1. Identification of the substance/preparation and of the company/undertaking

The following SDS applies to products described by combinations of the following trade name, product grade and color code listed below.

Trade Name
Vandar

Product Grade(s):
8000, 8000A

Color Code:
See Section 16 for list of Color Codes

Manufacturer, importer, supplier
Ticona Polymer, Inc.
A business of Celanese
8040 Dixie Hwy.
Florence, KY 41042
United States
www.celanese.com

Transportation emergency phone numbers:
In USA, call 800 424 9300
Outside USA, call 703 527 3887, collect calls accepted.

Product Information
info-engineeredmaterials-am@celanese.com

Synonyms:
Polybutylene terephthalate / PBT
Thermoplastic polyester

Identified uses
Plastic processing industry.

2. Hazards identification

Emergency Overview

WARNING!
Possible cancer hazard. Contains material which may cause cancer based on animal data. Risk of cancer depends on duration and level of exposure.

Potential health effects

Immediate effects

Skin
Polymer particles may cause mechanical irritation. The molten product can cause serious burns.
Eyes
Resin particles, like other inert materials, are mechanically irritating to eyes.

Inhalation
Dust irritating to respiratory tract. Overheating in processing may generate hazardous, irritating vapours.

Ingestion
Low toxicity by this route is expected based on the biological activity of high molecular weight polymers.

Other:
Antimony Trioxide is listed as an IARC 2B, possible human carcinogen based on animal data.

Medical conditions which may be aggravated by exposure:
No specific information available on the product. Off-gases, which may be released if overheated, may affect those with chronic diseases of the respiratory system.

3. Composition/information on ingredients

Chemical characterization
Polybutylene Terephthalate / PBT; Basic CAS-RN: 30965-26-5 and 26062-94-2 with flame retardant

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony trioxide</td>
<td>1309-64-4</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Tetrahydrofuran</td>
<td>109-99-9</td>
<td>&lt; 0.5</td>
</tr>
</tbody>
</table>

This product may contain proprietary ingredients.
This is a polymeric material. Any hazardous constituents are wetted by the polymer system, and therefore are unlikely to present exposure under normal conditions of processing and handling.

4. First aid measures

Skin
Cool skin rapidly with cold water after contact with molten polymer. Immediate medical attention is required. Do not peel solidified product off the skin.

Eyes
Immediately flush eye(s) with plenty of water. Call a physician if irritation persists.

Inhalation
Move to fresh air in case of accidental inhalation of vapors. Get medical attention immediately if symptoms occur.

Ingestion
If swallowed, do not induce vomiting - seek medical advice.

Notes to physician
This product is essentially inert and nontoxic. However, if it is heated at too high a temperature or if it is burned, gases may be released. Patients who have been exposed to off-gases may need to have their arterial blood gases and carboxyhemoglobin levels checked. If the carboxyhemoglobin levels are normal, asphyxia (carbon dioxide replacing oxygen) is a possibility. As with any fire, irritant gases may have formed. If patients may have inhaled high concentrations of irritating fumes, they should be monitored for delayed onset pulmonary edema.
5. Fire-fighting measures

Suitable extinguishing media
Water, Foam, Dry powder

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases
Carbon monoxide
Carbon dioxide (CO2)
Hydrogen halides
Sb(x)O(y)Br(z) compounds

Special protective equipment for fire-fighters
Wear self-contained breathing apparatus and protective suit.

Other Information
Keep people away from and upwind of fire.

6. Accidental release measures

Personal precautions
Do not breathe dust. Avoid dust formation.

Environmental precautions
No special environmental precautions required.

Methods for cleaning up
Use mechanical handling equipment.

7. Handling and storage

Advice on safe handling
Do not handle hot or molten material without appropriate protective equipment. Maintain good housekeeping in work areas. Do not exceed recommended process temperatures to minimize release of decomposition products.

Protection - fire and explosion
Do not smoke in areas where polymer dust is present. Appropriate measures should be taken to control the generation and accumulation of dust during conveying and processing operations.

Material storage
Store in a cool dry place. Maintain dryness of resin.

Incompatible products
strong bases

8. Exposure controls/personal protection

OSHA Exposure Limits
8. Exposure controls/personal protection

### ACGIH Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>200 PPM</td>
</tr>
<tr>
<td>Antimony trioxide</td>
<td>0.5 mg/m³ Sb</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>100 PPM</td>
</tr>
</tbody>
</table>

### Mexico National Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>LMPE - PPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>590 mg/m³</td>
</tr>
<tr>
<td>Antimony trioxide</td>
<td>0.5 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetrahydrofuran</td>
<td>735 mg/m³</td>
</tr>
</tbody>
</table>

### Mexican Carcinogen Category

<table>
<thead>
<tr>
<th>Components</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony trioxide</td>
<td>A2</td>
</tr>
</tbody>
</table>

**Exposure controls**

**Engineering measures**
General: May not be adequate as the sole means to control employee exposure.

Local Exhaust: Recommended when appropriate to control employee exposure to dust or process vapors

**General advice**
Do not breathe dust. Avoid contact with skin and eyes.

**Respiratory protection**
In case of insufficient ventilation wear suitable respiratory equipment
Skin protection:
When thermal or melt processing, wear long pants, long sleeves, well insulated gloves, and face shield when there is a chance of contact.

Eye/face protection:
safety glasses with side-shields. Safety goggles.

Comments:
Operations involving grinding and machining of parts should be reviewed to assure that particulate levels are kept below recommended standards.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td></td>
</tr>
<tr>
<td>Form</td>
<td>pellets</td>
</tr>
<tr>
<td>Odor</td>
<td>slight , specific</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>&gt;420°C (788°F)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>228 °C (442°F)</td>
</tr>
<tr>
<td>Density</td>
<td>approx 1.38 - 1.55 g/ml @ 20°C</td>
</tr>
<tr>
<td>Bulk density</td>
<td>approx 600 - 900 kg/m³ @20 °C</td>
</tr>
<tr>
<td>Water solubility</td>
<td>insoluble</td>
</tr>
<tr>
<td>VOC Content(%)</td>
<td>None</td>
</tr>
</tbody>
</table>

10. Stability and reactivity

Chemical stability
Stable under normal conditions.

Conditions to avoid
Flame. Avoid prolonged heating at or above the recommended processing temperature.

Incompatible Materials
strong bases.

Hazardous Combustion or Decomposition Products:
Aldehydes, ketones, esters, acids, alcohols, butadiene, tetrahydrofuran, toluene, benzoic acid, terephthalic acid.

11. Toxicological information

No data is available on the product itself.

12. Ecological information
### 12. Ecological information

**Ecotoxicity:**
The effects of resin pellets on the wildlife that may ingest them is not well understood. In the case of seabirds, some marine biologists believe that the fowl may not be able to pass plastic pellets through their digestive tracts. Thus, large quantities of ingested pellets may cause intestinal blockage, false feelings of satiation or reduction in absorption of nutrients, causing malnutrition and starvation. The goal of SPI's Operation Clean Sweep is zero loss of pellets into the environment.

**Environmental Fate/Information:**
This material is considered to be non-biodegradable.

### 13. Disposal considerations

**Disposal considerations**
Recycling is encouraged. Dispose of spilled material in accordance with state and local regulations for waste that is non-hazardous by Federal definition. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete.

This product as shipped is not a RCRA hazardous waste under present EPA regulations.

### 14. Transport information

**US Department of Transportation** Not regulated

**TDG** Not regulated

**Mexico Transport Information** Not regulated

**ICAO/IATA** Not restricted

**IMDG** Not regulated

### 15. Regulatory information

**U.S. FEDERAL REGULATIONS**

**TSCA Inventory**
This product complies with the U.S. Toxic Substances Control Act (TSCA).

**SARA 313 Chemicals**
Antimony Compounds (1-10 % wt%)
CANADIAN REGULATIONS

WHMIS Classification:
Not a WHMIS controlled product.

WHMIS Ingredient Disclosure List IDL:
Antimony Trioxide (1309-64-4)

16. Other information

NFPA:    Health:  1     Flammability:  0     Instability:  0
HMIS:    Health:  1     Flammability:  0     Physical Hazard:  0

Color Code(s):
MD3060, MF2001, MG3164

Prepared By
Product Stewardship Department
Celanese

Other Information:
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Changes against the previous version are marked by ***

This product is not intended for use in medical or dental implants.

The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Celanese makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. User has sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.
Abbreviation and Acronym:
ADR = Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID = Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG = International Maritime Code for Dangerous Goods
IATA = International Air Transport Association
ICAO = International Civil Aviation Organization
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
EINECS = European Inventory of Existing Commercial Chemical Substances
CLP = Classification, Labelling and Packaging
PBT = Persistent, Bioaccumulative and Toxic
vPvB = very Persistent and very Bioaccumulative
R-Phrases = Risk Phrases
S-Phrases = Safety Phrases
DNEL = Derived No Effect Level
PNEC = Predicted No Effect Concentration