temperature or Pressure
Molecular Weight	220.36 AMU	
pH	N/A	
BP/BP Range	265 °C	760 mmHg
MP/MP Range	69 - 70 °C	
Freezing Point	N/A	
Vapor Pressure	0.01 mmHg	20 °C
Vapor Density	7.6 g/l	
Saturated Vapor Conc.	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	260.6 °F 127 °C	Method: closed cup
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	470 °C	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Acid chlorides, Acid anhydrides, Oxidizing agents, Bases, Brass Copper, Copper alloys.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes eye irritation.

Inhalation: Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Harmful if swallowed.

SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

TOXICITY DATA

Oral

Rat

890 mg/kg

LD50

Oral

Mouse

650 mg/kg

LD50

Remarks: Behavioral:Tremor. Lungs, Thorax, or Respiration:Chronic pulmonary edema.

Intraperitoneal

Mouse

138 MG/KG

LD50

Remarks: Lungs, Thorax, or Respiration:Chronic pulmonary edema. Lungs, Thorax, or Respiration:Other changes. Blood: Hemorrhage.

Intravenous

Mouse

180 MG/KG

LD50

Remarks: Behavioral:Sleep.

Oral

Guinea pig

10700 mg/kg

LD50

Remarks: Gastrointestinal:Hypermotility, diarrhea.

Behavioral:Tremor. Lungs, Thorax, or Respiration:Respiratory depression.

IRRITATION DATA

Skin
Human
500 mg
48H
Remarks: Mild irritation effect

Skin
Rabbit
500 mg
48H
Remarks: Moderate irritation effect

Eyes
Rabbit
100 mg
24H
Remarks: Moderate irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Species: Rat
Route of Application: Oral
Dose: 134 GM/KG
Exposure Time: 32W
Frequency: C
Result: Tumorigenic: Carcinogenic by RTECS criteria. Kidney, Ureter, Bladder: Tumors. Tumorigenic: Cells (cultured) transformed.

Species: Mouse
Route of Application: Oral
Dose: 435 MG/KG
Exposure Time: 69W
Frequency: C
Result: Tumorigenic: Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration: Tumors. Gastrointestinal: Tumors.

Species: Rat
Route of Application: Oral
Dose: 247 GM/KG
Exposure Time: 3Y
Frequency: C
Result: Tumorigenic: Carcinogenic by RTECS criteria. Tumorigenic Effects: Uterine tumors. Liver: Tumors.

Species: Rat
Route of Application: Oral
Dose: 247 GM/KG
Exposure Time: 3Y
Frequency: C
Result: Tumorigenic: Neoplastic by RTECS criteria. Tumorigenic Effects: Ovarian tumors.

Species: Mouse
Route of Application: Oral
Dose: 1423 MG/KG
Exposure Time: 43W

Frequency: C
Result: Tumorigenic:Neoplastic by RTECS criteria. Liver:Tumors.

Species: Rat
Route of Application: Oral
Dose: 247 GM/KG
Result: Tumorigenic:Carcinogenic by RTECS criteria. Liver:Tumors.

Species: Rat
Route of Application: Oral
Dose: 963 GM/KG
Result: Tumorigenic:Carcinogenic by RTECS criteria.
Gastrointestinal:Tumors.

IARC CARCINOGEN LIST

Rating: Group 3

NTP CARCINOGEN LIST

Rating: No evidence.
Species: Mouse/rat
Route: Feed

ACGIH CARCINOGEN LIST

Rating: A4

CHRONIC EXPOSURE - TERATOGEN

Species: Mouse
Dose: 1200 MG/KG
Route of Application: Oral
Exposure Time: (9D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system.

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 500 UMOL/L
Cell Type: HeLa cell
Mutation test: DNA inhibition

Species: Human
Dose: 20 UMOL/L
Cell Type: lymphocyte
Mutation test: DNA inhibition

Species: Rat
Route: Oral
Dose: 1400 MG/KG
Mutation test: DNA damage

Species: Rat
Route: Oral
Dose: 16800 MG/KG
Exposure Time: 4W
Mutation test: Unscheduled DNA synthesis

Species: Rat
Dose: 100 PMOL/L

Cell Type: liver
Mutation test: Unscheduled DNA synthesis

Species: Rat
Route: Intraperitoneal
Dose: 1200 MG/KG
Exposure Time: 3D
Mutation test: Unscheduled DNA synthesis

Species: Rat
Route: Oral
Dose: 5460 MG/KG
Exposure Time: 10W
Mutation test: Dominant lethal test

Species: Mouse
Dose: 6 MG/L (+S9)
Cell Type: lymphocyte
Mutation test: Mutation in microorganisms

Species: Mouse
Route: Oral
Dose: 500 MG/KG
Mutation test: Other mutation test systems

Species: Mouse
Route: Intraperitoneal
Dose: 250 MG/KG
Mutation test: DNA inhibition

Species: Mouse
Route: Oral
Dose: 12 GM/KG
Exposure Time: 10W
Mutation test: Dominant lethal test

Species: Mouse
Dose: 6 MG/L
Cell Type: lymphocyte
Mutation test: Mutation in mammalian somatic cells.

Species: Mouse
Route: Intraperitoneal
Dose: 350 MG/KG
Exposure Time: 5D
Mutation test: sperm

Species: Hamster
Dose: 100 UG/L
Cell Type: ovary
Mutation test: Cytogenetic analysis

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 6 GM/KG
Route of Application: Oral
Exposure Time: (13W MALE/13W PRE-3W POST)
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Rat

Dose: 18 GM/KG
Route of Application: Oral
Exposure Time: (2W MALE/2W PRE-3W POST)
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.

Species: Rat
Dose: 9 GM/KG
Route of Application: Oral
Exposure Time: (2W MALE/2W PRE-3W POST)
Result: Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4).

Species: Rat
Dose: 35 GM/KG
Route of Application: Oral
Exposure Time: (10W MALE)
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea).

Species: Mouse
Dose: 43800 MG/KG
Route of Application: Oral
Exposure Time: (52D PRE/1-21D PREG)
Result: Maternal Effects: Parturition. Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Mouse
Dose: 12600 MG/KG
Route of Application: Oral
Exposure Time: (1-21D PREG)
Result: Effects on Newborn: Behavioral.

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: EC50 Daphnia
Species: Daphnia pulex
Time: 48 h
Value: 1.44 mg/l

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA

Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xn

Indication of Danger: Harmful.

R: 22 36/37/38

Risk Statements: Harmful if swallowed. Irritating to eyes, respiratory system and skin.

S: 26 36

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful.

Risk Statements: Harmful if swallowed. Irritating to eyes, respiratory system and skin.

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.