SAFETY DATA SHEET

500396 TOLYL ALDEHYDE FCC, PARA

1. IDENTIFICATION

Product Description: TOLYL ALDEHYDE FCC, PARA
CAS # 104-87-0
FEMA Number 3068
Other means of identification
Vigon Item # 500396
Recommended use Concentrated aromatic and flavor ingredient which may be used in flavor and fragrance compounds according to legal and IFRA or FEMA GRAS/FDA guidelines.
Recommended restrictions For Manufacturing Use Only

Company
Vigon International, Inc.
127 Airport Road
E. Stroudsburg, PA 18301
For information call: 570-476-6300
Web Site: www.vigon.com

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

<table>
<thead>
<tr>
<th>Company name</th>
<th>Vigon International, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>127 Airport Road</td>
</tr>
<tr>
<td></td>
<td>E. Stroudsburg, PA 18301</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Telephone</th>
<th>For information call: 570-476-6300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website</td>
<td><a href="http://www.vigon.com">www.vigon.com</a></td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:regulatory@vigon.com">regulatory@vigon.com</a></td>
</tr>
</tbody>
</table>

Emergency phone number

<table>
<thead>
<tr>
<th>INFOTRAC (ACCT# 78928); 1-800-535-5053 WITHIN THE U.S.A. 1-352-323-3500 OUTSIDE THE U.S.A.</th>
</tr>
</thead>
</table>

2. HAZARD(S) IDENTIFICATION

<table>
<thead>
<tr>
<th>Physical hazards</th>
<th>Health hazards</th>
<th>Environmental hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids</td>
<td>Acute toxicity, oral</td>
<td>Hazardous to the aquatic environment, acute hazard</td>
</tr>
<tr>
<td>Category 3</td>
<td>Category 4</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute toxicity, dermal</td>
<td>Acute toxicity, inhalation</td>
<td>Hazardous to the aquatic environment, acute hazard</td>
</tr>
<tr>
<td>Category 5</td>
<td>Skin corrosion/irritation</td>
<td>Category 3</td>
</tr>
<tr>
<td>Acute toxicity, inhalation</td>
<td>Serious eye damage/eye irritation</td>
<td>Category 2A</td>
</tr>
<tr>
<td>Category 4</td>
<td>Specific target organ toxicity, single exposure</td>
<td>Category 3 respiratory tract irritation</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Serious eye damage/eye irritation</td>
<td>Category 3 respiratory tract irritation</td>
</tr>
<tr>
<td>Category 2</td>
<td>Specific target organ toxicity, single exposure</td>
<td>Category 3 respiratory tract irritation</td>
</tr>
<tr>
<td>Category 2A</td>
<td>Hazardous to the aquatic environment, acute hazard</td>
<td>Category 3 respiratory tract irritation</td>
</tr>
<tr>
<td>Category 3</td>
<td>Hazardous to the aquatic environment, acute hazard</td>
<td>Category 3 respiratory tract irritation</td>
</tr>
<tr>
<td>Category 3</td>
<td>Hazardous to the aquatic environment, acute hazard</td>
<td>Category 3 respiratory tract irritation</td>
</tr>
<tr>
<td>Category 3</td>
<td>Hazardous to the aquatic environment, long-term hazard</td>
<td>Category 3 respiratory tract irritation</td>
</tr>
</tbody>
</table>
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Label elements

Signal word Warning

Hazard statement Combustible liquid. Harmful if swallowed or if inhaled. May be harmful in contact with skin. Causes skin irritation. Causes skin and eye irritation. Causes serious eye irritation. May cause respiratory irritation. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

Response IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER/doctor if you feel unwell. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.

Storage Keep cool. Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) After prolonged contact with highly porous materials, this product may spontaneously combust.

Supplemental information None.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOLYL ALDEHYDE PARA</td>
<td>4-Methylbenzaldehyde</td>
<td>104-87-0</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>P-TOLUALDEHYDE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4-METHYLBENZALDEHYDE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-FORMYLTOLUENE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST-AID MEASURES

Inhalation If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.

Skin contact Take off immediately all contaminated clothing. Get medical attention if irritation develops and persists. Wash skin thoroughly with soap and water for several minutes.

Eye contact Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists. Promptly wash eyes with plenty of water while lifting the eye lids.
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Ingestion
Call a physician or poison control center immediately. If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn’t enter the lungs.

Most important symptoms/effects, acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed
Not available.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Water spray, fog, CO2, dry chemical, or alcohol resistant foam.

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

Specific hazards arising from the chemical
Fire may produce irritating, corrosive and/or toxic gases. Porous material such as rags, paper, insulation, or organic clay may spontaneously combust when wetted with this material.

Special protective equipment and precautions for firefighters
Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage. Ventilate closed spaces before entering them. Keep run-off water out of sewers and water sources. Dike for water control.

Specific methods
Use water spray to cool unopened containers.

General fire hazards
Static charges generated by emptying package in or near flammable vapor may cause flash fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Eliminate all sources of ignition. Avoid contact with skin or inhalation of spillage, dust or vapor. Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.
Methods and materials for containment and cleaning up

Collect and dispose of spillage as indicated in section 13 of the SDS.

Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps.

The product is immiscible with water and will spread on the water surface.

Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.

Never return spills in original containers for re-use. This material and its container must be disposed of as hazardous waste. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Environmental precautions

Retain and dispose of contaminated wash water. Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. HANDLING AND STORAGE

Precautions for safe handling

Do not handle or store near an open flame, heat or other sources of ignition. Porous material such as rags, paper, insulation, or organic clay may spontaneously combust when wetted with this material. May auto-oxidize with sufficient heat generation to ignite if spread (as a thin film) or absorbed on porous or fibrous material. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Contaminated rags and cloths must be put in fireproof containers for disposal. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Do not store in direct sunlight. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Keep under a nitrogen blanket.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

This substance has no PEL, TLV, or other recommended exposure limit.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Use explosion-proof ventilation equipment to stay below exposure limits. Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Chemical resistant gloves.

Other

Wear suitable protective clothing.

Respiratory protection

Respiratory protection not required. If ventilation is insufficient, suitable respiratory protection must be provided.
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Refer to Spec Sheet</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Form</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Color</td>
<td>Refer to Spec Sheet</td>
</tr>
<tr>
<td>Odor</td>
<td>Characteristic.</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not available.</td>
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<tr>
<td>pH</td>
<td>Not available.</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>21.2 °F (-6 °C)</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>399.2 °F (204 °C) at 760.00 mmHg</td>
</tr>
<tr>
<td>Flash point</td>
<td>161.0 °F (71.7 °C) Closed Cup</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td></td>
</tr>
<tr>
<td>Flammability limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limit - upper (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - lower (%)</td>
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</tr>
<tr>
<td>Explosive limit - upper (%)</td>
<td>Not available.</td>
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<tr>
<td>Vapor pressure</td>
<td>0.26 mm Hg at 25 °C</td>
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<tr>
<td>Vapor density</td>
<td>4.2</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
<tr>
<td>Solubility (water)</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available.</td>
</tr>
<tr>
<td>Other information</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>1.02 g/cm3 estimated at 17 °C</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive.</td>
</tr>
<tr>
<td>Flammability class</td>
<td>Combustible IIIA estimated</td>
</tr>
</tbody>
</table>
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500396 TOLYL ALDEHYDE FCC, PARA

Molecular formula: C8-H8-O
Molecular weight: 120.16 g/mol
Oxidizing properties: Not oxidizing.
Specific gravity: 1.02 at 25 °C

10. STABILITY AND REACTIVITY

Reactivity: The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability: Material is stable under normal conditions.
Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.
Conditions to avoid: Porous material such as rags, paper, insulation, or organic clay may spontaneously combus when wetted with this material.
Incompatible materials: Strong oxidizing agents.
Hazardous decomposition products: No hazardous decomposition products if stored and handled as indicated.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation: Harmful if inhaled.
Skin contact: May be harmful in contact with skin. Causes skin irritation.
Eye contact: Causes serious eye irritation.
Ingestion: Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity: In high concentrations, vapors are anesthetic and may cause headache, fatigue, dizziness and central nervous system effects. Harmful if inhaled. Harmful if swallowed. May be harmful in contact with skin.

Product | Species | Test Results
---|---|---
TOLYL ALDEHYDE PARA (CAS 104-87-0) | | |
Acute | | |
Dermal | | |
LD50 | Rabbit | 2500 mg/kg

Skin corrosion/irritation: Causes skin irritation. Harmful if absorbed through skin.
Skin Irritation: rabbit: Irritant. (Draize test)
This product has not been tested. The statement has been derived from products of a similar structure and composition. Literature data.

Serious eye damage/eye irritation: Causes serious eye irritation.
Eye Irritation: rabbit: Irritant. (Draize test). Literature data.
Respiratory or skin sensitization

Respiratory sensitization: Due to partial or complete lack of data the classification is not possible.

Skin sensitization: Due to partial or complete lack of data the classification is not possible.

Sensitization: Guinea pig maximization test/guinea pig: Non-sensitizing. (OECD Guideline 406)

Germ cell mutagenicity: Genetic toxicity: The substance was not mutagenic in bacteria. Due to partial or complete lack of data the classification is not possible.

Carcinogenicity: Due to partial or complete lack of data the classification is not possible.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity: Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure: Due to partial or complete lack of data the classification is not possible.

Aspiration hazard: Due to partial or complete lack of data the classification is not possible.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Harmful to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOLYL ALDEHYDE PARA (CAS 104-87-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Leuciscus idus (Golden orfe)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 22 - &lt; 46 mg/l, 96 hours DIN 38412 Part 15 static. The details of the toxic effect relate to the nominal concentration.</td>
</tr>
<tr>
<td>Other</td>
<td>EC10</td>
<td>Bacterium</td>
</tr>
</tbody>
</table>
|                                |                          | 138 mg/l, 0.5 hours DIN 38412 Part 27 (draft) aerobic. The details of the toxic effect relate to the nominal concentration. The product has low solubility in the test medium. An aqueous solution prepared with solubilizers has been tested.
## Environmental fate and transport

### Biodegradation
- **Test method:** (aerobic), activated sludge
- **Degree of elimination:** > 70% (28 d)
- **Evaluation:** Readily biodegradable (according to OECD criteria)

The product has not been tested. The statement has been derived from products of a similar structure and composition.

### Bioaccumulation
- **Significant accumulation in organisms is not to be expected.**
- **No data available.**

### Mobility in soil
- **No data available.**

### Other adverse effects
- **No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.**

## 13. DISPOSAL CONSIDERATIONS

### Disposal instructions
Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

### Local disposal regulations
Dispose in accordance with all applicable regulations.

### Hazardous waste code
Not established.

### Waste from residues / unused products
Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

### Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

## 14. TRANSPORT INFORMATION

### ADN
Not regulated as dangerous goods.

### ADR
Not regulated as dangerous goods.

### RID
Not regulated as dangerous goods.

### DOT

### BULK
- **UN number:** NA1993
- **Proper shipping name:** COMBUSTIBLE LIQUID, N.O.S. (TOLYL ALDEHYDE PARA)
- **Hazard class:** Combustible liq
- **Packing group:** III
- **Environmental hazards:** No
- **Marine pollutant:** No
- **Packaging exceptions:** 150
- **Packaging bulk:** 241
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Labels required    None

DOT
NON-BULK
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

15. REGULATORY INFORMATION

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)
Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.
SARA 311/312 Hazardous chemical
Yes

Classified hazard categories
Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Issue date          11-24-2015
Revision date       05-11-2020
Vigon International, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, and disposal and should not be considered as a guarantee or quality specification. This product has not been evaluated for safe use in e-cigarettes or any vaping application where the product(s) is/are intentionally vaporized and inhaled. Vigon International, Inc. has performed no testing on these products in e-cig/vaping applications. It is the sole responsibility of the individual(s) purchasing this product to assess its safety in the final application. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal, and should not be considered as a guarantee or quality specification. The above information is based on data provided by and collected from recognized sources such as distributors, manufacturers, and technical groups and is considered to be accurate to the best of Vigon’s knowledge as of the date of this document. It is the responsibility of the user to review all safety information about this product and determine its safety and suitability in their own processes and operations. Appropriate warnings and safe handling procedures should be provided to all handlers and users, taking into account the intended use and the specific conditions and factors relating to such use in accordance with all applicable laws and regulations.

This document has undergone significant changes and should be reviewed in its entirety.