SAFETY DATA SHEET

Issue Date 27-Nov-2017 **Revision Date** 27-Nov-2017 **Version** 2

1. IDENTIFICATION

Product identifier

Product Name Fluoropolymer Laminated or Coated Polyimide APICAL

Other means of identification

Product Code 101725
UN/ID no. Not regulated
Synonyms Fluoropolymer Laminated or Coated Polyimide Film 616; 616ACT; 616B; EF019B; J11A7; J11A9; J20A7; L50S10; L55S10; P77A10; P50A10; T10A10; T10N10; T55N10); T55N20; T11N7; T11N10; 019; 029; 011; 021; 022; 051; 919; 929; 131

Recommended use of the chemical and restrictions on use

Recommended Use For 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 Fluoropolymer Laminated or Coated Polyimide Film, 616; 616ACT; 616B; EF019B; J11A7; J11A9; J20A7; L50S10; L55S10; P77A10; P50A10; T10A10; T10N10; T55N10); T55N20; T11N7; T11N10; 019; 029; 011; 021; 022; 051; 919; 929; 131.

Chemical Family Polyimide Film.

Chemical Name	CAS No.	Weight-%	Trade Secret
Polyimide Polymer	Proprietary	60 - 100	*
Titanium dioxide	13463-67-7	<10	*
Silicon dioxide	7631-86-9	<1	*
Aluminum Hydroxide	21645-51-2	<1	*
Teflon Backing	25067-11-2	0.1 - 1	*
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 (NOx). 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
Titanium dioxide 13463-67-7	TWA: 10 mg/m³	TWA: 15 mg/m³ total dust (vacated) TWA: 10 mg/m³ total dust	IDLH: 5000 mg/m³
Aluminum Hydroxide 21645-51-2	TWA: 1 mg/m³ respirable particulate matter	-	-
Silicon dioxide 7631-86-9	-	(vacated) TWA: 6 mg/m³ <1% Crystalline silica TWA: 20 mppcf : (80)/(% SiO2) mg/m³ TWA	IDLH: 3000 mg/m³ TWA: 6 mg/m³
Dimethylformamide 68-12-2	TWA: 10 ppm S*	TWA: 10 ppm TWA: 30 mg/m³ (vacated) TWA: 10 ppm (vacated) TWA: 30 mg/m³ (vacated) S* S*	IDLH: 500 ppm TWA: 10 ppm TWA: 30 mg/m³

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 or goggles if during the use of this product operations may produce flying debris or particulates.
Skin and body protection	Due to possibility of cuts from film, light-weight gloves (fabric or latex) may be appropriate to wear when handling film.
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 yellow	**Odor threshold**	No information available

Property	**Values**	**Remarks • Method**
pH	No information available	
Melting point / freezing point	> 350 °C 662 °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. Hydrogen fluoride. Carbonyl fluoride. Aluminum oxides. Perfluoroisobutylene. titanium dioxide.

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.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Titanium dioxide 13463-67-7	> 10000 mg/kg (Rat)	-	-
Aluminum Hydroxide 21645-51-2	> 5000 mg/kg (Rat)	-	-
Silicon dioxide 7631-86-9	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 2.2 mg/L (Rat) 1 h
Dimethylformamide 68-12-2	= 2800 mg/kg (Rat) = 2000 mg/kg (Rat)	= 1100 mg/kg (Rat) > 3.2 g/kg (Rat)	-

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
Silicon dioxide 7631-86-9	440: 72 h Pseudokirchneriella subcapitata mg/L EC50	5000: 96 h Brachydanio rerio mg/L LC50 static	7600: 48 h Ceriodaphnia dubia mg/L EC50
Dimethylformamide	500: 96 h Desmodesmus	10410: 96 h Pimephales promelas	6800 - 13900: 48 h Daphnia magna

68-12-2	subspicatus mg/L EC50	mg/L LC50 flow-through 6300: 96 h Lepomis macrochirus mg/L LC50 9800: 96 h Oncorhynchus mykiss mg/L LC50 flow-through	mg/L EC50 Static 7500: 48 h Daphnia magna mg/L EC50 8485: 48 h Daphnia magna mg/L EC50 semi-static

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

Bioaccumulation
Bioaccumulative potential.

Mobility in soil

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.

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

Chemical Name	California Proposition 65
Titanium dioxide - 13463-67-7	Carcinogen

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

Issue Date 27-Nov-2017
Revision Date 27-Nov-2017
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