MATERIAL SAFETY

DATA SHEET

3M Center

3M

St. Paul, Minnesota

55144-1000

1-800-364-3577 or (651) 737-6501 (24 hours)

Copyright, 2001, Minnesota Mining and Manufacturing Company. All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that:

- 1) the information is copied in full with no changes unless prior agreement is obtained from 3M, and
- 2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

This material safety data sheet (MSDS) is provided as a courtesy in response to a customer request. This product is not regulated under, and a MSDS is not required for this product by the OSHA Hazard Communication Standard (29 CFR 1910.1200) because, when used as recommended or under ordinary conditions, it should not present a health and safety hazard. However, use or processing of the product not in accordance with the product's recommendations or not under ordinary conditions may affect the performance of the product and may present potential health and safety hazards.

DIVISION: INDUSTRIAL TAPE AND SPECIALTIES DIVISION

TRADE NAME:

3M(tm) #5480, 4581, 5490, 5491 PTFE FILM TAPES

ID NUMBER/U.P.C.:

70-0000-8272-0 00-21200-90128-7

ISSUED: August 01, 2001 SUPERSEDES: April 04, 2001

DOCUMENT: 08-4964-6

1. INGREDIENT C.A.S. NO. PERCENT

PTFE FILM BACKING. 9002-84-0 70 - 86
ADHESIVE. TradeSecret 14 - 30

The components of this product are in compliance with the chemical notification requirements of TSCA.

2. PHYSICAL DATA

 BOILING POINT:
 N/A

 VAPOR PRESSURE:
 N/A

 VAPOR DENSITY:
 N/A

 EVAPORATION RATE:
 N/D

 SOLUBILITY IN WATER:
 nil

 SPECIFIC GRAVITY:
 N/A

 PERCENT VOLATILE:
 N/D

 pH:
 N/A

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

MSDS: 3M(tm) #5480, 4581, 5490, 5491 PTFE FILM TAPES August 01, 2001 PAGE 2 ______ 2. PHYSICAL DATA (continued) ______ VISCOSITY:......N/A MELTING POINT:..... N/D APPEARANCE AND ODOR: Solid, roll of tape, #5480 is gray color; #5490 is brown color, no specific odor. 3. FIRE AND EXPLOSION HAZARD DATA FLASH POINT:..... N/A FLAMMABLE LIMITS - LEL:..... N/A FLAMMABLE LIMITS - UEL:..... N/A AUTOIGNITION TEMPERATURE:..... N/D EXTINGUISHING MEDIA: Water, Water spray, Carbon dioxide, Dry chemical, Dry powder SPECIAL FIRE FIGHTING PROCEDURES: None known. UNUSUAL FIRE AND EXPLOSION HAZARDS: No unusual fire or explosion hazards are anticipated. NFPA HAZARD CODES: HEALTH: 0 FIRE: 1 REACTIVITY: 0 UNUSUAL REACTION HAZARD: none OSHA FIRE HAZARD CLASS: Not applicable 4. REACTIVITY DATA STABILITY: Stable INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID: Heat, Sparks and/or Flames. HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon Monoxide and Carbon Dioxide, Hydrocarbons, Silicon tetrafluoride when dissolved in hydrofluoric acid.

MSDS: 3M(tm) #5480, 4581, 5490, 5491 PTFE FILM TAPES August 01, 2001 PAGE 3 ______ 5. ENVIRONMENTAL INFORMATION ______ SPILL RESPONSE: Observe precautions from other sections. Collect spilled material. RECOMMENDED DISPOSAL: Dispose of completely cured (or polymerized) material in a sanitary landfill. Reclaim if feasible. Disposal alternative: Incinerate in an industrial or commercial facility in the presence of a combustible material. ENVIRONMENTAL DATA: Not determined. REGULATORY INFORMATION: Volatile Organic Compounds: N/D. VOC Less H2O & Exempt Solvents: N/A. Since regulations vary, consult applicable regulations or authorities before disposal. U.S. EPA Hazardous Waste Number = None (Not U.S. EPA Hazardous). EPCRA HAZARD CLASS: FIRE HAZARD: No PRESSURE: No REACTIVITY: No ACUTE: No CHRONIC: No 6. SUGGESTED FIRST AID ______ EYE CONTACT: No need for first aid is anticipated. SKIN CONTACT: No need for first aid is anticipated. If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, call a physician. IF SWALLOWED: No need for first aid is anticipated. 7. PRECAUTIONARY INFORMATION ______ EYE PROTECTION: Avoid eye contact.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

MSDS: 3M(tm) #5480, 4581, 5490, 5491 PTFE FILM TAPES August 01, 2001

PAGE 4

7. PRECAUTIONARY INFORMATION (continued)

SKIN PROTECTION:

Avoid prolonged or repeated skin contact.

RECOMMENDED VENTILATION:

Use with adequate dilution ventilation.

RESPIRATORY PROTECTION:

Avoid breathing of thermal decomposition products.

PREVENTION OF ACCIDENTAL INGESTION:

Wash hands after handling and before eating. Do not ingest.

RECOMMENDED STORAGE:

Store in a cool place. Store out of direct sunlight.

FIRE AND EXPLOSION AVOIDANCE:

Keep away from heat, sparks, open flame, and other sources of ignition.

HMIS HAZARD RATINGS: HEALTH: 1 FLAMMABILITY: 0 REACTIVITY: 0

PERSONAL PROTECTION: A (See precautions, section 7.)

EXPOSURE LIMITS

INGREDIENT	VALUE	UNIT	TYPE	AUTH	SKIN*
PTFE FILM BACKING		-, -	TWA	CMRG	
PTFE FILM BACKING	5	FOTAL DUST MG/M3 RESPIRABLE		CMRG	
ADHESIVE	NONE	NONE	NONE	NONE	

^{*} SKIN NOTATION: Listed substances indicated with 'Y' under SKIN refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

SOURCE OF EXPOSURE LIMIT DATA:

- CMRG: Chemical Manufacturer Recommended Exposure Guidelines
- NONE: None Established

8. HEALTH HAZARD DATA

EYE CONTACT:

Eye contact is not expected to occur during normal use of the product.

Abbreviations: N/D - Not Determined N/A - Not Applicable CA - Approximately

MSDS: 3M(tm) #5480, 4581, 5490, 5491 PTFE FILM TAPES August 01, 2001

PAGE 5

8. HEALTH HAZARD DATA (continued)

No adverse health effects are expected from eye contact.

SKIN CONTACT:

No adverse health effects are expected from skin contact.

Contact with the skin during product use is not expected to result in significant irritation.

INHALATION:

Health effects from inhalation are not expected unless the product is over heated and decomposition occurs.

If thermal decomposition occurs:

Irritation (upper respiratory): signs/symptoms can include soreness of the nose and throat, coughing and sneezing.

IF SWALLOWED:

Ingestion is not a likely route of exposure to this product.

No adverse health effects are expected from swallowing.

DECETAN CHANCE DATEC

SECTION CHANGE DATES

HEADING SECTION CHANGED SINCE April 04, 2001 ISSUE INGREDIENTS SECTION CHANGED SINCE April 04, 2001 ISSUE

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.