

SAFETY DATA SHEET

1. IDENTIFICATION

Product Name: FM® 377S Adhesive Film
Synonyms: None
Chemical Family: Epoxy
Molecular Formula: Mixture
Molecular Weight: Mixture
Intended/Recommended Use: Adhesive

CYTEC INDUSTRIES INC., FIVE GARRET MOUNTAIN PLAZA, WOODLAND PARK, NEW JERSEY 07424, USA
For Product and all Non-Emergency Information call 1-800/652-6013. Outside the USA and Canada call 1-973/357-3193.

EMERGENCY PHONE (24 hours/day) - For emergency only involving spill, leak, fire, exposure or accident call:

Asia Pacific:

Australia - +61-3-9663-2130 or 1800-033-111
China (PRC) - +86 10 5100 3039 (Carechem24 China)
New Guinea - +61-3-9663-2130
New Zealand - +61-3-9663-2130 or 0800-734-607
All Others - +65 3158 1074 (Carechem24 Singapore)

Canada: +1-905-356-8310 (Cytec Welland, Canada plant)

Europe/Africa/Middle East (Carechem24 UK):

Europe, Middle East, Africa, Israel - +44 (0) 1235 239 670
Middle East, Africa (Arabic speaking countries) - +44 (0) 1235 239 671

Latin America:

Brazil - 0800 0111 767 (SOS Cotec)
Chile - +56-2-247-3600 (CITUC QUIMICO)
All Others - +52-376-73 74122 (Cytec Atequiza, Mexico plant)

USA: +1-703-527-3887 or 1-800-424-9300 (CHEMTREC #CCN6083)

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2. HAZARDS IDENTIFICATION

GHS Classification

Carcinogenicity Hazard Category 1B
Germ Cell Mutagenicity Hazard Category 2
Skin Corrosion / Irritation Hazard Category 2
Skin Sensitizer Hazard Category 1B

LABEL ELEMENTS



Hazard Statements

May cause cancer
 Suspected of causing genetic defects
 Causes skin irritation
 May cause an allergic skin reaction

Precautionary Statements

Obtain special instructions before use.
 Wear protective gloves/protective clothing/eye protection/face protection.
 Wash face, hands and any exposed skin thoroughly after handling.
 Avoid breathing dust/fume/gas/mist/vapours/spray.
 Contaminated work clothing should not be allowed out of the workplace.
 IF exposed or concerned: Get medical advice/attention.
 IF ON SKIN: Wash with plenty of soap and water.
 Specific treatment (see supplemental first aid instructions on this label).
 Take off all contaminated clothing and wash it before reuse.
 If skin irritation or rash occurs: Get medical advice/attention.
 Store locked up.
 Dispose of contents/container in accordance with local and national regulations.

Hazards Not Otherwise Classified (HNOC), Other Hazards

Polymerization may occur from excessive heat, contamination or exposure to direct sunlight.
 By excessive exposure to dust, eye and respiratory tract irritation is possible.

3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS

Component / CAS No.	%	GHS Classification	Carcinogen
Phenolic epoxy resin #2 -	1-5	Skin Sens. 1B (H317) Aquatic Acute 2 (H401) Aquatic Chronic 2 (H411)	-
Tetrabromobisphenol A 79-94-7	1 - 2	Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410)	-
Calcium oxide 1305-78-8	1-5	Skin Corr. 1B (H314) Eye Dam. 1 (H318)	-
Refractory Ceramic Fiber 142844-00-6	0.5-1.5	Carc. Cat. 1B	IARC 2B NTP ACGIH A2
Aluminum 7429-90-5	15-40	Flam. Sol. 1 (H228) Water-react. 2 (H261)	-
Aniline derivative -	5 - 10	Acute Tox. 4 (H302)	-
Aromatic glycidyl derivative #2 -	7-13	Muta. 2 (H341) Skin Sens. 1B (H317) Aquatic Acute 2 (H401) Aquatic Chronic 2 (H411)	-

The specific chemical identity and/or exact percentage of composition for one or more ingredients has been withheld as a trade secret.

Additional GHS classification or other information may be included in this section but has not been adopted by OSHA. See Section 16 for full text of H phrases.

4. FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

Eye Contact:

Not an expected route of exposure.

Skin Contact:

Wash immediately with plenty of water and soap. Remove contaminated clothing and shoes without delay. Obtain medical attention. Do not reuse contaminated clothing without laundering. Destroy or thoroughly clean shoes before reuse.

Ingestion:

Not an expected route of exposure.

Inhalation:

Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

None known

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDS

Not applicable

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:

Use water spray or fog, carbon dioxide or dry chemical.

Protective Equipment:

Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. Refer to Section 8 (Exposure Controls/Personal Protection) for appropriate personal protective equipment.

Methods For Cleaning Up:

Sweep up into containers for disposal. Flush spill area with water.

References to other sections:

See Sections 8 and 13 for additional information.

7. HANDLING AND STORAGE

HANDLING

Precautions: Wash hands thoroughly after handling. Wear protective gloves. Contaminated work clothing should not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Special Handling Statements: None

STORAGE

None

Storage Temperature: Store at -18 °C 0 °F

Reason: Quality.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:

Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure when spraying or curing at elevated temperatures.

Respiratory Protection:

Where exposures are below the established exposure limit, no respiratory protection is required. Where exposures exceed the established exposure limit, use respiratory protection recommended for the material and level of exposure. A full facepiece respirator also provides eye and face protection. Cutting, grinding or sanding of parts fabricated after curing may create respirable dust particles. Respiratory protection appropriate for this dust may be required. Refer to components listed above for potential hazardous components in the dust.

Eye Protection:

Wear eye/face protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure.

Skin Protection:

Avoid skin contact. Wear impermeable gloves and suitable protective clothing. Barrier creams may be used in conjunction with the gloves to provide additional skin protection.

Hand Protection:

Wear impermeable gloves. Consider the porosity and elasticity data of the glove manufacturer and the specific conditions in the work place. Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred.

Additional Advice:

Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. It is recommended that a shower be taken after completion of workshift especially if significant contact has occurred. Work clothing should then be laundered prior to reuse. Street clothing should be stored separately from work clothing and protective equipment. Work clothing and shoes should not be taken home.

Exposure Limit(s)

1305-78-8 Calcium oxide

OSHA (PEL): 5 mg/m³ (TWA)

ACGIH (TLV): 2 mg/m³ (TWA)

Other Value: Not established

142844-00-6 Refractory Ceramic Fiber

OSHA (PEL): 1 fibers/cc (Carborundum)

ACGIH (TLV): 0.2 f/cc respirable fibers (TWA)

Other Value: 1 fibers/cc (Carborundum)

7429-90-5 Aluminum

OSHA (PEL): 15 mg/m³ total dust (TWA)

5 mg/m³ respirable fraction (TWA)

ACGIH (TLV): 1 mg/m³ respirable fraction (TWA)

Other Value: Not established

1305-78-8 Calcium oxide

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	gray
Appearance:	film
Odor:	odorless
Boiling Point:	Not applicable
Melting Point:	Not available
Vapor Pressure:	Not applicable
Specific Gravity/Density:	Not available
Vapor Density:	Not applicable
Percent Volatile (% by wt.):	<0.5mostly water
pH:	Not available
Saturation In Air (% By Vol.):	Not applicable
Evaporation Rate:	Negligible
Solubility In Water:	Insoluble
Volatile Organic Content:	0 gm/L
Flash Point:	Not applicable
Flammable Limits (% By Vol):	Not applicable
Autoignition Temperature:	Not applicable
Decomposition Temperature:	>232 °C 450 °F
Partition coefficient (n-octanol/water):	Not available
Odor Threshold:	Not available
Viscosity (Kinematic):	

10. STABILITY AND REACTIVITY

Stability:	Stable
Conditions To Avoid:	Avoid contact with acids, bases or amines. Do not heat above 82.2 C (180 F).
Polymerization:	May occur
Conditions To Avoid:	Avoid contact with acids, bases or amines. Do not heat material above 82.2 C (180 F).
Materials To Avoid:	Aliphatic amines Strong acids or bases
Hazardous Decomposition Products:	oxides of nitrogen oxides of carbon hydrogen bromide (HBr) sulfur dioxide

11. TOXICOLOGICAL INFORMATION

PRODUCT TOXICITY INFORMATION

Likely Routes of Exposure: Skin.

ACUTE TOXICITY DATA

oral	rat	Acute LD50	Not an expected route of exposure
dermal	rabbit	Acute LD50	>2000 mg/kg
inhalation	rat	Acute LC50 4 hr	Not an expected route of exposure

LOCAL EFFECTS ON SKIN AND EYE

Acute Irritation	dermal	Not irritating
Acute Irritation	eye	Not irritating

ALLERGIC SENSITIZATION

Sensitization	dermal	Sensitizing
Sensitization	inhalation	No data

GENOTOXICITY**Assays for Gene Mutations**

Ames Salmonella Assay	No data
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OTHER INFORMATION

The product toxicity information above has been estimated.

HAZARDOUS INGREDIENT TOXICITY DATA

Phenolic epoxy resin #2 has an acute oral LD50 (rat) of >10,000 mg/kg. This material may produce allergic skin reactions or primary skin irritation after prolonged or repeated dermal exposure. It is reported to have produced mutagenic effects in yeast and cultured mammalian cells both with and without metabolic activation. Chronic ingestion of a similar resin caused reduced weight gain and death in laboratory animals. The literature reports several cases of asthmatic symptoms developing in workers due to occupational exposure to this resin.

Tetrabromobisphenol A has an oral (rat) LD50, dermal (rabbit) LD50 and 4-hour inhalation (rat) LC50 values reported to be >4000 mg/kg, >3000 mg/kg and >10,000 mg/m³, respectively. This material caused fetotoxicity and teratogenicity in laboratory animal tests.

Calcium oxide causes severe irritation or burns of mucous membranes and moist skin. In animal studies, this material has caused severe eye irritation. Inhalation of calcium oxide dust may cause inflammation of the respiratory passages and possibly pneumonia.

Refractory Ceramic Fibers are classified by the International Agency for Research on Cancer (IARC) as possible human carcinogens (Group 2B). Chronic inhalation studies showed that refractory ceramic fibers induced mesotheliomas and lung tumors in rats and hamsters. Refractory ceramic fibers are similar to asbestos in fiber sizes and many physical properties. Inhalation studies in rats and hamsters also showed that refractory ceramic fibers caused pulmonary and pleural fibrosis, in addition to lung tumors and mesotheliomas. Refractory Ceramic Fibers are known to the State of California to cause cancer.

Acute exposure to aluminum is not expected to cause adverse effects. Repeated and prolonged inhalation of aluminum powder may cause serious lung disorders.

Aniline derivative has acute oral (rat) and dermal (rabbit) LD50 values of >600 mg/kg and greater than 4000 mg/kg, respectively. An acute oral (mouse) LD50 value of 250 mg/kg has also been reported. In laboratory animal tests, this material did not cause primary skin irritation. Exposure may also cause sore throat, headache, weakness, and possibly methemoglobinemia or other blood disorders. In lifetime feeding studies no evidence of carcinogenicity was seen in mice of either sex or female rats. However, male rats were observed to have an increased incidence of mesenchymal tumors of the spleen. This material was not mutagenic to *Salmonella typhimurium*. This material adversely affected reproductive potency in male rats. This material is reported to have shown positive results in in vitro mutagenicity tests with human cell cultures. Subacute ingestion caused liver damage in laboratory animals. It has been that this has the potential to cause allergic skin reactions.

Aromatic glycidyl derivative #2 has acute oral (rat) and dermal (rabbit) LD50 values of > 10,000 mg/kg and >3000 mg/kg, respectively. Direct contact with this material can cause mild eye and skin irritation. This material caused skin sensitization in guinea pigs and humans. This material was found to be mutagenic in the Ames test and the mouse lymphoma test, but was negative in other mutagenicity tests including the cell transformation test. This material demonstrated in vivo mutagenic activity in a mouse Micronucleus test. In another study with rats, the LD50 was reported to be >5,000 mg/kg. This compound caused severe eye irritation in one laboratory animal test and mild eye irritation in other tests.

California Proposition 65 Warning (applicable in California only) - This product contains (a) chemical(s) known to the State of California to cause cancer.

12. ECOLOGICAL INFORMATION

TOXICITY, PERSISTENCE AND DEGRADABILITY, BIOACCUMULATIVE POTENTIAL, MOBILITY IN SOIL, OTHER ADVERSE EFFECTS

This material is not classified as dangerous for the environment.

Environmental exposure from substances of this preparation are limited due to the physical form of the product.

RESULTS OF PBT AND vPvB ASSESSMENT

Not determined

HAZARDOUS INGREDIENT TOXICITY DATA

Component / CAS No.	Toxicity to Algae	Toxicity to Fish	Toxicity to Water Flea
Phenolic epoxy resin #2	Not available	Not available	Not available
Tetrabromobisphenol A 79-94-7	EC50 > 5.6 mg/L - <i>Pseudokirchneriella subcapitata</i> (96h)	LC50 = 0.51 mg/L - <i>Lepomis macrochirus</i> (96h) LC50 = 0.54 mg/L - <i>Pimephales promelas</i> (96h) LC50 = 0.06 mg/L - <i>Pimephales promelas</i> (96h)	EC50 6.8 - 9.2 mg/L - <i>Daphnia magna</i> (48h) EC50 = 0.96 mg/L - <i>Daphnia magna</i> (48h)
Calcium oxide 1305-78-8	Not available	LC50 = 1070 mg/L - <i>Cyprinus carpio</i> (96h)	Not available

Component / CAS No.	Toxicity to Algae	Toxicity to Fish	Toxicity to Water Flea
Refractory Ceramic Fiber 142844-00-6	Not available	Not available	Not available
Aluminum 7429-90-5	Not available	Not available	Not available
Aniline derivative -	Not available	Not available	Not available
Aromatic glycidyl derivative #2 -	Not available	Not available	Not available

13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA "listed hazardous waste" or has any of the four RCRA "hazardous waste characteristics." Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA "listed hazardous waste"; information contained in Section 15 of this MSDS is not intended to indicate if the product is a "listed hazardous waste." RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 3 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. The Company encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. The Company recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. The Company has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT

Dangerous Goods? Not applicable/Not regulated

TRANSPORT CANADA

Dangerous Goods? Not applicable/Not regulated

ICAO / IATA

Dangerous Goods? Not applicable/Not regulated

IMO

Dangerous Goods? Not applicable/Not regulated

15. REGULATORY INFORMATION

Inventory Information

United States (USA): All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.

Canada: All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL.

European Economic Area (including EU): This product is an article that does not intentionally release substances under normal conditions of use and is therefore exempt from the registration requirements under the REACH Regulation (EC) No. 1907/2006.

Australia: All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on AICS.

China: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

Japan: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese inventory.

Korea: All components of this product are included on the Korean (ECL) inventory or are not required to be listed on the Korean inventory.

Philippines: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine inventory.

OTHER ENVIRONMENTAL INFORMATION

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

Component / CAS No.	%	TPQ (lbs)	RQ(lbs)	S313	TSCA 12B
Aluminum 7429-90-5	15-40	None	0	Yes	No
Refractory Ceramic Fiber 142844-00-6	0.5-1.5	None	0	No	Yes

PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA

- Acute
- Chronic

16. OTHER INFORMATION

NFPA Hazard Rating (National Fire Protection Association)

Health: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

Fire: 1 - Materials that must be preheated before ignition can occur.

Instability: 0 - Materials that in themselves are normally stable, even under fire exposure conditions.

Reasons For Issue: New Product

Date Prepared: 07/30/2013

Date of last significant revision: 07/30/2013

Phenolic epoxy resin #2

H317 - May cause an allergic skin reaction.

H411 - Toxic to aquatic life with long lasting effects.

Phenolic epoxy resin #2

Tetrabromobisphenol A

H400 - Very toxic to aquatic life.

H410 - Very toxic to aquatic life with long lasting effects.

Calcium oxide

H314 - Causes severe skin burns and eye damage.

Refractory Ceramic Fiber

H350 - May cause cancer.

Aluminum

H228 - Flammable solid.

H261 - In contact with water releases flammable gases.

Aniline derivative

H302 - Harmful if swallowed.

Aromatic glycidyl derivative #2

H317 - May cause an allergic skin reaction.

H341 - Suspected of causing genetic defects.

H411 - Toxic to aquatic life with long lasting effects.

Prepared By: Legal & Compliance Services; E-mail: custinfo@cytec.com

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