SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Brown Sugar Flavor 343021
Version: 2

Section 1. Identification of the substance or the mixture and of the supplier

1.1 Product Identifier
Product identifier: Brown Sugar Flavor 343021
Other identifiers: None

1.2 Relevant identified uses of the substance of mixture and uses advised against
Product uses: Flavours

1.3 Details of the supplier of the safety data sheet
Company name: Perfumer's Apprentice
Company address: 170 Technology Circle
Scotts Valley
CA 95066
USA
Contact: Elisabeth Hanson
E-Mail address: regulatory@perfumersapprentice.com
Company phone: +1 (831) 346 7234

1.4 Emergency telephone number
Emergency phone: +1 (831) 346 7234

Section 2. Hazards identification

2.1 Classification of the substance or mixture
Class and category of danger:
- Sensitization - Respiratory Category 1
- Carcinogenicity Category 2
- Specific Target Organ Toxicity (Repeated Exposure) Category 2
  H334, May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  H351, Suspected of causing cancer (exposure route).
  H373, May cause damage to organs (organs) through prolonged or repeated exposure (exposure route).

2.2 Label elements
Signal word: Danger
Hazard statements:
- H334, May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H351, Suspected of causing cancer (exposure route).
- H373, May cause damage to organs (organs) through prolonged or repeated exposure (exposure route).
Precautionary statements:
- P202, Do not handle until all safety precautions have been read and understood.
- P260, Do not breathe vapour or dust.
SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Brown Sugar Flavor 343021

Version: 2

P285, In case of inadequate ventilation wear respiratory protection.
P304/341, IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P308/313, IF exposed or concerned: Get medical advice/attention.
P314, Get medical advice/attention if you feel unwell.
P342/311, If experiencing respiratory symptoms: Call a POISON CENTRE or a doctor/physician.
P405, Store locked up.
P501, Dispose of contents/container to approved disposal site, in accordance with local regulations.

Pictograms:

Other hazards: None

Section 3. Composition / information on ingredients

3.2 Mixtures

Contains:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>EC</th>
<th>%</th>
<th>GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanillin</td>
<td>121-33-5</td>
<td>204-465-2</td>
<td>1-&lt;5%</td>
<td>EDI 2A;H319</td>
</tr>
<tr>
<td>Furfuryl alcohol</td>
<td>98-00-0</td>
<td>202-626-1</td>
<td>1-&lt;5%</td>
<td>FL 4;ATO 3;ATD 3;ATI 2;SCI 2;EDI 2A-CAR 2-STO-SE 3(RI)-STO-RE 2; H227-H301-H311-H315-H319-H330-H335-H351-H373</td>
</tr>
<tr>
<td>Veratraldehyde</td>
<td>120-14-9</td>
<td>204-373-2</td>
<td>1-&lt;5%</td>
<td>ATO 4;H302</td>
</tr>
<tr>
<td>Furfural</td>
<td>98-01-1</td>
<td>202-627-7</td>
<td>0.1-&lt;1%</td>
<td>FL 4;ATO 3;ATD 4;ATI 2;SCI 2;EDI 2A-CAR 2-STO-SE 3(RI);H227-H301-H312-H315-H319-H330-H335-H351</td>
</tr>
<tr>
<td>4-Hydroxy-2,5-dimethyl-3(2H)-furanone</td>
<td>3658-77-3</td>
<td>222-908-8</td>
<td>0.1-&lt;1%</td>
<td>EDI 2A-SS 1A;H317-H319</td>
</tr>
</tbody>
</table>

The exact percentage concentrations of components are being withheld as a trade secret.

Substances with Community workplace exposure limits, not listed above:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>EC</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furfural</td>
<td>98-01-1</td>
<td>202-627-7</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>57-55-6</td>
<td>200-338-0</td>
<td>80-90%</td>
</tr>
</tbody>
</table>

Perfumer's Apprentice, 170 Technology Circle, Scotts Valley, CA, 95066, USA
SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Brown Sugar Flavor 343021
Version: 2

Section 4. First-aid measures

4.1 Description of first aid measures
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Suspected of causing cancer (exposure route).
May cause damage to organs (organs) through prolonged or repeated exposure (exposure route).

4.3 Indication of any immediate medical attention and special treatment needed
None expected, see Section 4.1 for further information.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable media: Carbon dioxide, Dry chemical, Foam.

5.2 Special hazards arising from the substance or mixture
In case of fire, may be liberated: Carbon monoxide, Unidentified organic compounds.

5.3 Advice for fire fighters:
In case of insufficient ventilation, wear suitable respiratory equipment.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:
Avoid inhalation. Avoid contact with skin and eyes. See protective measures under Section 7 and 8.

6.2 Environmental precautions:
Keep away from drains, surface and ground water, and soil.

6.3 Methods and material for containment and cleaning up:
Remove ignition sources. Provide adequate ventilation. Avoid excessive inhalation of vapours. Contain spillage immediately by use of sand or inert powder. Dispose of according to local regulations.

6.4 Reference to other sections:
Also refer to sections 8 and 13.
SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Brown Sugar Flavor 343021
Version: 2

Section 7. Handling and storage

7.1 Precautions for safe handling:
Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use personal protective equipment as required. Use in accordance with good manufacturing and industrial hygiene practices. Use in areas with adequate ventilation. Do not eat, drink or smoke when using this product.

7.2 Conditions for safe storage, including any incompatibilities:

7.3 Specific end use(s):
Flavours: Use in accordance with good manufacturing and industrial hygiene practices.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Workplace exposure limits:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS</th>
<th>EC</th>
<th>Description</th>
<th>ppm</th>
<th>mg/m³</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furfural</td>
<td>98-01-1</td>
<td>202-627-7</td>
<td>Long-term exposure limit (8-hour TWA reference period)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Short-term exposure limit (15-minute reference period)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Propylene glycol</td>
<td>57-55-6</td>
<td>200-338-0</td>
<td>Long-term exposure limit (8-hour TWA reference period)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Short-term exposure limit (15-minute reference period)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

8.2 Exposure Controls

Eye / Skin Protection
Wear protective gloves/eye protection/face protection

Respiratory Protection
Ensure adequate and ongoing ventilation is maintained in order to prevent build up of excessive vapour and to ensure occupational exposure limits are adhered to. If appropriate, and depending on your patterns and volumes of use, the following engineering controls may be required as additional protective measures: a) Isolate mixing rooms and other areas where this material is used or openly handled. Maintain these areas under negative air pressure relative to the rest of the plant. b) Employ the use of Personal protective equipment - an approved, properly fitted respirator with organic vapour cartridges or canisters and particulate filters. c) Use local exhaust ventilation around open tanks and other open sources of potential exposures in order to avoid excessive inhalation, including places where this material is openly weighed or measured. In addition, use general dilution ventilation of the work area to eliminate or reduce possible worker exposures. d) Use closed systems for transferring and processing this material.

Also refer to Sections 2 and 7.
SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Brown Sugar Flavor 343021
Version: 2

Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: Not determined
Odour: Not determined
pH: Not determined
Initial boiling point / range: Not determined
Flash point: 93.33 °C
Vapour pressure: Not determined
Relative density: Not determined
Solubility(ies): Not determined

9.2 Other information: None available

Section 10. Stability and reactivity

10.1 Reactivity:

Presents no significant reactivity hazard, by itself or in contact with water.

10.2 Chemical stability:

Good stability under normal storage conditions.

10.3 Possibility of hazardous reactions:

Not expected under normal conditions of use.

10.4 Conditions to avoid:

Avoid extreme heat.

10.5 Incompatible materials:

Avoid contact with strong acids, alkalis or oxidising agents.

10.6 Hazardous decomposition products:

Not expected.

Section 11. Toxicological information

11.1 Information on toxicological effects

This mixture has not been tested as a whole for health effects. The health effects have been calculated using the methods outlined in 29 CFR 1910.1200.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Suspected of causing cancer (exposure route).
May cause damage to organs (organs) through prolonged or repeated exposure (exposure route).
SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Brown Sugar Flavor 343021

Version: 2

Assumed Toxicity Value (LD50 or ATE) for Acute Oral Toxicity: >5000
Assumed Toxicity Value (LD50 or ATE) for Acute Dermal Toxicity: >5000
Assumed Toxicity Value (LC50 or ATE) for Acute Inhalation Toxicity: Not Available

Inhalation Route: Not Available

Information about hazardous ingredients in the mixture

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS</th>
<th>EC</th>
<th>LD50/ATE Oral</th>
<th>LD50/ATE Dermal</th>
<th>LC50/ATE Inhalation</th>
<th>LC50 Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furfural</td>
<td>98-01-1</td>
<td>202-627-7</td>
<td>100</td>
<td>1100</td>
<td>1</td>
<td>Vapour</td>
</tr>
<tr>
<td>Furfuryl alcohol</td>
<td>98-00-0</td>
<td>202-626-1</td>
<td>250</td>
<td>530</td>
<td>1</td>
<td>Vapour</td>
</tr>
<tr>
<td>Veratraldehyde</td>
<td>120-14-9</td>
<td>204-373-2</td>
<td>2000</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Refer to Sections 2 and 3 for additional information.

Section 12. Ecological information

12.1 Toxicity: Not available
12.2 Persistence and degradability: Not available
12.3 Bioaccumulative potential: Not available
12.4 Mobility in soil: Not available
12.5 Results of PBT and vPvB assessment:
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.
12.6 Other adverse effects: Not available

Section 13. Disposal considerations

13.1 Waste treatment methods:
Dispose of in accordance with local regulations. Avoid disposing into drainage systems and into the environment. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Section 14. Transport information

14.1 UN number: Not classified
14.2 UN Proper Shipping Name: Not classified
14.3 Transport hazard class(es):
Sub Risk: Not classified
14.4. Packing Group: Not classified
14.5 Environmental hazards: Not environmentally hazardous for transport
14.6 Special precautions for user: None additional
SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Brown Sugar Flavor 343021

Version: 2

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

Section 15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
None additional

15.2 Chemical Safety Assessment
A Chemical Safety Assessment has not been carried out for this product.

Section 16. Other information

Concentration % Limits: SS 1=20.00% CAR 2=5.33% STO-RE 2=53.33%

Total Fractional Values: SS 1=5.00 CAR 2=18.75 STO-RE 2=1.88

Key to revisions:

2.1 Classification of the substance or mixture

Key to abbreviations:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATD 3</td>
<td>Acute Toxicity - Dermal Category 3</td>
</tr>
<tr>
<td>ATD 4</td>
<td>Acute Toxicity - Dermal Category 4</td>
</tr>
<tr>
<td>ATI 2</td>
<td>Acute Toxicity - Inhalation Category 2</td>
</tr>
<tr>
<td>ATO 3</td>
<td>Acute Toxicity - Oral Category 3</td>
</tr>
<tr>
<td>ATO 4</td>
<td>Acute Toxicity - Oral Category 4</td>
</tr>
<tr>
<td>CAR 2</td>
<td>Carcinogenicity Category 2</td>
</tr>
<tr>
<td>ED1 2A</td>
<td>Eye Damage / Irritation Category 2A</td>
</tr>
<tr>
<td>FL 4</td>
<td>Flammable Liquid, Hazard Category 4</td>
</tr>
<tr>
<td>H227</td>
<td>Combustible liquid.</td>
</tr>
<tr>
<td>H301</td>
<td>Toxic if swallowed.</td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin.</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin.</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>H330</td>
<td>Fatal if inhaled.</td>
</tr>
<tr>
<td>H335</td>
<td>May cause respiratory irritation.</td>
</tr>
<tr>
<td>H351</td>
<td>Suspected of causing cancer (exposure route).</td>
</tr>
<tr>
<td>H373</td>
<td>May cause damage to organs (organs) through prolonged or repeated exposure (exposure route).</td>
</tr>
<tr>
<td>P202</td>
<td>Do not handle until all safety precautions have been read and understood.</td>
</tr>
<tr>
<td>P210</td>
<td>Keep away from heat, sparks, open flames and hot surfaces. - No smoking.</td>
</tr>
</tbody>
</table>
# SAFETY DATA SHEET

In accordance with 29 CFR 1910.1200

**Product:** Brown Sugar Flavor 343021

**Version:** 2

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P260</td>
<td>Do not breathe vapour or dust.</td>
</tr>
<tr>
<td>P261</td>
<td>Avoid breathing vapour or dust.</td>
</tr>
<tr>
<td>P264</td>
<td>Wash hands and other contacted skin thoroughly after handling.</td>
</tr>
<tr>
<td>P270</td>
<td>Do not eat, drink or smoke when using this product.</td>
</tr>
<tr>
<td>P272</td>
<td>Contaminated work clothing should not be allowed out of the workplace.</td>
</tr>
<tr>
<td>P280</td>
<td>Wear protective gloves/eye protection/face protection.</td>
</tr>
<tr>
<td>P284</td>
<td>Wear respiratory protection.</td>
</tr>
<tr>
<td>P301/310</td>
<td>IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</td>
</tr>
<tr>
<td>P301/312</td>
<td>IF SWALLOWED: call a POISON CENTER or doctor/physician if you feel unwell.</td>
</tr>
<tr>
<td>P302/352</td>
<td>IF ON SKIN: Wash with plenty of soap and water.</td>
</tr>
<tr>
<td>P304/340</td>
<td>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</td>
</tr>
<tr>
<td>P305/351/338</td>
<td>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>P308/313</td>
<td>IF exposed or concerned: Get medical advice/attention.</td>
</tr>
<tr>
<td>P310</td>
<td>Immediately call a POISON CENTER or doctor/physician.</td>
</tr>
<tr>
<td>P330</td>
<td>Rinse mouth.</td>
</tr>
<tr>
<td>P332/313</td>
<td>If skin irritation occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td>P333/313</td>
<td>If skin irritation or rash occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td>P337/313</td>
<td>If eye irritation persists: Get medical advice/attention.</td>
</tr>
<tr>
<td>P361</td>
<td>Remove/Take off immediately all contaminated clothing.</td>
</tr>
<tr>
<td>P362</td>
<td>Take off contaminated clothing and wash before reuse.</td>
</tr>
<tr>
<td>P363</td>
<td>Wash contaminated clothing before reuse.</td>
</tr>
<tr>
<td>P370/378</td>
<td>In case of fire: Use carbon dioxide, dry chemical, foam for extinction.</td>
</tr>
<tr>
<td>P405</td>
<td>Store locked up.</td>
</tr>
<tr>
<td>P501</td>
<td>Dispose of contents/container to approved disposal site, in accordance with local regulations.</td>
</tr>
<tr>
<td>SCI 2</td>
<td>Skin Corrosion / Irritation Category 2</td>
</tr>
<tr>
<td>SS 1A</td>
<td>Sensitization - Skin Category 1A</td>
</tr>
<tr>
<td>STO-RE 2</td>
<td>Specific Target Organ Toxicity (Repeated Exposure) Category 2</td>
</tr>
<tr>
<td>STO-SE 3(RI)</td>
<td>Specific Target Organ Toxicity (Single Exposure) Category 3</td>
</tr>
</tbody>
</table>

The information in this safety data sheet is to the best of our knowledge true and accurate but all data, instructions, recommendations and/or suggestions are made without guarantee.