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| Product name | VECTRA® V143XL VF3001 NATURAL | Revision Date | TNA/EN |
| MSDS number | 8721007723 | Issuing date | Dec.03.2009 |
| Revision Number | 0 | | Sep.13.2011 |

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

Product name VECTRA® V143XL VF3001 NATURAL
Material Number: 21007723
MSDS ID VE2028

Manufacturer, importer, supplier

TICONA
Corporate Headquarters
8040 Dixie Hwy.
Florence, KY 41042
United States
<http://www.ticona.com>

Transportation emergency phone numbers:

In USA, call 800-424-9300
Outside USA, call 703-527-3887, collect calls accepted

Product Emergency

888-522-7816 Ticona - 24 hrs/day, toll free in USA and Canada

Product Information

1-800-833-4882
prodinfo@ticona.com

Synonyms:

Liquid crystal polymer / LCP

End Use:

Plastic processing industry.

2. Hazards identification

Emergency Overview

Dust from this product can form an explosive organic dust cloud.
Spilled pellets may present a slipping hazard.
The molten product can cause serious burns.

Potential health effects

Immediate effects

Skin

Polymer particles may cause mechanical irritation. The molten product can cause serious burns.

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- 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. Thermal decomposition may evolve hazardous fumes which can cause "polymer fume fever", which has flu-like symptoms.
- Ingestion** May be harmful if swallowed.

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 Liquid crystal polymers / LCP, glass fiber reinforced

| Components | CAS-No | Percent % |
|---|------------|-----------|
| Glass oxide; Fiberglass continuous filament | 65997-17-3 | 5-60 |

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.

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Notes to physician

This product is essentially inert and nontoxic. However, if it is heated at too high a temperature or if it burns, gases may be released. Gases that may be formed are extremely foul smelling, even at low and relatively nontoxic concentrations. A condition called polymer fume fever may be seen in individuals exposed to off-gases. Polymer fume fever is a flu-like syndrome (aches, chest pain, cough and fever) that clears spontaneously within one to two days. 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, the patients may still have suffered asphyxia from carbon dioxide replacing oxygen if they were exposed in an enclosed space. While it is unlikely that enough hydrogen sulfide would be formed to cause hydrogen sulfide poisoning, the possibility should be considered if the clinical picture is consistent (similar to cyanide toxicity). Sulfur oxides are respiratory tract irritants. Fluorinated hydrocarbons and hydrogen fluoride are respiratory irritants. Other irritant gases may also have been formed in lesser amounts. If patients may have inhaled high concentrations of irritating fumes, they should be monitored for delayed onset pulmonary edema. The sulfides and mercaptans can cause nausea and headache as a result of their foul odor. The greatest hazard is from non-specific respiratory tract irritation. Specific antidotes for hydrogen fluoride (HF) are not recommended because HF is not likely to be present in high enough concentration for an antidote to be of use.

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)
nitrogen oxides (NO_x)
Sulfur oxides (SO_x)
Hydrogen fluoride (HF)

Special protective equipment for fire-fighters

Wear self-contained breathing apparatus and protective suit.

Other Information

Potential dust explosion hazard.

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.

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7. Handling and storage

Handling

Protection - fire and explosion:

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.

Advice on safe handling

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.

Storage

Material storage

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

8. Exposure controls/personal protection

OSHA Exposure Limits

No exposure limits established.

ACGIH Exposure Limits

| Components | TWA |
|---|---------------------|
| Glass oxide; Fiberglass continuous filament | 5 mg/m ³ |

Mexico National Exposure Limits

| Components | LMPE - PPT |
|---|----------------------|
| Glass oxide; Fiberglass continuous filament | 10 mg/m ³ |

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

Respiratory protection

In case of insufficient ventilation wear suitable respiratory equipment

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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 goggles. safety glasses with side-shields.

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

Appearance

| | |
|-------------------------|-----------------------------|
| Form | pellets |
| Odor | slight , specific . |
| Molecular Weight | > 20.000 (base resin) |
| Flash point | > 93°C(200°F) |
| Melting Point | 260-325 °C (500-617°F) |
| Density | 1.3 - 2.1 g/ml @ 20°C |
| Bulk density | approx 600-900 kg/m³ @20 °C |
| Water solubility | insoluble |

10. Stability and reactivity

Reactivity

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:

Thermal decomposition products may include oxides of nitrogen and carbon., Sulfur oxides, Hydrogen fluoride, Fluorinated hydrocarbons.

11. Toxicological information

No data is available on the product itself

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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

Contains no substances at or above the reporting threshold under Section 313.

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CANADIAN REGULATIONS

WHMIS Classification:

Not a WHMIS controlled product.

WHMIS Ingredient Disclosure List

Fiberglass (65997-17-3)

16. Other information

Prepared By

Product Stewardship Department
Ticona

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

Changes against the previous version are marked by ***

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

Refer to the appropriate Ticona bulletins for specific processing guidance and good manufacturing practices (purging, processing parameters, shutdown, etc.).

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. Ticona 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 the 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.