



SAFETY DATA SHEET

Issue Date 31-Mar-2015

Revision Date 31-Mar-2015

Version 1

1. IDENTIFICATION

Product identifier

Product Name Apical Film:AV,AH

Other means of identification

Product Code 101644
UN/ID no. Not regulated
Synonyms Polyimide Film

Recommended use of the chemical and restrictions on use

Recommended Use INDUSTRIAL USE ONLY.
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Address
Kaneka North America LLC-Apical Division 6161 Underwood Road Pasadena Texas 77507

Emergency telephone number

Company Phone Number 800-222-8128
Emergency Telephone Chemtrec 1-800-424-9300 or 703-527-3887

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Label elements

Emergency Overview

The product contains no substances which at their given concentration, are considered to be hazardous to health

Appearance film

Physical state Solid

Odor Odorless

Precautionary Statements - Prevention

Not applicable

Precautionary Statements - Response

Not applicable

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance
Synonyms
Chemical Family

Polyimide Film.

Polyimide Film.

| Chemical Name | CAS No. | Weight-% | Trade Secret |
|-------------------|-------------|----------|--------------|
| Polyimide Polymer | Proprietary | 60 - 100 | * |
| Dimethylformamide | 68-12-2 | <0.1 | * |

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of first aid measures

| | |
|---------------------|---|
| Eye contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin contact | Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing. Get medical attention if irritation develops and persists. |
| Inhalation | Remove to fresh air. If symptoms persist, call a physician. |
| Ingestion | Call a physician or poison control center immediately. Do NOT induce vomiting. Rinse mouth. |

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Small Fire Dry chemical or CO₂.

Large Fire Water spray or fog. Move containers from fire area if you can do it without risk.

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

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Hazardous combustion products Carbon oxides. Nitrogen oxides (NO_x). Dimethylamine.

Explosion data

Sensitivity to Mechanical Impact Not sensitive.

Sensitivity to Static Discharge Not sensitive.

Protective equipment and precautions for firefighters

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation, especially in confined areas.

Environmental precautions

Environmental precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only in well-ventilated areas. Slip hazard if good housekeeping practices are not followed.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep in properly labeled containers. Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from direct sunlight. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity).

Incompatible materials Finely powdered metals. Fluorinated compounds.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|------------------------------|-------------------|--|---|
| Dimethylformamide 68-12-2 | TWA: 10 ppm S* | TWA: 10 ppm TWA: 30 mg/m ³ (vacated) TWA: 10 ppm (vacated) TWA: 30 mg/m ³ (vacated) S* S* | IDLH: 500 ppm TWA: 10 ppm TWA: 30 mg/m ³ |

Appropriate engineering controls

Engineering Controls Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear protective gloves and protective clothing.

Respiratory protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state Solid

| | | | |
|--------------------------------|--------------------------|-------------------------|--------------------------|
| Appearance | film | Odor | Odorless |
| Color | amber | Odor threshold | No information available |
| Property | Values | Remarks • Method | |
| pH | No information available | | |
| Melting point / freezing point | > 400 °C 752 °F | | |
| Boiling point / boiling range | No information available | | |
| Flash point | No information available | | |
| Evaporation rate | No information available | | |
| Flammability (solid, gas) | No information available | | |
| Flammability Limit in Air | | | |
| Upper flammability limit: | No information available | | |
| Lower flammability limit: | No information available | | |
| Vapor pressure | No information available | | |
| Vapor density | No information available | | |
| Relative density | No information available | | |
| Water solubility | Insoluble in water | | |
| Solubility in other solvents | No information available | | |
| Partition coefficient | No information available | | |
| Autoignition temperature | No information available | | |
| Decomposition temperature | No information available | | |
| Kinematic viscosity | No information available | | |
| Dynamic viscosity | No information available | | |
| Explosive properties | No information available | | |
| Oxidizing properties | No information available | | |
| Other Information | | | |
| Softening point | No information available | | |
| Molecular weight | No information available | | |
| VOC Content (%) | No information available | | |
| Density | No information available | | |
| Bulk density | No information available | | |

10. STABILITY AND REACTIVITY

Reactivity

Stable under conditions of normal temperature and pressure.

Chemical stability

Stable under conditions of normal temperature and pressure.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid

Extremes of temperature and direct sunlight.

Incompatible materials

Finely powdered metals. Fluorinated compounds.

Hazardous Decomposition Products

Carbon oxides. Nitrogen oxides (NOx). Dimethylamine.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

| | |
|----------------------------|--|
| Product Information | Product does not present an acute toxicity hazard based on known or supplied information |
| Inhalation | Inhalation of vapors in high concentration may cause irritation of respiratory system. |
| Eye contact | Prolonged contact may cause redness and irritation. |

| | |
|---------------------|---|
| Skin contact | Prolonged contact may cause redness and irritation. |
| Ingestion | Unlikely route of exposure. |

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

| | |
|---------------------------------|---------------------------|
| Sensitization | No information available. |
| Germ cell mutagenicity | No information available. |
| Carcinogenicity | No information available. |
| Reproductive toxicity | No information available. |
| STOT - single exposure | No information available. |
| STOT - repeated exposure | No information available. |
| Aspiration hazard | No information available. |

Numerical measures of toxicity - Product Information**12. ECOLOGICAL INFORMATION****Ecotoxicity**

| Chemical Name | Algae/aquatic plants | Fish | Crustacea |
|------------------------------|--|--|---|
| Dimethylformamide 68-12-2 | 500: 96 h Desmodesmus subspicatus mg/L EC50 | 6300: 96 h Lepomis macrochirus mg/L LC50 9800: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 10410: 96 h Pimephales promelas mg/L LC50 flow-through | 7500: 48 h Daphnia magna mg/L EC50 8485: 48 h Daphnia magna mg/L EC50 semi-static 6800 - 13900: 48 h Daphnia magna mg/L EC50 Static |

Persistence and degradability

These products are not expected to bio-degrade significantly in the environment.

Bioaccumulation

Bioaccumulative potential.

| Chemical Name | Partition coefficient |
|------------------------------|-----------------------|
| Dimethylformamide 68-12-2 | -1.028 |

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS**Waste treatment methods**

Disposal of wastes This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated packaging Do not reuse container.

| |
|----------------------------------|
| 14. TRANSPORT INFORMATION |
|----------------------------------|

| | |
|--|---------------|
| DOT | Not regulated |
| UN/ID no. | Not regulated |
| Hazard Class | Not regulated |
| Subsidiary class | Not regulated |
| Packing Group | Not regulated |
| Reportable Quantity (RQ) | Not regulated |
| Special Provisions | Not regulated |
| Emergency Response Guide Number | Not regulated |
| | |
| UN/ID no. | Not regulated |
| Hazard Class | Not regulated |
| Subsidiary class | Not regulated |
| Packing Group | Not regulated |
| Special Provisions | Not regulated |
| | |
| UN/ID no. | Not regulated |
| Hazard Class | Not regulated |
| Subsidiary class | Not regulated |
| Special Provisions | Not regulated |
| Packing Group | Not regulated |
| | |
| UN/ID no. | Not regulated |
| Hazard Class | Not regulated |
| Subsidiary hazard class | Not regulated |
| Packing Group | Not regulated |
| Special Provisions | Not regulated |
| | |
| UN/ID no. | Not regulated |
| Proper shipping name | Not regulated |
| Hazard Class | Not regulated |
| Subsidiary hazard class | Not regulated |
| Packing Group | Not regulated |
| ERG Code | Not regulated |
| Special Provisions | Not regulated |
| Description | Not regulated |
| | |
| UN/ID no. | Not regulated |
| Proper shipping name | Not regulated |
| Hazard Class | Not regulated |
| Subsidiary hazard class | Not regulated |
| Packing Group | Not regulated |
| EmS-No. | Not regulated |
| Special Provisions | Not regulated |
| Description | Not regulated |
| | |
| UN/ID no. | Not regulated |
| Hazard Class | Not regulated |
| Packing Group | Not regulated |
| Classification code | Not regulated |
| Special Provisions | Not regulated |
| Labels | Not regulated |
| | |
| UN/ID no. | Not regulated |
| Hazard Class | Not regulated |
| Packing Group | Not regulated |
| Classification code | Not regulated |
| Tunnel restriction code | Not regulated |
| Special Provisions | Not regulated |

| | |
|-------------------------------|---------------|
| Labels | Not regulated |
| UN Number | Not regulated |
| Hazard Class | Not regulated |
| Packing Group | Not regulated |
| Classification code | Not regulated |
| Special Provisions | Not regulated |
| Hazard label(s) | Not regulated |
| Limited quantity (LQ) | Not regulated |
| Transport category | Not regulated |
| Ventilation | Not regulated |
| Equipment Requirements | Not regulated |

15. REGULATORY INFORMATION

International Inventories

| | |
|-----------------|---|
| TSCA | This is an article and is not subject to the requirements of TSCA. The polymer(s) in this product meet the criteria of the TSCA Polymer Exemption as set forth at 40 CFR 723.259(e)(2). Polymers reviewed and certified under the TSCA Polymer Exemption are not added to the TSCA inventory. Companies, other than Kaneka North America LLC., seeking to manufacture or import the same polymer are obligated to create their own Polymer Exemption Review Certification prior to engaging in manufacturing or import. |
| DSL/NDSL | Does not comply |
| ENCS | Does not comply |

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

| | |
|--|----|
| Acute health hazard | No |
| Chronic Health Hazard | No |
| Fire hazard | No |
| Sudden release of pressure hazard | No |
| Reactive Hazard | No |

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Chemical Name | Hazardous Substances RQs | CERCLA/SARA RQ | Reportable Quantity (RQ) |
|------------------------------|--------------------------|----------------|---|
| Dimethylformamide 68-12-2 | 100 lb | - | RQ 100 lb final RQ RQ 45.4 kg final RQ |

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

U.S. State Right-to-Know Regulations

| Chemical Name | New Jersey | Massachusetts | Pennsylvania |
|------------------------------|------------|---------------|--------------|
| Dimethylformamide 68-12-2 | X | X | X |

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

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

| | | | | |
|-------------|------------------|----------------|--------------------|------------------------------------|
| NFPA | Health hazards 1 | Flammability 1 | Instability 0 | Physical and Chemical Properties - |
| HMIS | Health hazards 1 | Flammability 1 | Physical hazards 0 | Personal protection X |

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Revision Note

No information available

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet