SAFETY DATA SHEET

BHT

Revision Date: 01-Apr-2015

Version 3

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product name
BHT

Synonyms
Butylated Hydroxytoluene; 2,6-di-tert-butyl-4-methyl phenol; 2,6-di-tert-butyl-p-cresol;

Molecular Weight
220.34

Recommended use
Antioxidant. Preservative. Food additive.

Manufacturer
Sasol Chemicals (USA) LLC
292 State Route 8
Oil City, PA 16301, US
Telephone: (814) 677-2028

Emergency telephone

2. HAZARDS IDENTIFICATION

GHS - Classification

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2B</td>
</tr>
<tr>
<td>Specific target organ systemic toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute aquatic toxicity</td>
<td>Category 1</td>
</tr>
<tr>
<td>Chronic aquatic toxicity</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

GHS Label elements, including precautionary statements
Signal Word: WARNING

Hazard statements

- Causes eye irritation
- May cause respiratory irritation. May cause drowsiness or dizziness
- Very toxic to aquatic life with long lasting effects

Physical hazards

- May form combustible dust concentrations in air (during processing)

Precautionary Statements - EU (§28, 1272/2008)

P280 - Wear eye protection/ face protection
P264 - Wash face, hands and any exposed skin thoroughly after handling
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
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P271 - Use only outdoors or in a well-ventilated area
P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P304 + P312 - IF INHALED: Call a POISON CENTER or doctor/ physician if you feel unwell
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
P273 - Avoid release to the environment.
P391 - Collect spillage.
P501 - Dispose of contents/ container to an approved waste disposal plant.

Combustible dust clouds may be created where operations produce fine material (dust). Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions. Handling and processing operations should be conducted in accordance with ‘best practices’ (e.g. NFPA- 654)

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>EC-No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>128-37-0</td>
<td>&gt;99</td>
<td>204-881-4</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, consult a specialist.

Skin contact

Wash off with soap and water. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse.

Inhalation

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, call a physician.
Ingestion
Not an expected route of exposure. If swallowed: Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention.

Notes to physician
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable properties
Combustible material: may burn but does not ignite readily.

Explosive properties
Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges. See Section 9 for more information.

Suitable Extinguishing Media
Water spray; Foam; Dry chemical; Carbon dioxide (CO₂).

Unsuitable Extinguishing Media
Do not use a solid water stream as it may scatter and spread fire.

Special exposure hazards in a fire
As the product contains combustible organic ingredients, fire will produce dense black smoke containing hazardous products of combustion (see section 10). In case of incomplete combustion an increased formation of oxides of nitrogen (NOx) is to be expected.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Further Information
Evacuate personnel to safe areas. Do not allow run-off from fire fighting to enter drains or water courses.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Evacuate personnel to safe areas. Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Dust Deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Non-sparking tools should be used.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system. Keep out of waterways. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up
Use personal protective equipment. Take precautionary measures against static discharges. Avoid dust formation. Take up mechanically and collect in suitable container for disposal. Non-sparking tools should be used. Clean contaminated surface thoroughly.
7. HANDLING AND STORAGE

Advisory on safe handling
Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Avoid contact with skin and eyes. Do not breathe vapors/dust. Handle in accordance with good industrial hygiene and safety practice.

Technical measures/Storage conditions
Keep containers tightly closed in a dry, cool and well-ventilated place.

Incompatible products

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>NIOSH REL</th>
<th>OSHA PEL</th>
<th>Ontario TWA</th>
<th>European Union</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>TWA: 2 mg/m³ inhalable fraction and vapor</td>
<td>TWA: 10 mg/m³</td>
<td>(vacated) TWA: 10 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>China</th>
<th>Japan</th>
<th>Korea</th>
<th>Australia</th>
<th>Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td></td>
<td></td>
<td>TWA: 2 mg/m³</td>
<td>10 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Mexico</th>
<th>Brazil</th>
<th>Argentina</th>
<th>Venezuela</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>Mexico: TWA 10 mg/m³</td>
<td>Mexico: STEL 20 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 2 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Engineering measures
It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Use only appropriately classified electrical equipment and powered industrial trucks. Ensure adequate ventilation, especially in confined areas. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Personal protective equipment

Eye/face protection
Safety glasses with side-shields. Molten form: Goggles; Face-shield.

Skin and body protection
Long sleeved clothing.

Hand protection
Impervious gloves.

Respiratory Protection
None under normal use conditions. If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice.
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State @20°C | Solid
appearance          | White; crystalline; pellets
Odor                | Mild
Odor Threshold      | No information available
pH                   | No information available
Melting point/range | 156-158 °F / 69-70 °C
Boiling point/boiling range | 509 °F / 265 °C
Flash point          | 244 °F / 118 °C
Evaporation rate     | No information available
Flammable properties | Combustible material: may burn but does not ignite readily
Flammability Limits in Air
  upper              | Not applicable
  lower              | Not applicable
Vapor pressure       | <0.01 mmHg @ 20 °C
Vapor density        | 7.6
Water solubility     | Practically insoluble; 0.4 - 1.14 mg/l
Partition coefficient: | 5.1
Autoignition temperature | 878 °F / 470 °C
Viscosity, dynamic   | 3.45 cSt @ 80 °C; 1.54 cSt @ 120 °C
Molecular Weight     | 220.34

Dust explosion properties
  Maximum explosion overpressure | 7-9 Pm (bar)
  Maximum Rate of Pressure Rise  | 800-1300 [dP/dt (bar/s)]
  Dust deflagration index (Kst)  | 200-350 [bar.m/s]
  Minimum ignition energy (MIE)  | 10-25 (mJ)
  Lower explosion limit           | 10-20 [M.E.C. (g/m³)]

10. STABILITY AND REACTIVITY

Stability            | Stable under normal conditions.
Conditions to avoid  | Heat (temperatures above flash point), sparks, ignition points, flames, static electricity.
Incompatible products| Strong acids, Strong bases, Oxidizing agents, Reducing agents.
Hazardous decomposition products | Possible formation of carbon oxides, nitrogen oxides, and hazardous organic compounds.
Hazardous reactions | Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Product Information

Acute toxicity
  Oral             | >6,000 mg/kg
  Dermal           | >2,000 mg/kg
Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>&gt;6,000 mg/kg (Rat)</td>
<td>&gt;2000 mg/kg (Rat)</td>
<td></td>
</tr>
</tbody>
</table>

Chronic toxicity

Repeated dose toxicity
Repeated oral exposure of laboratory animals (rats and mice) at doses greater than 25 mg/kg/day resulted in growth depression and functional and histological changes to the lung, liver, kidneys, and thyroid.

Carcinogenicity
Contains no ingredient listed as a carcinogen.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>IARC</th>
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</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>Group 3</td>
</tr>
</tbody>
</table>

IARC: (International Agency for Research on Cancer)
Group 3: Not classifiable as to its carcinogenicity to humans

Irritation
Irritating to eyes. Inhalation of dust in high concentration may cause irritation of respiratory system.

Mutagenic effects
None known.

Reproductive toxicity
None expected in humans. The only effects on reproduction in rats and mice were lower numbers of litters of ten or more pups at birth at doses of 100 mg/kg/day and above. During pregnancy, BHT had maternal effects on mice above oral doses of 240 mg/kg/day.

Target Organ Effects
Eyes, Lungs, Liver, Kidney, Thyroid.

Other adverse effects
May cause nausea, vomiting, gastro-intestinal distress, and narcotic effects if ingested in large doses well above the acceptable daily intake (ADI) of 0.3 mg/kg bw/day.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Toxicity to algae</th>
<th>Toxicity to fish</th>
<th>Toxicity to microorganisms</th>
<th>Toxicity to daphnia and other aquatic invertebrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EC50 72 h: = 6 mg/L (Pseudokirchneriella subcapitata)</td>
<td>LC50 48 h: = 5 mg/L (Oryzias latipes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EC50 72 h: &gt; 0.42 mg/L (Desmodesmus subspicatus)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EC50 48 h: = 0.48 mg/L (Daphnia magna) (immobilization)</td>
</tr>
</tbody>
</table>

Persistence and degradability

Not readily biodegradable.
Bioaccumulative potential

The product may be accumulated in organisms.

Bioconcentration factor (BCF)

230-2,500 [(fish) 56 days]

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>5.1</td>
</tr>
</tbody>
</table>

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products
If recycling is not practicable, dispose of in compliance with local regulations.

Contaminated packaging
Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

IMDG/IMO

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>Hazard class</th>
<th>UN/ID No</th>
<th>Packing group</th>
<th>Marine pollutant Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmentally Hazardous Substance, Solid, N.O.S. (Butylated Hydroxytoluene)</td>
<td>9</td>
<td>3077</td>
<td>III</td>
<td>Product is a marine pollutant according to the criteria set by IMDG/IMO</td>
</tr>
</tbody>
</table>

ICAO/IATA

<table>
<thead>
<tr>
<th>UN/ID No</th>
<th>Proper Shipping Name</th>
<th>Hazard class</th>
<th>Packing group</th>
</tr>
</thead>
<tbody>
<tr>
<td>3077</td>
<td>Environmentally Hazardous Substance, Solid, N.O.S. (Butylated Hydroxytoluene)</td>
<td>9</td>
<td>III</td>
</tr>
</tbody>
</table>

DOT

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>Hazard class</th>
<th>UN/ID No</th>
<th>Packing group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not regulated</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADR/RID

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>Hazard class</th>
<th>UN/ID No</th>
<th>Packing group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmentally Hazardous Substance, Solid, N.O.S. (Butylated Hydroxytoluene)</td>
<td>9</td>
<td>3077</td>
<td>III</td>
<td>UN3077, Environmentally Hazardous Substance, Solid, N.O.S. (Butylated Hydroxytoluene), 9, III, Marine Pollutant</td>
</tr>
</tbody>
</table>
15. REGULATORY INFORMATION

International Inventories

All of the components in the product are on the following Inventory lists:

- **TSCA** Complies
- **EINECS/ELINCS** Complies
- **DSL/NDSL** Complies
- **PICCS** Complies
- **ENCS** Complies
- **IECSC** Complies
- **AICS** Complies
- **KECL** Complies

**Legend**
- **TSCA** (Toxic Substances Control Act)
- **EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- **DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
- **PICCS** - Philippines Inventory of Chemicals and Chemical Substances
- **ENCS** - Japan Existing and New Chemical Substances
- **IECSC** - China Inventory of Existing Chemical Substances
- **AICS** - Australian Inventory of Chemical Substances
- **KECL** - Korean Existing and Evaluated Chemical Substances

**REstrictions - REACH Title** No information available

**U.S. FEDERAL REGULATIONS**

**SARA 313**
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Health Hazard</td>
<td>yes</td>
</tr>
<tr>
<td>Chronic Health Hazard</td>
<td>no</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>no</td>
</tr>
<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>no</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>no</td>
</tr>
</tbody>
</table>

**Clean Water Act**
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**CERCLA**
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

**U.S. STATE REGULATIONS**

**U.S. State Right-to-Know Regulations**
16. OTHER INFORMATION

Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

Revision Date: 01-Apr-2015

Disclaimer
The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butylated Hydroxytoluene</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>