SAFETY DATA SHEET

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

1.1. Product identifier

Topanol CA

Synonyms: 1,1,3 – Tris (2-methyl-4-hydroxy-5-t-butyl phenyl) butane

Chemical Abstracts Registry No: 1843-03-4

REACH Registration Number: 01-2119955265-33-0001 (Topanol)

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

Antioxidant; Stabilizer

1.3. Details of the supplier of the safety data sheet

Vertellus Specialties UK Ltd.
Seal Sands Road, Seal Sands
Middlesbrough, TS2 1UB
England
+44 1642-546546

e-mail Address: sds@vertellus.com

1.4. Emergency telephone number

Vertellus: +44 1642-546546
CHEMTREC (USA): +1-800-424-9300 (collect calls accepted)
CHEMTREC (International): +1-703-527-3887 (collect calls accepted)
NRCC (China): +86 532 83889090

SECTION 2: Hazards identification


Skin Sensitization Category 1B
Reproductive Toxicity Category 2
Skin Irritation Category 2
Specific Target Organ Systemic Toxicity Repeated Exposure Category 2

2.2. Label elements

Hazard Symbols (Pictogram):

Signal Word: Warning

Hazard Precautions:
H315 - Causes skin irritation.
H361d - Suspected of damaging the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure.
H317 - May cause an allergic skin reaction.

Prevention Precautionary Statements:
P201 - Obtain special instructions before use.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P281 - Use personal protective equipment as required.

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First Aid Precautionary Statements:

P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P308+P313 - IF exposed or concerned: Get medical advice/attention.
P333+P313 - IF skin irritation or rash occurs: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P363 - Wash contaminated clothing before reuse.

2.3. Other hazards

Other Hazards: WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR (DURING PROCESSING).

SECTION 3: Composition/information on ingredients

3.1. Substances or 3.2. Mixtures

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>Concentration (weight %)</th>
<th>EC Number</th>
<th>CLP Inventory/Annex VI</th>
<th>EU CLP Classification (1272/2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,1,3-Tris(2-methyl-4-hydroxy-5-t-butylphenyl)butane</td>
<td>1843-03-4</td>
<td>&gt; 87.5</td>
<td>217-420-7</td>
<td>Not listed.</td>
<td>Skin Sens. 1; H317</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>&lt; 12.5</td>
<td>203-625-9</td>
<td>601-021-00-3</td>
<td>Flam Liq 2, H225, Asp Tox 1, H304, STOT SE 3, H336, Repr. 2; H361d, Skin Irrit. 2; H315, STOT RE 2; H373</td>
</tr>
</tbody>
</table>

NOTE: See Section 8 for exposure limit data for these ingredients. See Section 15 for trade secret information (where applicable). See Section 16 for the full text of the R-phrases above.

SECTION 4: First aid measures

4.1. Description of first aid measures

Skin Contact: Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician.

Eye Contact: Flush eyes with water for at least 15 minutes; if irritation occurs seek medical attention.

Inhalation: If exposed to excessive levels remove to fresh air and get medical attention if cough or other symptoms develop. If breathing has stopped, give artificial respiration.

Ingestion: If swallowed, contact physician or poison control center immediately.

4.2 Most important symptoms and effects, both acute and delayed

Acute: May cause sensitization or irritation by skin contact.

Delayed Effects: None known.

4.3. Indication of any immediate medical attention and special treatment needed

Note to Physician: No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.

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**SECTION 5: Firefighting measures**

5.1. Extinguishing media

Appropriate Extinguishing Media: Water spray, Carbon dioxide, Dry chemical

5.2. Special hazards arising from the substance or mixture

Hazardous Products of Combustion: Carbon monoxide, carbon dioxide

Potential for Dust Explosion: Topanol presents a significant dust explosion hazard unless properly handled. Topanol CA was tested for dust explosion characteristics and the following results were obtained:
- Minimum ignition energy: < 3 mJ
- Minimum ignition temperature of dust cloud: 360 - 380 °C

Maximum Explosion Pressure: 9.2 bar
Maximum Rate of Pressure Rise: 1172 bar/s
Kst: 318 bar.m/s [St class : 3]
Limiting Oxygen Concentration: 8%
Minimum Explosible Concentration: 25 g/m³
Charge Relaxation time: ~120hrs

Powder Volume Resistivity: 3.6 x1015 Ohm.m (@<10% RH)

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.

Refer to European standards: EN1127-1, EN14491, EN14797, EN14373, and EN15089 for safe handling of and controlling explosive atmospheres in the workplace.

Special Flammability Hazards: This product is an organic solid. As such, in its finely divided form, this product has the potential to present a dust explosion hazard under certain conditions. Please review the dust explosion data enclosed in this section. Handle this product in a manner that prevents dust generation and accumulation, and refer to National Fire Protection Association (NFPA) Standard 654 for further information on prevention of dust explosions.

5.3. Advice for firefighters

Basic Fire Fighting Guidance: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**SECTION 6: Accidental release measures**

6.1. Personal precautions, protective equipment and emergency procedures

Evacuation Procedures: Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Special Instructions: See Section 8 for personal protective equipment recommendations. Remove all contaminated clothing to prevent further absorption. Decontaminate affected personnel using the first aid procedures in Section 4. Leather shoes that have been saturated must be discarded. 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). Nonsparking tools should be used.

6.2. Environmental precautions

Prevent releases to soils, drains, sewers and waterways.

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SAFETY DATA SHEET

6.3. Methods and material for containment and cleaning up

Remove all ignition sources. Wear protective equipment during clean-up. Ventilate the area of spill or leak. After collection of material, flush area with water. Avoid generation of dust clouds during clean-up. Carefully scoop up and place into appropriate disposal container. Dispose of contents & container in accordance with local, regional, national or international regulations.

6.4. Reference to other sections

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean up material disposal instructions.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for Unique Hazards: Not applicable.
Special Handling Equipment: Not applicable.

7.2. Conditions for safe storage, including any incompatibilities

Storage Precautions & Recommendations: This product should be stored at ambient temperature in a dry, well-ventilated location. Keep away from heat, sparks, and flame. 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 friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Dangerous Incompatibility Reactions: No data available.
Incompatibilities with Materials of Construction: None known

7.3. Specific end use(s)

If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to this annex for the specific exposure scenario control parameters for uses identified in subsection 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Country</th>
<th>Occupational Exposure Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States (OSHA)</td>
<td>Inhalable dust: 15 mg/m³. Respirable dust: 5 mg/m³</td>
</tr>
<tr>
<td>Austria, France, Sweden</td>
<td>Inhalable dust: 10 mg/m³. Respirable dust: 5 mg/m³</td>
</tr>
<tr>
<td>Belgium, Spain, Switzerland</td>
<td>Inhalable dust: 10 mg/m³. Respirable dust: 3 mg/m³.</td>
</tr>
<tr>
<td>Ireland, United Kingdom</td>
<td>Inhalable dust: 10 mg/m³. Respirable dust: 4 mg/m³.</td>
</tr>
<tr>
<td>Denmark, Singapore</td>
<td>Inhalable dust: 10 mg/m³. Respirable dust: 6 mg/m³.</td>
</tr>
<tr>
<td>Hungary</td>
<td>Inhalable dust: 10 mg/m³. Respirable dust: 1.25 mg/m³.</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
</tr>
</tbody>
</table>

Air Monitoring Method: Gravimetric analysis for total particulate and respirable fraction (<10 microns).

8.2. Exposure controls

Also see the annex to this SDS (if applicable) for specific exposure scenario controls.

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Other Engineering Controls: All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided. 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).

Personal Protective Equipment: Neoprene, nitrile, or PVC-coated gloves. Safety glasses or chemical goggles. 08PPA550


Thermal Hazards: Not applicable.

Environmental Exposure Controls: The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance, State &amp; Odor (ambient temperature)</td>
<td>White to off-white powder with possible toluene odor.</td>
</tr>
<tr>
<td>Molecular Formula:</td>
<td>Mixture</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>Mixture</td>
</tr>
<tr>
<td>Vapor Pressure:</td>
<td>No data available.</td>
</tr>
<tr>
<td>Specific Gravity or Density</td>
<td>0.5 g/mL @ 20°C</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>(approx) 265 °C</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Insoluble in water.</td>
</tr>
<tr>
<td>pH:</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash Point and Method:</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas):</td>
<td>Not a flammable solid.</td>
</tr>
<tr>
<td>Explosive Properties:</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor Density (air = 1):</td>
<td>Not established</td>
</tr>
<tr>
<td>Freezing / Melting Point:</td>
<td>184 °C</td>
</tr>
<tr>
<td>Octanol / Water Coefficient</td>
<td>12.7 @ 25°C</td>
</tr>
<tr>
<td>Odor Threshold:</td>
<td>No data available</td>
</tr>
<tr>
<td>Autoignition Temperature:</td>
<td>Not self-ignitable</td>
</tr>
<tr>
<td>Flammable Limits:</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition Temperature:</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing Properties:</td>
<td>Not an oxidizer</td>
</tr>
</tbody>
</table>

SECTION 10: Stability and reactivity

10.1. Reactivity
Not classified as dangerously reactive.

10.2. Chemical stability
Stable

10.3. Possibility of hazardous reactions
Will not occur.

10.4. Conditions to avoid
Electrostatic discharge Formation of dust clouds

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SAFETY DATA SHEET

10.5. Incompatible materials
None known

10.6. Hazardous decomposition products
Oxides of carbon

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Oral LD$_{50}$:
- $> 5000$ mg/kg (rat)
- $> 5000$ mg/kg (guinea pig)
- $> 3000$ mg/kg (dog)
- $636$ mg/kg (rat)

Acute Dermal LD$_{50}$:
- $> 7940$ mg/kg (rabbit)
- $8390$ mg/kg (rabbit)

Acute Inhalation LC$_{50}$:
- Inhalation LC$_{50}$ (4h) (rat) $12.5$ mg/L
- Toluene

Skin Irritation:
Slightly irritating to skin.

Eye Irritation:
Non-irritating to eyes.

Skin Sensitization:
Positive for skin sensitization potential in Local Lymph Node Assay (OECD 429).

Mutagenicity:
Not mutagenic : Negative to Ames test

Reproductive / Developmental Toxicity:
Suspected of damaging fertility or the unborn child (toluene)

Carcinogenicity:
This material is not listed by IARC, NTP or OSHA as a carcinogen. No test data is available that indicates this material is a carcinogen.

Target Organs:
Central nervous system

Aspiration Hazard:
Not applicable.

Primary Route(s) of Exposure:
Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure.

Most important symptoms and effects, both acute and delayed
May cause sensitization or irritation by skin contact. Delayed Effects: None known.

Additive or Synergistic effects:
None known.

SECTION 12: Ecological information

12.1. Toxicity
- NOEC (40d) (onchorhynchus kisutch) = $1.4$ mg/L
- LC50 (96h) (onchorhynchus kisutch) = $5.5$ mg/L
- EC50 (48h) (daphnia dubia) = $3.78$ mg/L
- NOEC (7d) (daphnia dubia) = $0.74$ mg/L
- EC50 (3h) (chlorella vulgaris) = $134$ mg/L
- Aquatic NOAC 100 mg/L 96 hr Brachydanio rerio, (Scheerbaum 1995) Toluene
- Aquatic NOEC >1000 mg/L 48 hr Daphnia Magna, (Migchielson 2012) Topanol
- Aquatic NOEC >1000 mg/L (72hr) Scenedesmus subspicatus, (Scheerbaum, 1995) Topanol

12.2. Persistence and degradability
Topanol: OECD 301B (modified Sturm test): 12% degradation in 28 days; not ready biodegradable. (Noack 1995b)

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12.3. Bioaccumulative potential
   Topanol: By means of EPIWIN QSAR BCFBAF estimations the BCF is determined to be 1.064 L/kg wet-wt (Green, 2012)

12.4. Mobility in soil
   No data available.

12.5. Results of PBT and vPvB assessment
   This mixture is not a PBT or vPvB.

12.6. Other adverse effects
   Ecotoxicological data are for components.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
   US EPA Waste Number: Non-Hazardous
   Waste Classification (per US regulations): The waste may be classified as "special" or hazardous per State regulations.
   Waste Disposal:
   **NOTE**: Generator is responsible for proper waste characterization. State hazardous waste regulations may differ substantially from federal regulations. Dispose of this material responsibly, and in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws, and environmental protection duty of care principles. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate classification code according to the European Community List of Wastes should be used. Note that disposal regulations may also apply to empty containers and equipment rinsates.

SECTION 14: Transport information

The following information applies to all shipping modes (DOT/IATA/ICAO/IMDG/ADR/RID/ADN), unless otherwise indicated:

14.1. UN number
   Non-Hazardous

14.2. UN proper shipping name
   Chemicals, n.o.s. (1,1,3-Tris(2-methyl-4-hydroxy-5-t-butylphenyl)butane)

14.3. Transport hazard class(es)
   Not applicable

14.4. Packing group
   Not applicable

14.5. Environmental hazards
   Not applicable

14.6. Special precautions for user
   Not applicable

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
   Not applicable.

SECTION 15: Regulatory information

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

Chemical Inventory Lists:

<table>
<thead>
<tr>
<th>Country</th>
<th>Status</th>
<th>EINECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA TSCA:</td>
<td>Listed</td>
<td>217-420-7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>203-625-9</td>
</tr>
<tr>
<td>Canada(DSL/NDSL):</td>
<td>DSL</td>
<td>Japan:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3)-2 (toluene)</td>
</tr>
<tr>
<td>Korea:</td>
<td>KE-24898 (topanol CA-SF)</td>
<td>Australia:</td>
</tr>
</tbody>
</table>

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SAFETY DATA SHEET

KE-33936 (toluene)

China: Listed 16691 (toluene)
Taiwan: Listed

Philippines: Listed
New Zealand: Listed

German Water Hazard Classification:
ID Number 194, hazard class 2 - hazard to waters (1,1,3-Tris(2-methyl-4-hydroxy-5-tert-butylphenyl)butan Toluol)

SARA 313: Toluene 1.0 percent de minimis concentration
Reportable Quantities: 1000 lbs
State Regulations: ATTENTION: This product can expose you to Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

HMIS IV: 
NFPA: 1

15.2. Chemical safety assessment
A chemical safety assessment has not been prepared for this mixture of substances.

SECTION 16: Other information

Legend of Abbreviations:
ACGIH = American Conference on Governmental Industrial Hygienists.
CAS = Chemical Abstracts Service.
DSL/NDSL = Domestic Substances List/Non-Domestic Substances List.
EC = European Community.
EINECS = European Inventory of Existing Commercial Chemical Substances.
ELINCS = European List of Notified Chemical Substances.
EU = European Union.
GHS = Globally Harmonized System.
LC = Lethal Concentration.
LD = Lethal Dose.
NIOSH = National Institute of Occupational Safety and Health.
NTP = National Toxicology Program.
OSHA = Occupational Safety and Health Administration.
PEL = Permissible Exposure Limit.
RQ = Reportable Quantity.
TLV = Threshold Limit Value.
WHMIS = Workplace Hazardous Materials Information System.

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Revision Details: Revised format; classification change.

Original Date of Issue: 14 Feb 2008
Email: SDS@Vertellus.com

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