

CODING FORMS FOR SRC INDEXING

Microfiche No.		
OTS0574156-1		
New Doc ID		Old Doc ID
89010000233		8EHQ-0501-14922
Date Produced	Date Received	TSCA Section
06/19/01	06/21/01	8E
Submitting Organization		
APPLIED BIOSYSTEMS		
Contractor		
Document Title		
SUPPORT: LTR FR APPLIED BIOSYSTEMS TO USEPA W/SUMMARIES OF ADD'L TEST RESULTS & REVISED MSDS'S FOR PYAOP, TBTU, & TFFH, W/ATTCHMNTS & DTD 061901		
Chemical Category		
PyAOP, TBTU, TFFH		

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8EHQ-0601-14922

AB Applied Biosystems

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2001 JUN 21 AM 6:59

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8EHQ-01-14922

June 19, 2001

Contain NO CBI

VIA FEDERAL EXPRESS

Document Processing Center 7407
Room G-99, East Tower
Attn: Section 8(e)
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
401 "M" Street, S.W.
Washington, DC 20460-0001



89010000233

**Re: Additional Section 8(e) Submittals for PyAOP, TBTU and TFFH
8EHQ-01-14922**

Dear Section 8(e) Coordinator:

In accordance with the requirements of Section 8(e) of the Toxic Substances Control Act (TSCA), 15 U.S.C. § 2607(e), Applied Biosystems (formerly, PE Biosystems) is submitting information to the U.S. Environmental Protection Agency (EPA) regarding three chemical substances for which Applied Biosystems made a previous submission to EPA under Section 8(e):

- 1) Tri-1-pyrrolidinyl (3H-1,2,3-triazolo[4,5-b]pyridin-3-yloxy) phosphonium, hexafluorophosphate (1-) (PyAOP)
- 2) Benzotriazol-1-yl-tetramethyluronium tetrafluoroborate (TBTU)
- 3) Tetramethylfluoroformamidinium hexafluorophosphate (TFFH)

In our previous submission to you, dated May 4, 2001, we provided the results of Local Lymph Node Assays indicating that these three substances are to be considered potential sensitizers. We also provided information regarding allegations of adverse health effects related to these chemicals. The purpose of this correspondence is to supplement our May 4, 2001 submission with additional test results and revised Material Safety Data Sheets (MSDSs).

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June 19, 2001
Page 2

Name and Address of Person and Company Reporting

Debora Van der Sluis
Senior Manager, Global Environmental, Health & Safety Department
Applied Biosystems
850 Lincoln Centre Drive
Foster City, CA 94404
Telephone: (650) 638-5277
Facsimile: (650) 638-6786

Summary of Adverse Effects and Source of Information

PyAOP

We have received information regarding the results of an eye irritation study conducted by Calvert Preclinical Services, Inc. ("PyAOP Eye Irritation Study"). Applied Biosystems sponsored the PyAOP Eye Irritation Study. This study involved the application of PyAOP to six rabbits. Specifically, 100 mg of PyAOP was applied to the conjunctival sac of one eye of each rabbit.

The information we received indicates that five of the six animals treated were found dead on the morning following application. The sixth animal appeared to be in moderate pain and was sacrificed shortly thereafter. Necropsy of the dead animals revealed no visible lesions and no cause of death could be determined. This information was received from Calvert Preclinical Services, Inc. in an e-mail communication to Applied Biosystems dated May 31, 2001. We do not expect to receive a written report of these findings.

Attached at Tab 1 is a copy of the revised MSDS for PyAOP, dated June 13, 2001. The MSDS has been revised to incorporate the PyAOP Eye Irritation Study results referenced above, and the Local Lymph Node Assay results submitted to you on May 4, 2001.

TBTU

Attached at Tab 2 is a copy of the revised MSDS for TBTU, dated June 13, 2001. The MSDS has been revised to incorporate the Local Lymph Node Assay results submitted to you on May 4, 2001.

TFFH

We have received information regarding the results of an eye irritation study conducted by Calvert Preclinical Services, Inc. ("TFFH Eye Irritation Study"). The TFFH Eye Irritation Study was sponsored by Applied Biosystems. This study involved the application of TFFH to six rabbits. Specifically, 100 mg of TFFH was applied to the conjunctival sac of one eye of each rabbit.

It was reported that eye conditions progressively worsened following application. Total destruction of the treated eyes was reported on the eighth day following application. The animals were sacrificed following a determination that recovery or reversibility was not likely. We received this information in an e-mail communication from Calvert Preclinical Services, Inc. to Applied Biosystems on June 11, 2001. We expect to receive a draft report from Calvert Preclinical Services, Inc. regarding these findings. We will provide you with a copy of the draft TFFH Eye Irritation Study report promptly after receipt.

Attached at Tab 3 is a copy of the revised MSDS for TFFH, dated June 13, 2001. The MSDS incorporates information from the TFFH Eye Irritation Study referenced above, and the Local Lymph Node Assay results submitted to you on May 4, 2001.

* * * *

Please contact me if you have any questions regarding this submittal. I can be reached at (650) 638-5277.

Sincerely,

Debora Van der Sluis

Debora Van der Sluis
Senior Manager
Global Environmental, Health & Safety Department

Attachments



ABI PART NUMBER: 4315398
 OHS PART NUMBER: 00200584
 PAGE 1 OF 6 Rev. C

MATERIAL SAFETY DATA SHEET

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

APPLIED BIOSYSTEMS
 850 LINCOLN CENTRE DRIVE
 FOSTER CITY, CA 94404
 (650) 570-6667 (USA)
 01925-825650 (UK)

24 HOUR EMERGENCY RESPONSE NUMBER:
 1-800-424-9300 (NORTH AMERICA)
 1-703-527-3887 (INTERNATIONAL)

SUBSTANCE: TRI-1-PYRROLIDINYL(3H-1,2,3-TRIAZOLO(4,5-B)PYRIDIN-3-YLOXY)
 PHOSPHONIUM, HEXAFLUOROPHOSPHATE (1-)

TRADE NAMES/SYNONYMS:

PHOSPHONIUM, TRI-1-PYRROLIDINYL(3H-1,2,3-TRIAZOLO(4,5-B)PYRIDIN-3-YLOXY)-,
 HEXAFLUOROPHOSPHATE (1-); 7-AZABENZTRIAZOL-1-YLOXYTRIS(PYRROLIDINO)
 PHOSPHONIUM HEXAFLURO PHOSPHATE; 3H-1,2,3-TRIAZOLO(4,5-B)PYRIDINE,
 PHOSPHONIUM DERIVATIVE PYAOP; PyAOP; GEN076531; GEN076533; P/N 4315398;
 C17H27F6N7OP2; 00200584

CHEMICAL FAMILY: phosphono, halides

PRODUCT USE: For Research Use Only. Not for use in diagnostic procedures.

CREATION DATE: Jun 08 1998
 REVISION DATE: Jun 13 2001

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TRI-1-PYRROLIDINYL(3H-1,2,3-TRIAZOLO(4,5-B)PYRIDIN-3-YLOXY)
 PHOSPHONIUM, HEXAFLUOROPHOSPHATE (1-)
 CAS NUMBER: 156311-83-0
 PERCENTAGE: 100.0

SECTION 3 HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=1 REACTIVITY=0

EMERGENCY OVERVIEW:

COLOR: white to off-white

PHYSICAL FORM: powder

MAJOR HEALTH HAZARDS: Causes severe eye burns. May cause allergic respiratory
 and skin reactions.

PHYSICAL HAZARDS: Dust/air mixtures may ignite or explode.



ABI PART NUMBER: 4315398
OHS PART NUMBER: 00200584
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POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: irritation, allergic reactions

LONG TERM EXPOSURE: same as effects reported in short term exposure

SKIN CONTACT:

SHORT TERM EXPOSURE: allergic reactions

LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:

SHORT TERM EXPOSURE: burns, eye damage

LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:

SHORT TERM EXPOSURE: no information is available

LONG TERM EXPOSURE: no information is available

SECTION 4	FIRST AID MEASURES
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INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If a large amount is swallowed, get medical attention.

SECTION 5	FIRE FIGHTING MEASURES
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FIRE AND EXPLOSION HAZARDS: Slight fire hazard. Dust/air mixtures may ignite or explode.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk.

Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire.

Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SECTION 6 ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

SECTION 7 HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Keep dry. Keep separated from incompatible substances.

HANDLING: Use methods to minimize dust.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

TRI-1-PYRROLIDINYL(3H-1,2,3-TRIAZOLO(4,5-B)PYRIDIN-3-YLOXY) FLUOROPHOSPHONIUM, HEXAFLUOROPHOSPHATE (1-):

No occupational exposure limits established.

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any chemical cartridge respirator with organic vapor cartridge(s) and dust and mist filter(s).

Any chemical cartridge respirator with organic vapor cartridge(s) and high-efficiency particulate filter(s).

Any air-purifying respirator with a full facepiece, an organic vapor canister and a dust, mist, and fume filter.

Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.



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For Unknown Concentrations or Immediately Dangerous to Life or Health -
Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES
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PHYSICAL STATE: solid
COLOR: white to off-white
PHYSICAL FORM: powder
ODOR: Not available
MOLECULAR WEIGHT: 521.39
MOLECULAR FORMULA: C₁₇-H₂₇-N₇-O₄-P₂
BOILING POINT: Not applicable
MELTING POINT: 288-306 F (141-152 C)
VAPOR PRESSURE: Not applicable
VAPOR DENSITY: Not applicable
SPECIFIC GRAVITY: Not available
WATER SOLUBILITY: Not available
PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: dimethylformamide

SECTION 10	STABILITY AND REACTIVITY
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REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition.
Avoid contact with incompatible materials.

INCOMPATIBILITIES: oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: oxides of carbon

POLYMERIZATION: Will not polymerize.



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SECTION 11	TOXICOLOGICAL INFORMATION
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TRI-1-PYRROLIDINYL(3H-1,2,3-TRIAZOLO(4,5-B)PYRIDIN-3-YLOXY) PHOSPHONIUM,
HEXAFLUOROPHOSPHATE (1-):

IRRITATION DATA: The material was found to be non-irritating to rabbit skin.

LOCAL EFFECTS:

Corrosive: eye

TARGET ORGANS: immune system (sensitizer)

ADDITIONAL DATA: The material induced a hypersensitivity response in mice as measured by the proliferation of lymphocytes in the draining lymph nodes (Local Lymph Node Assay).

MUTAGENIC DATA:

The material did not cause a positive increase in the mean number of revertants with any of the tester strains either in the presence or absence of microsomal enzymes (S9) in the Salmonella-Escherichia coli / Mammalian-Microsome Reverse Mutation Assay.

SECTION 12	ECOLOGICAL INFORMATION
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Not available

SECTION 13	DISPOSAL CONSIDERATIONS
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Dispose in accordance with all applicable regulations.

SECTION 14	TRANSPORT INFORMATION
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U.S. DEPARTMENT OF TRANSPORTATION: No classification assigned.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR/RID: No classification assigned.

AIR TRANSPORT IATA/ICAO: No classification assigned.

MARITIME TRANSPORT IMDG: No classification assigned.

SECTION 15	REGULATORY INFORMATION
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U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
Not regulated.



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SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):
ACUTE: Yes
CHRONIC: Yes
FIRE: No
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:
California Proposition 65: Not regulated.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): Not listed on inventory. This product is sold for
Research and Development Use Only.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

SECTION 16	OTHER INFORMATION
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ABI PART NUMBER: MIB76728
OHS PART NUMBER: 00201091
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MATERIAL SAFETY DATA SHEET

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

APPLIED BIOSYSTEMS
850 LINCOLN CENTRE DRIVE
FOSTER CITY, CA 94404
(650) 570-6667 (USA)
01925-825650 (UK)

24 HOUR EMERGENCY RESPONSE NUMBER:
1-800-424-9300 (NORTH AMERICA)
1-703-527-3887 (INTERNATIONAL)

SUBSTANCE: TBTU COUPLING REAGENT

TRADE NAMES/SYNONYMS:

KNORR'S REAGENT; O-BENZOTRIAZOL-1-YL-N,N,N',N'-TETRAMETHYLURONIUM
TETRAFLUOROBORATE; O-(1H-BENZOTRIAZOL-1-YL)-N,N,N',N'-TETRAMETHYLURONIUM
TETRA-FLUOROBORATE; (N,N,N',N'-TETRAMETHYL-O-(1H-BENZOTRIAZOL-1-YL)URONIUM
TETRAFLUOROBORATE; TBTU; C11H16BF4N5O; MIB76728; GEN030003; GEN759195;
00201091

CHEMICAL FAMILY: fluoride, inorganic, triazoles

PRODUCT USE: For Research Use Only. Not for use in diagnostic procedures.

CREATION DATE: Jul 06 1998

REVISION DATE: Jun 13 2001

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TBTU COUPLING REAGENT
CAS NUMBER: 125700-67-6
PERCENTAGE: 100.0

SECTION 3 HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=1 REACTIVITY=0

EMERGENCY OVERVIEW:

PHYSICAL FORM: solid

MAJOR HEALTH HAZARDS: May cause allergic respiratory and skin reactions.

PHYSICAL HAZARDS: Dust/air mixtures may ignite or explode.



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POTENTIAL HEALTH EFFECTS:**INHALATION:**

SHORT TERM EXPOSURE: allergic reactions, irritation (possibly severe), asthma, lung congestion, same as effects reported in short term ingestion

LONG TERM EXPOSURE: same as effects reported in short term exposure

SKIN CONTACT:

SHORT TERM EXPOSURE: allergic reactions, irritation (possibly severe)

LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:

SHORT TERM EXPOSURE: irritation (possibly severe)

LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:

SHORT TERM EXPOSURE: burns, rash, nausea, diarrhea, stomach pain, difficulty breathing, irregular heartbeat, headache, tingling sensation, visual disturbances, dilated pupils, bluish skin color, paralysis, convulsions, coma

LONG TERM EXPOSURE: no information on significant adverse effects

SECTION 4	FIRST AID MEASURES
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INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: Give milk. Get medical attention immediately.

SECTION 5	FIRE FIGHTING MEASURES
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FIRE AND EXPLOSION HAZARDS: Slight fire hazard. Dust/air mixtures may ignite or explode.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SECTION 6	ACCIDENTAL RELEASE MEASURES
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OCCUPATIONAL RELEASE:
Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

SECTION 7	HANDLING AND STORAGE
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STORAGE: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.

SECTION 8	EXPOSURE CONTROLS, PERSONAL PROTECTION
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EXPOSURE LIMITS:
TBTU COUPLING REAGENT:
INORGANIC FLUORIDES (as F):
2.5 mg/m³ OSHA TWA
2.5 mg/m³ ACGIH TWA
2.5 mg/m³ NIOSH recommended TWA 10 hour(s)

VENTILATION: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

Measurement Element:

F

12.5 mg/m³

Any dust and mist respirator.

25 mg/m³

Any dust and mist respirator except single-use and quarter-mask respirators.

Any supplied-air respirator.

62.5 mg/m³

Any supplied-air respirator operated in a continuous-flow mode.

Any powered, air-purifying respirator with a dust and mist filter.

May need acid gas sorbent.

125 mg/m³

Any air-purifying respirator with a full facepiece and a high-efficiency particulate filter.

May need acid gas sorbent.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

250 mg/m³

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

Escape -

Any air-purifying respirator with a full facepiece and a high-efficiency particulate filter.

May need acid gas sorbent.

Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: solid

ODOR: Not available

MOLECULAR WEIGHT: 321.1

MOLECULAR FORMULA: C₁₁H₁₆N₅O₂B₄F₄

BOILING POINT: Not applicable

MELTING POINT: 311-316 F (155-158 C)

VAPOR PRESSURE: Not applicable

VAPOR DENSITY: Not applicable

SPECIFIC GRAVITY: Not available

WATER SOLUBILITY: Not available



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PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: acetonitrile

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition.
Avoid contact with incompatible materials.

INCOMPATIBILITIES: oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: acid halides, oxides of boron

POLYMERIZATION: Will not polymerize.

SECTION 11 TOXICOLOGICAL INFORMATION

TBTU COUPLING REAGENT:

TARGET ORGANS: immune system (sensitizer)

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: central nervous system disorders,
bone, joint or tooth disorders, eye disorders, kidney disorders, respiratory
disorders, skin disorders and allergies

ADDITIONAL DATA: May cross the placenta. May be excreted in breast milk.
The material induced a hypersensitivity response in mice as measured by the
proliferation of lymphocytes in the draining lymph nodes (Local Lymph Node
Assay).

MUTAGENIC DATA:

The material did not cause a positive increase in the mean number of revertants with
any of the tester strains either in the presence or absence of microsomal
enzymes (S9) in the Salmonella-Escherichia coli / Mammalian-Microsome
Reverse Mutation Assay.

SECTION 12 ECOLOGICAL INFORMATION

Not available



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SECTION 13 DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

SECTION 14 TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: No classification assigned.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR/RID: No classification assigned.

AIR TRANSPORT IATA/ICAO: No classification assigned.

MARITIME TRANSPORT IMDG: No classification assigned.

SECTION 15 REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

- ACUTE: Yes
- CHRONIC: Yes
- FIRE: No
- REACTIVE: No
- SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: Not regulated.



ABI PART NUMBER: MIB76728
OHS PART NUMBER: 00201091
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NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Not listed on inventory. This product is sold for Research and Development Use Only.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

SECTION 16	OTHER INFORMATION
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ABI PART NUMBER: MIB33866
OHS PART NUMBER: 00201051
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MATERIAL SAFETY DATA SHEET

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

APPLIED BIOSYSTEMS
850 LINCOLN CENTRE DRIVE
FOSTER CITY, CA 94404
(850) 570-8867 (USA)
01925-826850 (UK)

24 HOUR EMERGENCY RESPONSE NUMBER:
1-800-424-9300 (NORTH AMERICA)
1-703-527-3887 (INTERNATIONAL)

SUBSTANCE: TETRAMETHYLFLUOROFORMAMIDINIUM HEXAFLUOROPHOSPHATE

TRADE NAMES/SYNONYMS:
TFFH; C5H12F7N2P; MIB33866; GEN076545; GEN076543; GEN076541; GEN76543;
00201051

CHEMICAL FAMILY: halogenated, aliphatic, quaternary, ammonium

PRODUCT USE: For Research Use Only. Not for use in diagnostic procedures.

CREATION DATE: Jul 08 1998
REVISION DATE: Jun 13 2001

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT: TETRAMETHYLFLUOROFORMAMIDINIUM HEXAFLUOROPHOSPHATE
CAS NUMBER: Not assigned.
PERCENTAGE: 100.0

SECTION 3 HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=1 REACTIVITY=0

EMERGENCY OVERVIEW:

COLOR: white

PHYSICAL FORM: powder

MAJOR HEALTH HAZARDS: Causes severe eye burns. May cause allergic respiratory and skin reactions.

PHYSICAL HAZARDS: Dust/air mixtures may ignite or explode.

POTENTIAL HEALTH EFFECTS:

INHALATION:

SHORT TERM EXPOSURE: allergic reactions

LONG TERM EXPOSURE: same as effects reported in short term exposure



ABI PART NUMBER: MIB33886
OHS PART NUMBER: 00201051
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SKIN CONTACT:

SHORT TERM EXPOSURE: allergic reactions

LONG TERM EXPOSURE: same as effects reported in short term exposure

EYE CONTACT:

SHORT TERM EXPOSURE: burns, eye damage

LONG TERM EXPOSURE: same as effects reported in short term exposure

INGESTION:

SHORT TERM EXPOSURE: no information is available

LONG TERM EXPOSURE: no information is available

SECTION 4	FIRST AID MEASURES
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INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

SKIN CONTACT: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

INGESTION: If a large amount is swallowed, get medical attention.

SECTION 5	FIRE FIGHTING MEASURES
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FIRE AND EXPLOSION HAZARDS: Slight fire hazard. Dust/air mixtures may ignite or explode.

EXTINGUISHING MEDIA: regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.



SECTION 6 ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:

Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

SECTION 7 HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.

SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

TETRAMETHYLFLUOROFORMAMIDINIUM HEXAFLUOROPHOSPHATE:

No occupational exposure limits established.

VENTILATION: Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear appropriate chemical resistant clothing.

GLOVES: Wear appropriate chemical resistant gloves.

RESPIRATOR: Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use.

Any chemical cartridge respirator with organic vapor cartridge(s).

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.

Any self-contained breathing apparatus with a full facepiece.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: solid
COLOR: white
PHYSICAL FORM: powder
ODOR: Not available
MOLECULAR WEIGHT: 264.13
MOLECULAR FORMULA: C5-H12-F7-N2-P
BOILING POINT: Not applicable
MELTING POINT: 219-226 F (104-108 C)
VAPOR PRESSURE: Not applicable
VAPOR DENSITY: Not applicable
SPECIFIC GRAVITY: Not available
WATER SOLUBILITY: Not available
PH: Not applicable
VOLATILITY: Not applicable
ODOR THRESHOLD: Not available
EVAPORATION RATE: Not applicable
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available
SOLVENT SOLUBILITY:
Soluble: dimethylformamide

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Avoid heat, flames, sparks and other sources of ignition.
Avoid contact with incompatible materials.

INCOMPATIBILITIES: oxidizing materials

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: oxides of carbon

POLYMERIZATION: Will not polymerize.

SECTION 11 TOXICOLOGICAL INFORMATION

TETRAMETHYLFLUOROFORMAMIDIUM HEXAFLUOROPHOSPHATE:
LOCAL EFFECTS:
Corrosive: eye
TARGET ORGANS: immune system (sensitizer)



ADDITIONAL DATA: The material induced a hypersensitivity response in mice as measured by the proliferation of lymphocytes in the draining lymph nodes (Local Lymph Node Assay).

MUTAGENIC DATA:

The material did not cause a positive increase in the mean number of revertants with any of the tester strains either in the presence or absence of microsomal enzymes (S9) in the Salmonella-Escherichia coli / Mammalian-Microsome Reverse Mutation Assay.

SECTION 12 ECOLOGICAL INFORMATION

Not available

SECTION 13 DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable regulations.

SECTION 14 TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION: No classification assigned.

CANADIAN TRANSPORTATION OF DANGEROUS GOODS: No classification assigned.

LAND TRANSPORT ADR/RID: No classification assigned.

AIR TRANSPORT IATA/CAO: No classification assigned.

MARITIME TRANSPORT IMDG: No classification assigned.

SECTION 15 REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4): Not regulated.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
Not regulated.

SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.40):
Not regulated.



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SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE: Yes
CHRONIC: Yes
FIRE: No
REACTIVE: No
SUDDEN RELEASE: No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

STATE REGULATIONS:

California Proposition 65: Not regulated.

NATIONAL INVENTORY STATUS:

U.S. INVENTORY (TSCA): Not listed on inventory. This product is sold for Research and Development Use Only.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

SECTION 16	OTHER INFORMATION
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