Section 1 - Product and Company Information

Product Name                       4-TERT-BUTYLPHENOL, 99%
Product Number                     B99901
Brand                              ALDRICH
Company                            Sigma-Aldrich
Street Address                     3050 Spruce Street
City, State, Zip, Country          SAINT LOUIS MO 63103 US
Technical Phone:                   314 771 5765
Emergency Phone:                   414 273 3850 Ext. 5996
Fax:                               800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name                          CAS #                 SARA 313
4-TERT-BUTYLPHENOL                      98-54-4               No

Formula         C10H14O
Synonyms        p-terc.Butylfenol (Czech) * Butylphen *
                 p-tert-Butylphenol * 4-t-Butylphenol *
                 4-(1,1-Dimethylethyl)phenol *
                 1-Hydroxy-4-tert-butylbenzene * Phenol,
                 4-(1,1-dimethylethyl)- * PTBP * Ucar butylphenol
                 4-T flake * Ucar butylphenol 4-T

RTECS Number:   SJ8925000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
  Irritant. Dangerous for the environment.
  Risk of serious damage to eyes. Toxic to aquatic organisms, may
  cause long-term adverse effects in the aquatic environment.

HMIS RATING
  HEALTH:  2
  FLAMMABILITY:  1
  REACTIVITY:  0

NFPA RATING
  HEALTH:  2
  FLAMMABILITY:  1
  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 immediately. Do not induce vomiting.

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 skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

CONDITIONS OF FLAMMABILITY
Under fire conditions, material may decompose to form flammable and/or explosive mixtures in air.

FLASH POINT
235.4 °F   113 °C   Method: closed cup

AUTOIGNITION TEMP
510 °C

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: Carbon dioxide, dry chemical powder, or appropriate foam. Water may be ineffective.

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 TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Sweep up, place in a bag and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING
User Exposure: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE
Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS
Safety shower and eye bath. Use only in a chemical fume hood.

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

GENERAL HYGIENE MEASURES
Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Physical State: Solid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Color: White</td>
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</tr>
<tr>
<td></td>
<td>Form: Powder</td>
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</tr>
<tr>
<td>Molecular Weight</td>
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<tr>
<td>pH</td>
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<tr>
<td>BP/BP Range</td>
<td>236 - 238 °C</td>
<td>760 mmHg</td>
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<td>MP/MP Range</td>
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<td>Freezing Point</td>
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<tr>
<td>Vapor Pressure</td>
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<td>Vapor Density</td>
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<td>Saturated Vapor Conc.</td>
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<tr>
<td>Bulk Density</td>
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<tr>
<td>Odor Threshold</td>
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<td>Volatile%</td>
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<tr>
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<tr>
<td>Water Content</td>
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<tr>
<td>Solvent Content</td>
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<td>Evaporation Rate</td>
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<td>Partition Coefficient</td>
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<tr>
<td>Decomposition Temp.</td>
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<td>Flash Point</td>
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<td>Explosion Limits</td>
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<td>Flammability</td>
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<tr>
<td>Autoignition Temp</td>
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<td>Refractive Index</td>
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<td>Optical Rotation</td>
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<td>Miscellaneous Data</td>
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<tr>
<td>Solubility</td>
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<td></td>
</tr>
</tbody>
</table>

N/A = not available

Section 10 - Stability and Reactivity

STABILITY
Stable: Stable.
Materials to Avoid: Bases, Acid chlorides, Acid anhydrides, Oxidizing agents, 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: May cause skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes severe eye irritation.
Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
Ingestion: May be harmful if swallowed.

SIGNS AND SYMPTOMS OF EXPOSURE
Exposure can cause: Dizziness. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

TOXICITY DATA

Oral
Rat
3250 UL/KG
LD50

Intraperitoneal
Rat
225 MG/KG
LD50

Intraperitoneal
Mouse
78 MG/KG
LD50

Skin
Rabbit
2520 UL/KG
LD50

Oral
Mammal
1500 mg/kg
LD50

Skin
Mammal
1580 mg/kg
LD50

IRRITATION DATA

Skin
Rabbit
500 mg
4H
Remarks: Mild irritation effect

Skin
Rabbit
500 mg
24H
Remarks: Mild irritation effect
Eyes
Rabbit
10 mg
Remarks: Severe irritation effect

Eyes
Rabbit
0.05 mg
24H
Remarks: Severe irritation effect

CHRONIC EXPOSURE - CARCINOGEN

Species: Hamster
Route of Application: Oral
Dose: 252 GM/KG
Exposure Time: 20W
Frequency: C
Result: Tumorigenic:Neoplastic by RTECS criteria.
Gastrointestinal:Tumors.

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish
Species: Pimephales promelas (Fathead minnow)
Time: 96 h
Value: 5.14 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: Alkylphenols, solid, n.o.s. [(including C2-C12 homologues)]
UN#: 2430
Class: 8
Packing Group: Packing Group III
Hazard Label: Corrosive
PIH: Not PIH

IATA
Proper Shipping Name: Alkylphenols, solid, n.o.s.
IATA UN Number: 2430
Hazard Class: 8
Packing Group: III

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION
Symbol of Danger: Xi N
Indication of Danger: Irritant. Dangerous for the environment.
R: 41 51/53
Risk Statements: Risk of serious damage to eyes. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S: 26 39 61
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection. Avoid release to the environment. Refer to special instructions/safety data sheets.

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Irritant. Dangerous for the environment.
Risk Statements: Risk of serious damage to eyes. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection. Avoid release to the environment. Refer to special instructions/safety data sheets.

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.
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