



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

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"KAPTON" POLYIMIDE FILM, H TYPES, V TYPES AND VARIATIONS
KAP00001 Revised 6-JAN-1999

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

Kapton is a registered trademark of DuPont.

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
"KAPTON" CR

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
LT, MT, or CR contain:		
ALUMINA	1344-28-1	0-35
CB, XC, XC600, FPC-C, MTB, PST-C contain:		
CARBON BLACK	1333-86-4	0-30
Exposure limits for the following may apply:		
DIMETHYL ACETAMIDE (residual in film)	127-19-5	<1

(COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

POLYIMIDE POLYMER (as nuisance dust) 25038-81-7

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

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
CARBON BLACK				2B

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.

(FIRST AID MEASURES - Continued)

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.

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.

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

Safety glasses are recommended as good industrial practice.

Respirators are not needed for normal use.

Special protective clothing is not needed for normal use. 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, 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, A4
AEL * (DuPont)	: 0.5 mg/m ³ , 8 & 12 Hr. TWA, (Polynuclear Aromatic Hydrocarbon Content <0.1%) Includes Channel, Lamp, and Thermal Black

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, A4
AEL * (DuPont)	: 10 ppm, 8 & 12 Hr. TWA, Skin

POLYIMIDE POLYMER (as nuisance dust)

(Applicable Exposure Limits - Continued)

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.

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

REGULATORY INFORMATION

State Regulations (U.S.)

STATE RIGHT-TO-KNOW

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.

SUBSTANCES ON THE PENNSYLVANIA HAZARDOUS SUBSTANCES LIST
PRESENT AT A CONCENTRATION OF 1% OR MORE (0.01% FOR SPECIAL
HAZARDOUS SUBSTANCES)- Dimethyl acetamide (1% maximum);
Some types contain carbon black (2-30%); Some types contain
alumina (35% maximum).

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO
CAUSE CANCER, 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).

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.

(Continued)

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

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS