



DuPont Polymers

KAP001

Revised 11-NOV-1995

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"KAPTON" POLYIMIDE FILM, H TYPES, V TYPES AND VARIATIONS

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Corporate MSDS Number DU005413

Tradenames and Synonyms

- "KAPTON" H, HN, HA, HZT
- "KAPTON" V, VN
- "KAPTON" FPC, FPC-C, FPC-ZT
- "KAPTON" HPP, HPP-A, HPP-LT, HPP-ST
- "KAPTON" LT
- "KAPTON" MT, MTB
- "KAPTON" CB
- "KAPTON" PST, PST-C
- "KAPTON" XC, XC600
- "KAPTON" 5X4M

Company Identification

MANUFACTURER/DISTRIBUTOR

DuPont
 "Kapton"/"Teflon" Customer Service
 P.O. Box 89
 Circleville, OH 43113

PHONE NUMBERS

Product Information	1-800-237-4357
Transport Emergency	1-800-424-9300
Medical Emergency	1-800-441-3637

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material

CAS Number %

INERT POLYIMIDE FILM		100
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COMPOSITION/INFORMATION ON INGREDIENTS(Continued)

LT or MT types contain:

ALUMINA	1344-28-1	0-35
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CB, XC, XC600, FPC-C, MTB, PST-C contain:

CARBON BLACK	1333-86-4	0-30
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Exposure limits for the following may apply:

DIMETHYL ACETAMIDE (residual in film)	127-19-5	<1
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POLYIMIDE POLYMER (as nuisance dust)	25038-81-7	
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Components (Remarks)

All reportable ingredients are listed in the TSCA Chemical Substance Inventory.

HAZARDS IDENTIFICATION

Potential Health Effects

Before using "Kapton" Polyimide Films, read the bulletin on safe handling and use.

POTENTIAL HEALTH EFFECTS

INHALATION: Not a probable route of exposure for film. Exposure to alumina or carbon black encapsulated in the polymer is not likely.

For the polymer from which the film is made, DuPont recommends treating polymer dust as a nuisance particulate.

SKIN CONTACT: No irritation is expected from handling film. Less than 1 ppm dimethyl acetamide was extracted from film by distilled water at 40 deg C for 4 hours.

EYE CONTACT: Not a probable route of exposure for film.

INGESTION: Not a probable route of exposure for film.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

(Continued)

FIRST AID MEASURES

First Aid INHALATION

Not a probable route of exposure for films.

SKIN CONTACT

Wash with soap and water after handling. If skin irritation develops, consult a physician.

EYE CONTACT

Flush eyes with water. Consult a physician if irritation persists.

INGESTION

Not a probable route of exposure for films.

FIRE FIGHTING MEASURES

Flammable Properties Not a fire or explosion hazard.

Fire and Explosion Hazards:

The flammability characteristic of polyimide film is reported as "self-extinguishing".

"Kapton" chars but does not burn in air. "Kapton" will burn in an atmosphere of 100% oxygen. The major off-gases are carbon dioxide and carbon monoxide.

The processing of "Kapton" polyimide films can cause the generation of static charge. Precautions for static charges should also be taken when removing plastic films used as protective packaging for "Kapton".

Extinguishing Media Water, Foam, Dry Chemical, CO2.

Fire Fighting Instructions None required.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel) NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Accidental Release Measures Pick up to prevent slipping hazard.

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HANDLING AND STORAGE

Handling (Personnel)

Wash thoroughly after handling.

Storage

Store away from flammable materials.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

Safe handling of "Kapton" polyimide films at high temperatures (above 200 deg C) requires adequate ventilation. If small quantities of "Kapton" are involved, normal air circulation may be all that is needed in case of overheating. Whether or not existing ventilation is adequate at higher temperatures will depend on the combined factors of film quantity, temperature and exposure time.

Personal Protective Equipment

Eye/Face	Safety glasses are recommended as good industrial practice.
Respirator	Not required for normal processing.
Protective Gloves	Gloves are recommended as good industrial practice.

Exposure Guidelines

Applicable Exposure Limits

ALUMINA

PEL (OSHA)	15 mg/m ³ , total dust, 8 Hr. TWA 5 mg/m ³ , respirable dust, 8 Hr. TWA
TLV (ACGIH)	10 mg/m ³ , total dust, 8 Hr. TWA Notice of Intended Changes (1995-1996) A4
AEL * (DuPont)	None Established

CARBON BLACK

PEL (OSHA)	3.5 mg/m ³ , 8 Hr. TWA
TLV (ACGIH)	3.5 mg/m ³ , 8 Hr. TWA Notice of Intended Changes (1995-1996) A4
AEL * (DuPont)	3.5 mg/m ³ , 8 Hr. TWA (Polynuclear Aromatic Hydrocarbon Content <0.1%)

DIMETHYL ACETAMIDE (residual in film)

PEL (OSHA)	10 ppm, 35 mg/m ³ , 8 Hr. TWA, Skin
TLV (ACGIH)	10 ppm, 36 mg/m ³ , 8 Hr. TWA, Skin
AEL * (DuPont)	10 ppm, 8 & 12 Hr. TWA, Skin

POLYIMIDE POLYMER (as nuisance dust)

PEL (OSHA)	None Established
TLV (ACGIH)	None Established
AEL * (DuPont)	10 mg/m ³ , 8 Hr. TWA, total dust 5 mg/m ³ , 8 Hr. TWA, respirable dust

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

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PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Melting Point	none
% Volatiles	1% max
Solubility in Water	Insoluble
Odor	No odor
Form	Transparent film
Color	Light amber
Specific Gravity	>1.4

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

None reasonably foreseeable.

Decomposition

At temperatures above 400 deg C, the major off-gases are carbon monoxide and carbon dioxide.

ECOLOGICAL INFORMATION

Ecotoxicological Information

Aquatic Toxicity

Insoluble.

DISPOSAL CONSIDERATIONS

Waste Disposal

Landfill or incinerate in compliance with federal, state, and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT	
Proper Shipping Name	NOT APPLICABLE
Hazard Class	NOT REGULATED

OTHER INFORMATION

Additional Information

MEDICAL USE: CAUTION: Do not use in medical applications involving permanent implantation in the human body. For other medical applications see DuPont CAUTION Bulletin No. H-50102.

STATE RIGHT TO KNOW LAWS

(Continued)

OTHER INFORMATION(Continued)

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 1% OR MORE: Dimethyl acetamide (1% maximum); Some types contain carbon black (2-30%); Some types contain alumina (35% maximum).

SUBSTANCES ON THE PENNSYLVANIA SPECIAL HAZARDOUS SUBSTANCES LIST PRESENT AT A CONCENTRATION OF 0.01% OR MORE: None known

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

SUBSTANCES ON THE NEW JERSEY WORKPLACE HAZARDOUS SUBSTANCE LIST PRESENT AT A CONCENTRATION OF 1% OR MORE (0.1% FOR SUBSTANCES IDENTIFIED AS CARCINOGENS, MUTAGENS OR TERATOGENS): Dimethyl acetamide (1% maximum); Some types contain carbon black (2-30%); Some types contain alumina (35% maximum).

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS	"Kapton" Customer Service
Address	DuPont
	Circleville, OH
Telephone	800-237-4357

Indicates updated section.

End of MSDS