3M AUSTRALIA PTY LIMITED
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Pymble NSW 2073
Phone: 136 136
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250 Archers Road
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MATERIAL SAFETY DATA SHEET

Document ID	: 10-4323-1	Issue date	: 09/05/2003
Version	: 2.00	Supersedes date	: 23/04/2001
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

1 IDENTIFICATION

NOTE: Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
FC-206CF LIGHT WATER(TM) AFFF FIRE FIGHTING FOAM 6% CONCENTRATE

3M Product ID

ZF-0002-0614-2	ZF-0002-0621-7	ZF-0002-0791-8	98-0211-5624-9
98-0211-5625-6	98-0211-5626-4	98-0211-5627-2	98-0211-5628-0
98-0211-5629-8	98-0211-5630-6		

DIVISION
3M SPECIALTY MATERIALS

INTENDED USE OF PRODUCT
Fire fighting foam

UN NUMBER	NONE ALLOCATED
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED
PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Clear amber coloured liquid

Boiling point	ca 100 C (Initial)
Vapour pressure	ca 17.8 mmHg Calc @ 20C
Vapour density	ca 0.69 (Air=1) Calc @ 20C
Evaporation rate	< 1.0 (BuOAc=1)
Solubility in Water	Miscible
Specific gravity	1.03 (Water=1)
Volatile organic compounds	103 g/L Calc @ 20C
pH	ca 8.5
Viscosity	Not determined
Melting point	Not applicable
Flash point	None (Setaflash CC)
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not applicable

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	75 - 85
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	5 - 15
UREA	57-13-6	5 - 10
ALKYL SULFATE SALTS(2) +(5809P, 5810P)	---	1.0 - 5.0
AMPHOTERIC FLUOROALKYLAMIDE DERIVATIVE +(5807P)	---	1 - 5
TRIETHANOLAMINE	102-71-6	< 1
PERFLUOROALKYL SULFONATE SALTS(5) +(5808P)	---	< 1
RESIDUAL ORGANIC FLUOROCHEMICALS	Mixture	Not determined

4 HEALTH HAZARDS

Effects from Eye Contact

Eye irritation: Signs/symptoms can include redness, swelling, pain, tearing and hazy vision.

Effects from Skin Contact

May cause mild skin irritation (more likely after prolonged or

repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation

Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, lack of coordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Upper Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Effects from Ingestion

Animal studies conducted on organic fluorochemicals which are present in this product indicate effects including liver disturbances, weight loss, loss of appetite, lethargy, and neurological, pancreatic, adrenal and hematologic effects. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed.
Ingestion may cause: Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

Other Toxicological Information

A 3M Product Toxicity Summary Sheet is available.
This product contains one or more organic fluorochemicals that have the potential to be absorbed and remain in the body for long periods of time, either as the parent molecule or as metabolites, and may accumulate with repeated exposures. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed. The presence of organic fluorochemicals in the blood of the general population and subpopulations, such as workers, has been published dating back to the 1970's. 3M's epidemiological study of its own workers indicates no adverse effects.

5 FIRST AID

EYE CONTACT

In case of contact with eyes, rinse immediately with plenty of water. Get immediate medical attention.

SKIN CONTACT

Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION

If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, seek medical attention.

SWALLOWED

If swallowed, call a doctor or Poisons Information Centre immediately. Only induce vomiting at the instruction of a doctor. Never give anything by mouth to an unconscious person.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Not applicable.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable: ordinary combustible material.

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area with fresh air. Contain spill. Cover with absorbent material. Collect as much of the spilled material as possible.

Clean up residue with water. Place residue in a closed container.

Methods for Disposal
Discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HF. Facility must be capable of handling halogenated materials.

8 HANDLING AND STORAGE

Storage Requirements
Store away from areas where product may come into contact with food or pharmaceuticals. Store at temperatures below 50 degrees C. Store at temperatures above 0 C. Keep container closed when not in use.

Recommended Ventilation
Keep container in well-ventilated area.

Use Instructions
Keep container tightly closed when not in use. No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of the hazardous decomposition products mentioned in Section 11 of this MSDS.

9 EXPOSURE CONTROLS/PROTECTION

Eye Protection
Avoid eye contact with vapour, spray, or mist. During operations in which eye exposure is likely, the following should be worn alone, or in combination, as appropriate: Wear vented goggles. Eye protection should comply with AS/NZS1337.

Hand Protection
During operations in which hand exposure is likely, wear appropriate gloves. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection
Avoid skin contact.

Respiratory Protection
Avoid breathing of airborne material. During operations in which inhalation exposure is likely, respiratory protection should be used. Select and use respirators in accordance with AS/NZS1715. When required, use one of the following:
Half facepiece respirator with organic vapour (Type G1) and particle (Type P) filters. For information about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. As a precaution against accidental ingestion, wash hands after handling and before eating.

Recommended Ventilation
If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapour concentrations below recommended exposure limits and/or control spray or mist.

10 EXPOSURE STANDARDS

TRIETHANOLAMINE (102-71-6)
NOHSC EXPOSURE STANDARDS
: TWA 5mg/m3
(Sensitiser)

RESIDUAL ORGANIC FLUOROCHEMICALS (Mixture)
Exposure Standards: TWA 0.1mg/m3
(3M Recommended Exposure Guidelines)

11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY
Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID
Not applicable

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide. Oxides of Nitrogen. Oxides of Sulfur. Hydrogen Cyanide. Hydrogen Fluoride. Ammonia. Thermal decomposition of usage concentrations does not present a hazard.

12 ECOTOXICITY

Persistence/Biodegradability
This product contains one or more organic fluorochemicals that have the potential to resist degradation and persist in the environment.

ENVIRONMENTAL DATA
A 3M Product Environmental Data Sheet is available.

Other Ecotoxicity Information
5-Day Biological Oxygen Demand (BOD5): 0.16g/g
20-Day Biological Oxygen Demand (BOD20): 0.18g/g
Chemical Oxygen Demand (COD): 0.34g/g
20-Day BOD/COD: 0.53,
96-Hr LC50, Fathead minnow (Pimephales promelas): >1000mg/L;
48-Hr EC50, Daphnia magna: >1000mg/L;
96-Hr Static Algae (Selenastrum capricornutum): 254mg/L (233-277);
30-Min. EC50, Photobacterium phosphoreum (Microtox System): 680mg/L (610-750);3-Hr EC50 (OECD Method #209): >1,000mg/L.

13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal
Discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HF. Facility must be capable of handling halogenated materials. Contact your local waste authority to determine suitable disposal methods.

14 REGULATORY INFORMATION

Product Certifications
AICS - Yes; components checked

Special Regulatory Information
Xi (Irritant)

R Codes: 36
S Codes: 24/25-26-28b-46

15 OTHER INFORMATION

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product, or otherwise that in accordance with instructions of use on product packaging is the responsibility of the user.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Snr Regulatory Services Officer on (02) 9677-5179.

3M AUSTRALIA PTY LIMITED
2-74 Dunheved Circuit ST MARYS NSW 2760
Phone: (02) 9833-5179 (Toxicology Department)
Fax: (02) 9833-5170
EMERGENCY PHONE: (02) 9833-5333 (available 24 hours)

MATERIAL SAFETY DATA SHEET

Document ID	: 10-4367-8	Issue date	: 03/03/2000
Version	: 3.00	Supersedes date	: 12/10/1999
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

1 IDENTIFICATION

NOTE: Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
FC-3002 LIGHT WATER BRAND AQUEOUS FILM FORMING FOAM

3M Product ID
FJ-9000-3002-1 0286864 0296624

DIVISION
SPECIALTY CHEMICALS DIVISION

INTENDED USE OF PRODUCT
Fire fighting

UN NUMBER	Not applicable.
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED
PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Straw coloured liquid; sweet odour

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Boiling point	ca 100 C
Vapour pressure	ca 16.9 mmHg Calc @ 20C
Vapour density	ca 0.92 (Air=1) Calc @ 20C
Evaporation rate	< 1 (BuOAc=1)
Solubility in Water	Miscible
Specific gravity	ca 1.04 (Water=1)
Volatile organic compounds	ca 333 g/L Calc @ 20C
pH	ca 8.5
Viscosity	Not determined
Melting point	Not determined
Flash point	None (Setaflash CC)
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not determined

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	50 - 60
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	30 - 40
FLUOROALKYL SURFACTANTS	---	1 - 7
SYNTHETIC DETERGENTS	---	1 - 6
RESIDUAL ORGANIC FLUOROCHEMICALS	---	Not determined

4 HEALTH HAZARDS

Effects from Eye Contact

Severe eye irritation: signs/symptoms can include redness, swelling, pain, tearing, cloudy appearance of the cornea, impaired

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vision and possible permanently impaired vision.

Effects from Skin Contact
May cause mild skin irritation (more likely after prolonged or repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation
Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, lack of coordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Irritation to upper respiratory tract: Signs/symptoms can include sore nose and throat, coughing and sneezing.

Effects from Ingestion
Animal studies conducted on organic fluorochemicals which are present in this product indicate effects including liver disturbances, weight loss, loss of appetite, lethargy, and neurological, pancreatic, adrenal and hematologic effects. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed. Ingestion may cause: Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

Other Toxicological Information
This product contains one or more organic fluorochemicals that have the potential to be absorbed and remain in the body for long periods of time, either as the parent molecule or as metabolites, and may accumulate with repeated exposures. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used, as intended and instructed. The presence of organic fluorochemicals in the blood of the general population and subpopulations, such as workers, has been published dating back to the 1970's. 3M's epidemiological study of its own workers indicates no adverse effects.

A 3M Product Toxicity Summary Sheet is available.

A maximum average primary eye irritation score of 41.7 of a possible 110.0 assigned at the 1 hour evaluation. The test material is considered severely irritating to the eyes under the conditions of this study.
See the Product Toxicity Summary Sheet for further detail.

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5 FIRST AID

EYE CONTACT
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SKIN CONTACT
Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, seek medical attention.

SWALLOWED
If swallowed, call a doctor or Poisons Information Centre immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Not applicable.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable.

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place

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residue in a closed container. For information on the 3M range of sorbent materials, call 3M OH&ES on Freecall 1800 024-464.

Methods for Disposal
Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HF.

8 HANDLING AND STORAGE

Storage Requirements
Store away from areas where product may come into contact with food or pharmaceuticals. Store at temperatures below 48 degrees C. Store at temperatures above 2 C. Keep container closed when not in use.

Recommended Ventilation
Keep container in well-ventilated area.

Use Instructions
Keep container tightly closed when not in use.

9 EXPOSURE CONTROLS/PROTECTION

Eye Protection
Avoid eye contact with vapour, spray, or mist. The following should be worn alone or in combination, as appropriate, to prevent eye contact during operations in which exposure is likely: Vented goggles.
Eye protection should comply with AS/NZS1337.

Hand Protection
Wear appropriate gloves when handling this material. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection
Avoid skin contact.

Respiratory Protection
Avoid breathing of airborne material. Select and use respirators in accordance with AS/NZS 1715. When required, use one of the

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following
Half facepiece respirator with organic vapour and formaldehyde (Type A) and particle (Type P) filters. For information about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Wash hands after handling and before eating.

Recommended Ventilation
If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapour concentrations below recommended exposure limits and/or control spray or mist.

10 EXPOSURE STANDARDS

RESIDUAL ORGANIC FLUOROCHEMICALS (---)
Exposure Standards: TWA 0.1mg/m3 3M recommended guideline

11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY
Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID
None known.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide. Hydrogen Fluoride. Toxic Vapours, Gases or Particulates. Thermal decomposition during normal use with the diluted solution does not present a hazard.

12 ECOTOXICITY

Persistence/Biodegradability
This product contains one or more organic fluorochemicals that have the potential to resist degradation and persist in the environment.

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ENVIRONMENTAL DATA
Not determined

Other Ecotoxicity Information
Not determined.

13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal
Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Combustion products will include HF. Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Incinerate large quantities in an industrial or commercial incinerator. Contact your local waste authority to determine suitable disposal methods.

14 REGULATORY INFORMATION

Product Certifications
AICS - Yes

Special Regulatory Information
Xi (Irritant)

I Code: 36
S Codes: 26-28A-62

15 OTHER INFORMATION

REASON FOR REISSUE
Precautionary statements added.
7/10/98 Ingredient and statement changes.
30/9/99 Product Toxicity Study information added to Health Hazards section.
29/2/00 Statement change in Health Hazards Section.

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product,or otherwise than in accordance with instructions of use on product packaging is

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the responsibility of the user.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Snr Regulatory Services Officer on (02) 9677-5179.

3M AUSTRALIA PTY LIMITED
2-74 Dunheved Circuit ST MARYS NSW 2760
Phone: 126-136
Fax: (02) 9677-5170
EMERGENCY PHONE: (02) 9677-5333 (available 24 hours)

3% AFFF

FOI 297/16/17
Item 1
Serial 3

MATERIAL SAFETY DATA SHEET

Document ID	: 10-4367-0	Issue date	: 12/04/2001
Version	: 3.01	Supersedes date	: 03/03/2000
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

1 IDENTIFICATION

NOTE: Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
3M FC-3002 LIGHT WATER(TM)AFFF FIRE FIGHTING FOAM 3% CONCENTRATE

3M Product ID
AJ-9000-3002-1 0286064 0296624

DIVISION
SPECIALTY CHEMICALS DIVISION

INTENDED USE OF PRODUCT
Fire fighting

UN NUMBER	NONE ALLOCATED
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED
PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Straw coloured liquid; sweet odour

Boiling point	ca 100 C
Vapour pressure	ca 16.9 mmHg Calc @ 20C
Vapour density	ca 0.92 (Air=1) Calc @ 20C
Evaporation rate	< 1 (BuOAc 1)
Solubility in Water	Miscible
Specific gravity	ca 1.04 (Water=1)
Volatile organic compounds	ca 333 g/L Calc @ 20C
pH	ca 0.5
Viscosity	Not determined
Melting point	Not determined
Flash point	None (Setaflash CC)
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not determined

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	50 - 60
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	30 - 40
FLUOROALKYL SURFACTANTS	---	1 - 7
SYNTHETIC DETERGENTS	---	1 - 6
RESIDUAL ORGANIC FLUOROCHEMICALS	---	Not determined

4 HEALTH HAZARDS

Effects from Eye Contact
Severe eye irritation: signs/symptoms can include redness, swelling, pain, tearing, cloudy appearance of the cornea, impaired vision and possible permanently impaired vision.

Effects from Skin Contact
May cause mild skin irritation (more likely after prolonged or repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation
Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, lack of coordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Irritation to upper respiratory tract: Signs/symptoms can include sore nose and throat, coughing and sneezing.

Effects from Ingestion
Animal studies conducted on organic fluorochemicals which are present in this product indicate effects including liver disturbances, weight loss, loss of appetite, lethargy, and neurological, pancreatic, adrenal and hematologic effects. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed. Ingestion may cause: Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

Other Toxicological Information
This product contains one or more organic fluorochemicals that have the potential to be absorbed and remain in the body for long periods of time, either as the parent molecule or as metabolites, and may accumulate with repeated exposures. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed. The presence of organic fluorochemicals in the blood of the general population and subpopulations, such as workers, has been published dating back to the 1970's. 3M's epidemiological study of its own workers indicates no adverse effects.

A 3M Product Toxicity Summary Sheet is available.

A maximum average primary eye irritation score of 41.7 of a possible 110.0 assigned at the 1 hour evaluation. The test material is considered severely irritating to the eyes under the conditions of this study.

See the Product Toxicity Summary Sheet for further detail.

5 FIRST AID

EYE CONTACT
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SKIN CONTACT
Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, seek medical attention.

SWALLOWED
If swallowed, call a doctor or Poisons Information Centre immediately. Only induce vomiting at the instruction of a doctor. Never give anything by mouth to an unconscious person.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Not applicable.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable.

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place residue in a closed container. For information on the 3M range of Sorbent materials, call 3M OH&ES on Freecall 1800 024-464.

Methods for Disposal
Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HF.

8 HANDLING AND STORAGE

Storage Requirements
Store away from areas where product may come into contact with food or pharmaceuticals. Store at temperatures below 50 degrees C. Store at temperatures above 0 C. Keep container closed when not in use.

Recommended Ventilation
Keep container in well-ventilated area.

Use Instructions
Keep container tightly closed when not in use.

9 EXPOSURE CONTROLS/PROTECTION

Eye Protection
Avoid eye contact with vapour, spray, or mist. During operations in which eye exposure is likely, the following should be worn alone, or in combination, as appropriate: wear vented goggles. Eye protection should comply with AS/NZS1337.

Hand Protection
During operations in which hand exposure is likely, wear appropriate gloves. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection
Avoid skin contact.

Respiratory Protection
Avoid breathing of airborne material. During operations in which inhalation exposure is likely, respiratory protection should be used. Select and use respirators in accordance with AS/NZS1715. When required, use one of the following:
Half facepiece respirator with organic vapour (Type G1) and particle (Type P) filters. For information about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. As a precaution against accidental ingestion, wash hands after handling and before eating.

Recommended Ventilation
If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapour concentrations below recommended exposure limits and/or control spray or mist.

10 EXPOSURE STANDARDS

RESIDUAL ORGANIC FLUOROCHEMICALS (---)
Exposure Standards: TWA 0.1mg/m3 3M recommended guideline

11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY
Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID
None known.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide, Hydrogen Fluoride.
Toxic Vapours, Gases or Particulates. Thermal decomposition during normal use with the diluted solution does not present a hazard.

12 ECOTOXICITY

Persistence/Biodegradability
This product contains one or more organic fluorochemicals that have the potential to resist degradation and persist in the environment.

ENVIRONMENTAL DATA
Not determined

Other Ecotoxicity Information
Not determined.

13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal
Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Combustion products will include HF. Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Incinerate large quantities in an industrial or commercial incinerator. Contact your local waste authority to determine suitable disposal methods.

14 REGULATORY INFORMATION

Product Certifications
AICS - Yes

Special Regulatory Information
Xi (Irritant)

R Code: 36
S Codes: 26-28A-62

15 OTHER INFORMATION

REASON FOR REISSUE
Precautionary statements added.
7/10/98 Ingredient and statement changes.

3M AUSTRALIA PTY LIMITED
2-74 Dunheved Circuit ST MARYS NSW 2760
Phone: (02) 9833-5179 (Toxicology Department)
Fax: (02) 9833-5170
EMERGENCY PHONE: (02) 9833-5333 (available 24 hours)

MATERIAL SAFETY DATA SHEET

Document ID	: 10-4367-8	Issue date	: 03/03/2000
Version	: 3.00	Supersedes date	: 12/10/1999
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

1 IDENTIFICATION

NOTE: Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
FC-3002 LIGHT WATER BRAND AQUEOUS FILM FORMING FOAM

3M Product ID
FJ-9000-3002-1 0286864 0296624

DIVISION
SPECIALTY CHEMICALS DIVISION

INTENDED USE OF PRODUCT
Fire fighting

UN NUMBER	Not applicable.
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED
PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Straw coloured liquid; sweet odour

39c

Boiling point	ca 100 C
Vapour pressure	ca 16.9 mmHg Calc @ 20C
Vapour density	ca 0.92 (Air=1) Calc @ 20C
Evaporation rate	< 1 (BuOAc=1)
Solubility in Water	Miscible
Specific gravity	ca 1.04 (Water=1)
Volatile organic compounds	ca 333 g/L Calc @ 20C
pH	ca 8.5
Viscosity	Not determined
Melting point	Not determined
Flash point	None (Setaflash CC)
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not determined

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	50 - 60
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	30 - 40
FLUOROALKYL SURFACTANTS	---	1 - 7
SYNTHETIC DETERGENTS	---	1 - 6
RESIDUAL ORGANIC FLUOROCHEMICALS	---	Not determined

4 HEALTH HAZARDS

Effects from Eye Contact

Severe eye irritation: signs/symptoms can include redness, swelling, pain, tearing, cloudy appearance of the cornea, impaired

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vision and possible permanently impaired vision.

Effects from Skin Contact
May cause mild skin irritation (more likely after prolonged or repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation
Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, lack of coordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Irritation to upper respiratory tract: Signs/symptoms can include sore nose and throat, coughing and sneezing.

Effects from Ingestion
Animal studies conducted on organic fluorochemicals which are present in this product indicate effects including liver disturbances, weight loss, loss of appetite, lethargy, and neurological, pancreatic, adrenal and hematologic effects. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed. Ingestion may cause: Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

Other Toxicological Information
This product contains one or more organic fluorochemicals that have the potential to be absorbed and remain in the body for long periods of time, either as the parent molecule or as metabolites, and may accumulate with repeated exposures. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used, as intended and instructed. The presence of organic fluorochemicals in the blood of the general population and subpopulations, such as workers, has been published dating back to the 1970's. 3M's epidemiological study of its own workers indicates no adverse effects.

A 3M Product Toxicity Summary Sheet is available.

A maximum average primary eye irritation score of 41.7 of a possible 110.0 assigned at the 1 hour evaluation. The test material is considered severely irritating to the eyes under the conditions of this study.
See the Product Toxicity Summary Sheet for further detail.

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5 FIRST AID

EYE CONTACT
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SKIN CONTACT
Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, seek medical attention.

SWALLOWED
If swallowed, call a doctor or Poisons Information Centre immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Not applicable.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable.

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place

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residue in a closed container. For information on the 3M range of sorbent materials, call 3M OH&ES on Freecall 1800 024-464.

Methods for Disposal
Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HF.

8 HANDLING AND STORAGE

Storage Requirements
Store away from areas where product may come into contact with food or pharmaceuticals. Store at temperatures below 48 degrees C. Store at temperatures above 2 C. Keep container closed when not in use.

Recommended Ventilation
Keep container in well-ventilated area.

Use Instructions
Keep container tightly closed when not in use.

9 EXPOSURE CONTROLS/PROTECTION

Eye Protection
Avoid eye contact with vapour, spray, or mist. The following should be worn alone or in combination, as appropriate, to prevent eye contact during operations in which exposure is likely: Vented goggles.
Eye protection should comply with AS/NZS1337.

Hand Protection
Wear appropriate gloves when handling this material. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection
Avoid skin contact.

Respiratory Protection
Avoid breathing of airborne material. Select and use respirators in accordance with AS/NZS 1715. When required, use one of the

3 9/0

following
Half facepiece respirator with organic vapour and formaldehyde (Type A) and particle (Type P) filters. For information about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Wash hands after handling and before eating.

Recommended Ventilation
If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapour concentrations below recommended exposure limits and/or control spray or mist.

10 EXPOSURE STANDARDS

RESIDUAL ORGANIC FLUOROCHEMICALS (---)
Exposure Standards: TWA 0.1mg/m3 3M recommended guideline

11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY
Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID
None known.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide. Hydrogen Fluoride. Toxic Vapours, Gases or Particulates. Thermal decomposition during normal use with the diluted solution does not present a hazard.

12 ECOTOXICITY

Persistence/Biodegradability
This product contains one or more organic fluorochemicals that have the potential to resist degradation and persist in the environment.

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ENVIRONMENTAL DATA
Not determined

Other Ecotoxicity Information
Not determined.

13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal
Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Combustion products will include HF. Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Incinerate large quantities in an industrial or commercial incinerator. Contact your local waste authority to determine suitable disposal methods.

14 REGULATORY INFORMATION

Product Certifications
AICS - Yes

Special Regulatory Information
Xi (Irritant)

I Code: 36
S Codes: 26-28A-62

15 OTHER INFORMATION

REASON FOR REISSUE
Precautionary statements added.
7/10/98 Ingredient and statement changes.
30/9/99 Product Toxicity Study information added to Health Hazards section.
29/2/00 Statement change in Health Hazards Section.

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product,or otherwise than in accordance with instructions of use on product packaging is

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the responsibility of the user.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Snr Regulatory Services Officer on (02) 9677-5179.

3% AFFF

FOI 297/16/17
Item 1
Serial 5

3M AUSTRALIA PTY LIMITED
2-74 Dunheved Circuit ST MARYS NSW 2760
Phone: 136-136
Fax: (02) 9677-5170
EMERGENCY PHONE: (02) 9677-5333 (available 24 hours)

MATERIAL SAFETY DATA SHEET

Document ID	: 10-4367-0	Issue date	: 12/04/2001
Version	: 3.01	Supersedes date	: 03/03/2000
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

1 IDENTIFICATION

NOTE: Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
3M FC-3002 LIGHT WATER(TM)AFFF FIRE FIGHTING FOAM 3% CONCENTRATE

3M Product ID
AJ-9000-3002-1 0286064 0296624

DIVISION
SPECIALTY CHEMICALS DIVISION

INTENDED USE OF PRODUCT
Fire fighting

UN NUMBER	NONE ALLOCATED
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED
PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Straw coloured liquid; sweet odour

Boiling point	ca 100 C
Vapour pressure	ca 16.9 mmHg Calc @ 20C
Vapour density	ca 0.92 (Air=1) Calc @ 20C
Evaporation rate	< 1 (BuOAc 1)
Solubility in Water	Miscible
Specific gravity	ca 1.04 (Water=1)
Volatile organic compounds	ca 333 g/L Calc @ 20C
pH	ca 0.5
Viscosity	Not determined
Melting point	Not determined
Flash point	None (Setaflash CC)
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not determined

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	50 - 60
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	30 - 40
FLUOROALKYL SURFACTANTS	---	1 - 7
SYNTHETIC DETERGENTS	---	1 - 6
RESIDUAL ORGANIC FLUOROCHEMICALS	---	Not determined

4 HEALTH HAZARDS

Effects from Eye Contact
Severe eye irritation: signs/symptoms can include redness, swelling, pain, tearing, cloudy appearance of the cornea, impaired vision and possible permanently impaired vision.

Effects from Skin Contact
May cause mild skin irritation (more likely after prolonged or repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation
Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, lack of coordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Irritation to upper respiratory tract: Signs/symptoms can include sore nose and throat, coughing and sneezing.

Effects from Ingestion
Animal studies conducted on organic fluorochemicals which are present in this product indicate effects including liver disturbances, weight loss, loss of appetite, lethargy, and neurological, pancreatic, adrenal and hematologic effects. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed. Ingestion may cause: Aspiration Pneumonitis: signs/symptoms can include coughing, difficulty breathing, wheezing, coughing up blood and pneumonia, which can be fatal.

Other Toxicological Information
This product contains one or more organic fluorochemicals that have the potential to be absorbed and remain in the body for long periods of time, either as the parent molecule or as metabolites, and may accumulate with repeated exposures. There are no known human health effects from anticipated exposure to these organic fluorochemicals when used as intended and instructed. The presence of organic fluorochemicals in the blood of the general population and subpopulations, such as workers, has been published dating back to the 1970's. 3M's epidemiological study of its own workers indicates no adverse effects.

A 3M Product Toxicity Summary Sheet is available.

A maximum average primary eye irritation score of 41.7 of a possible 110.0 assigned at the 1 hour evaluation. The test material is considered severely irritating to the eyes under the conditions of this study.

See the Product Toxicity Summary Sheet for further detail.

5 FIRST AID

EYE CONTACT
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SKIN CONTACT
Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, seek medical attention.

SWALLOWED
If swallowed, call a doctor or Poisons Information Centre immediately. Only induce vomiting at the instruction of a doctor. Never give anything by mouth to an unconscious person.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Not applicable.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable.

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place residue in a closed container. For information on the 3M range of Sorbent materials, call 3M OH&ES on Freecall 1800 024-464.

Methods for Disposal
Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HF.

8 HANDLING AND STORAGE

Storage Requirements
Store away from areas where product may come into contact with food or pharmaceuticals. Store at temperatures below 50 degrees C. Store at temperatures above 0 C. Keep container closed when not in use.

Recommended Ventilation
Keep container in well-ventilated area.

Use Instructions
Keep container tightly closed when not in use.

9 EXPOSURE CONTROLS/PROTECTION

Eye Protection
Avoid eye contact with vapour, spray, or mist. During operations in which eye exposure is likely, the following should be worn alone, or in combination, as appropriate: wear vented goggles. Eye protection should comply with AS/NZS1337.

Hand Protection
During operations in which hand exposure is likely, wear appropriate gloves. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection
Avoid skin contact.

Respiratory Protection
Avoid breathing of airborne material. During operations in which inhalation exposure is likely, respiratory protection should be used. Select and use respirators in accordance with AS/NZS1715. When required, use one of the following:
Half facepiece respirator with organic vapour (Type G1) and particle (Type P) filters. For information about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. As a precaution against accidental ingestion, wash hands after handling and before eating.

Recommended Ventilation
If exhaust ventilation is not adequate, use appropriate respiratory protection. Provide ventilation adequate to control vapour concentrations below recommended exposure limits and/or control spray or mist.

10 EXPOSURE STANDARDS

RESIDUAL ORGANIC FLUOROCHEMICALS (---)
Exposure Standards: TWA 0.1mg/m3 3M recommended guideline

11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY
Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID
None known.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide, Hydrogen Fluoride.
Toxic Vapours, Gases or Particulates. Thermal decomposition during normal use with the diluted solution does not present a hazard.

12 ECOTOXICITY

Persistence/Biodegradability
This product contains one or more organic fluorochemicals that have the potential to resist degradation and persist in the environment.

ENVIRONMENTAL DATA
Not determined

Other Ecotoxicity Information
Not determined.

13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal
Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Combustion products will include HF. Slowly discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Incinerate large quantities in an industrial or commercial incinerator. Contact your local waste authority to determine suitable disposal methods.

14 REGULATORY INFORMATION

Product Certifications
AICS - Yes

Special Regulatory Information
Xi (Irritant)

R Code: 36
S Codes: 26-28A-62

15 OTHER INFORMATION

REASON FOR REISSUE
Precautionary statements added.
7/10/98 Ingredient and statement changes.

3812 5296

FC-3003 LIGHT WATER Brand Aqueous Film Forming Foam

3M Australia Pty Limited
2-74 Dunheved Circuit
ST MARYS NSW 2760
Phone: (02) 833-5405 (Toxicology Dept)
Fax: (02) 833-5170
Emergency Phone: (02) 833-5333 (Available 24 hrs)

MATERIAL SAFETY DATA SHEET

MSDS Document No.: 10-4031-1
Issue Date: 15th February, 1996
Supersedes: March 11, 1992

Classified as Non hazardous according to the criteria of Worksafe Australia.

I IDENTIFICATION

Product Name: FC-3003 LIGHT WATER Brand Aqueous Film Forming Foam
Division: Industrial Chemical Products Division
3M ID Number:
Intended Use: Fire fighting

II TRANSPORTATION

UN NUMBER: Not applicable

CORRECT SHIPPING NAME: Not applicable

HAZCHEM CODE: Not applicable

DANGEROUS GOODS CLASS: Not applicable

SUBSIDIARY RISK: Not applicable

PACKAGING GROUP: Not applicable

POISONS SCHEDULE: Not applicable

III COMPOSITION

Ingredient Name	CAS Number	Percentage
Water	7732-18-5	80.0
Butyl Carbitol (Diethylene Glycol Monobutyl Ether)	112-34-5	15.0
Fluoroalkyl Surfactants +(5612P,5613P)	TradeSecret	<5.0
Synthetic Detergents +(5611P)	TradeSecret	<5.0

Trade Name: FC-3003 LIGHT WATER Brand Aqueous Film Forming Foam

IV HAZARDS

May cause eye irritation.

V FIRST AID

EYE CONTACT: Immediately flush eyes with large amounts of water for at least fifteen (15) minutes. Get medical attention.

SKIN CONTACT: Immediately wash affected area with soap and water.

INHALATION: Remove person to fresh air. Call a doctor.

IF SWALLOWED: If swallowed, do not induce vomiting. Drink copious amounts of water. Immediately call a doctor or Poisons Information Centre.

FIRST AID FACILITIES: Eye and hand washing facilities should be available.

VI FIRE AND EXPLOSION

EXTINGUISHING MEDIA:

FC-3003 is a fire extinguishing agent.

FIRE FIGHTING PROCEDURES:
None known.

UNUSUAL FIRE & EXPLOSION HAZARDS:
Toxic by-products, including small amounts of HF, may be formed.

HAZARDOUS POLYMERIZATION:
Will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:
Thermal decomposition may produce toxic materials including HF. Decomposition of usage concentrations does not present a hazard.

VII ACCIDENTAL RELEASE MEASURES (SPILL)

Observe precautions from other sections. Cover with absorbent material. Collect spilled material. Clean up residue with water.

Trade Name: FC-3003 LIGHT WATER Brand Aqueous Film Forming Foam

VIII HANDLING AND STORAGE

Do not store containers on their sides. Store at room temperature. Keep containers closed when not in use.

IX EXPOSURE CONTROLS/PROTECTION

EYE PROTECTION:

Avoid eye contact with vapour, spray or mist. To prevent eye contact, wear vented goggles.

SKIN PROTECTION:

Wear a pair of butyl rubber gloves when handling this material.

RECOMMENDED VENTILATION:

Provide sufficient ventilation to maintain emissions below recommended exposure limits. If exhaust ventilation is not available, use appropriate respiratory protection.

RESPIRATORY PROTECTION:

Avoid breathing of vapours, mists or spray.

PREVENTION OF ACCIDENTAL INGESTION:

Wash exposed areas thoroughly with soap and water after handling. Do not eat or smoke while using this material.

EXPOSURE LIMITS

Ingredient	Value	Unit	Type	Auth.
Water	NONE	NONE	NONE	NONE
Butyl Carbitol (Dicthylene glycol monobutyl ether)	35	PPM	TWA	CMRG
Fluoroalkyl Surfactants +(5612P, 5613P)	NONE	NONE	NONE	NONE
Synthetic Detergents +(5611P)	NONE	NONE	NONE	NONE

SOURCE OF EXPOSURE LIMIT DATA:

- CMRG Chemical Manufacturer Recommended Exposure Guidelines
- NONE None Established

X PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Clear, amber coloured liquid
Boiling Point	100 deg.C (initial)
Vapour Pressure	ca. 30.4mmHg Calc.@R.T.
Vapour Density	ca. 0.62 Air=1 Calc.@ R.T.
Evaporation Rate	<1.00 BuOAc=1

Trade Name: FC-3003 LIGHT WATER Brand Aqueous Film Forming Foam

X PHYSICAL/CHEMICAL PROPERTIES (continued)

Solubility in Water	Miscible
Specific Gravity	ca. 1.010 Water=1
Percent Volatile	ca. 97%
Volatile Organic Compounds	Not determined
VOC Less H_20 & Exempt Solvents	Not determined
pH	ca. 8.50
Viscosity	Not determined
Melting Point	Not determined
Flashpoint	None (Setaflash CC)
Flammability Limits	LEL Not applicable UEL Not applicable
Autoignition Temperature	Not determined

XI STABILITY AND REACTIVITY

STABILITY: Stable

INCOMPATIBILITY - MATERIALS/CONDITIONS TO AVOID:
Not applicable.

HAZARDOUS POLYMERISATION:
Hazardous polymerisation will not occur.

XII TOXICITY

Effects from Eye Contact:
Moderate Eye Irritation: signs/symptoms can include redness, swelling, pain, tearing and hazy vision.

Effects from Skin Contact:
Mild Skin Irritation (after prolonged or repeated contact): signs/symptoms can include redness, swelling, and itching.
May be absorbed through the skin and produce effects similar to those caused by inhalation and/or ingestion.

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

Trade Name: FC-3003 LIGHT WATER Brand Aqueous Film Forming Foam

XII TOXICITY (continued)

Effects from Ingestion:

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

Ingestion may cause:

Irritation of Gastrointestinal Tissues: signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus, and blood in faeces.

XIII ECOTOXICITY

Not determined.

XIV DISPOSAL CONSIDERATIONS

Bleed spent solutions and small product quantities, generally <5 gal., to a wastewater treatment system. Disposal alternative: Mix with flammable material and incinerate in an industrial or commercial incinerator. Combustion products will include HF.
Or: Dispose of completely absorbed waste product in a facility permitted to accept chemical wastes.

XV REGULATORY INFORMATION

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet or which involves using the product in combination with any other product or any other process is the responsibility of the user.

Contact point: Regulatory Compliance Chemist (02) 833-5401

FOI 297/16/17
Item 1
Serial 7

Light Water

BRA

3M

A.F.F.F. Concentrate (6% Proportioning) FC 303

Light Water A.F.F.F. is manufactured by 3M Company for use on petroleum products and designed for use at ambient temperatures, note this product is not freeze protected.
Avoid contact with eyes.
Do not mix with other liquids except as noted in the instructions for use.

Detailed instructions are published in the Light Water Engineering Manual

3M Australia Pty. Ltd., Inc. in N.S.W.,
Dunheved Circuit, St. Marys, N.S.W., 2760.
Telephone: (02) 623-0121.
Made in Australia.

Instructions for Use: *Light Water A.F.F.F. is for use by dilution with water in fire fighting foam making equipment. This product is designed to be mixed in the proportions of 6 parts concentrate with 94 parts of fresh, salt or brakish water.*

Date of Manufacture

4.JUN84

0158410

AV-2520-1390-7

20 Litres

FOI 297/16/17
Item 1
Serial 8

3M Product Environmental Data Sheet

Environmental Laboratory
3M Environmental Technology and Services

935 Bush Avenue
PO Box 33331
St. Paul, MN 55133-3331
612/778-6047

SPECIALTY CHEMICALS DIVISION
3M LIGHT WATER BRAND AQUEOUS FILM FORMING FOAM (AFFF)
DISPOSAL RECOMMENDATIONS AND HAZARD EVALUATION

CONCLUSIONS:

Light Water Brand AFFF and ATC wastes are treatable in a wastewater treatment system if disposed of according to 3M recommendations. These products have low toxicity to the microorganisms in wastewater treatment systems even at concentrations much higher than those recommended by 3M. Foaming problems may develop, however, particularly when recommended discharge concentrations are exceeded.

Fluorochemical thermal decomposition products do not present a health hazard during fire fighting nor do they affect the treatability of aqueous fire fighting wastes. The major reasons for this are that during usage, the concentration of fluorochemicals in Light Water AFFF solutions is low and little fluorochemical is burned.

DISPOSAL RECOMMENDATIONS FOR AFFF (AQUEOUS FILM FORMING FOAM) AND ATC (ALCOHOL TYPE CONCENTRATE) WASTES:

3M recommends handling wastes resulting from the use of Light Water AFFF products by pretreatment in an oil/water separator. The oil fraction from the separator should be incinerated in a facility designed to accept such wastes. Disposal of the aqueous fraction from the oil/water separator or the entire waste, when pretreatment by oil/water separation is not possible, requires special considerations. A qualified individual should evaluate these wastes to determine if volatile flammable materials are present at hazardous concentrations and to review the applicability of sewer code restrictions. If volatile flammable materials in the waste present an explosion hazard, it should not be discharged to a sewer. Such wastes should be further treated to remove the hazard or they should be incinerated in a facility designed to accept such wastes.

If qualified individuals determine that the waste meets sewer codes and that flammable materials are not present in the waste at concentrations that presents a risk of explosion in the sewer, the waste may be metered into a sewer that flows to a wastewater treatment system. Meter

such wastes into the sewage system at a rate sufficiently low so that the AFFF will not cause excessive foaming in the aeration basin of the wastewater treatment system. Appropriate discharge rates will be determined by individual circumstances and should follow applicable regulations. Since regulations vary, consult regulations or authorities before discharge. In addition, wastewater treatment plant operators should be contacted to determine the capacity of the treatment system and sewage flow rates into the system so that appropriate AFFF waste discharge rates can be determined.

For most AFFF or ATC products used at 6%, 3M recommends adjusting the discharge rate so that the product concentration in the aeration basin of the wastewater treatment system will be less than 100 mg per liter of sewage. For most products used at 3%, 3M recommends a maximum product concentration of 50 mg/L in the aeration basin. Products used at 3% require greater dilution than products used at 6% because the 3% concentrates have higher surfactant concentrations than the 6% concentrates. Product Environmental Data Sheets for products with higher surfactant concentrations may recommend somewhat greater dilution.

In some situations, metered discharge of wastes to a wastewater treatment system is impractical because the small size of the treatment system limits the discharge rate to such an extent that too much time would be required for disposal. 3M recommends two disposal alternatives in these situations: (1) transporting collected waste materials by tank trucks for metered discharge into a larger waste treatment facility, or (2) discharging the waste at a somewhat higher rate with appropriate concentrations of antifoaming agent added to the waste stream to control foaming.

Experiments conducted in the 3M Environmental Laboratory have determined that several antifoaming products are effective at controlling excessive foaming in activated sluge/AFFF mixtures for up to 3 hours. The effectiveness of antifoaming agents, however, will be determined by the specific conditions in the aeration basin in individual wastewater treatment systems. In addition, some antifoamers may become less effective at controlling excessive foaming as time passes. Therefore, foaming should be closely monitored over time and additional antifoamer should be added to the aeration basin as needed.

While this is not an endorsement, the following nine products were found to be the most effective of thirty-one antifoam products tested using activated sludge/AFFF mixtures in laboratory tests:

GE Silicones 1-800-332-3390	Antifoam Emulsion AF72 Antifoam Emulsion AF93 Antifoam Emulsion AF9020

	Henkel 1-800-922-0605	Defoamer WB-209 FoammasterTM DS
Emulsion	Union Carbide 1-800-523-5862	SAG 2001 Organosilicone
	Wacker Silicones 1-800-248-0063	Antifoam Agent SE-36 Antifoam Agent SWS-214 Antifoam Emulsion SRE

Of these nine products, the most cost-effective were Henkel WB-209, GE Silicones AF9020, Henkel FoammasterTM DS, and Wacker Silicones SRE. The cost analysis used in that study was based on antifoam prices obtained in July, 1992. Price and transport charges may vary which could cause other products to be more cost-effective in some locations.

The antifoam concentration required to limit foaming in laboratory tests on FC-203CF solutions of various concentrations are tabulated below. The products are listed in the table in order of most to least cost-effective. The antifoam concentrations given in the table are intended to serve as estimates since the actual antifoam concentration required to suppress foaming will be determined by the specific conditions in the aeration basin. Where no data are given in the table, the antifoam agent is not recommended for suppressing foam at or above that AFFF concentration.

The antifoam concentrations in the table were obtained in laboratory tests using 3M FC-203CF, but they are the approximate antifoam concentrations required for other 3M AFFF and ATC products used at 3%.

For 3M AFFF products used at 6% in water, the antifoam concentrations should be approximately correct for twice the AFFF concentrations given at the top of each column. This is, the antifoam concentrations would be approximately correct for 6% AFFF concentrates at 200, 600, 1000, 1200, 1400, 1600, 1800, and 2200 mg/L in the aeration basin.

The AFFF and antifoam concentrations given in the preceding paragraph and in the table below are for foam control only. Other factors must be considered in selecting rates of discharge to a sewer. 3M recommends a case-by-case determination of the maximum concentrations of AFFF and antifoam to be discharged to a treatment system and subsequently to an aquatic environment. The maximum concentration will depend on a variety of factors, including the conditions in the individual wastewater treatment system and in the receiving watercourse, as well as the dilution factor of the treated wastewater in the receiving watercourse. These factors should be evaluated in each situation to ensure that neither the AFFF nor the antifoam will cause harm. Product Environmental Data Sheets on the particular 3M AFFF product(s) will help in this evaluation.

Determination of the approximate antifoam concentration from the table is best explained by an example. Suppose that AFFF usage waste is to be discharged at a rate that will result in a concentration of FC-203CF of 700 mg/L in the aeration basin of a wastewater treatment system. The approximate antifoam concentrations needed to control foaming at this AFFF concentration are listed in the "700" column of the table. The numbers in this column are the approximate concentrations of antifoam products needed to control foaming caused by FC-203CF at 700 mg/L. Each row gives the approximate antifoam concentration for the product listed on the left side of the table. If you intend to use Henkel FoammasterTM DS for foam control, read down the column under the heading "700" until you reach the row for Henkel FoammasterTM DS. The number in the table is "430" which means that Henkel FoammasterTM DS should be added to the aeration basin at approximately 430 mg/L to control foaming caused by FC-203CF at 700 mg/L. Another possible antifoamer for controlling foaming by FC-203CF at 700 mg/L is Wacker Silicones SE-36. Reading from the table under the "700" column at the Wacker Silicones SE-36 row gives "580" which means that to control foaming of FC-203CF at 700 mg/L with Wacker Silicones SE-36, you will need to add Wacker Silicones SE-36 so that its concentration is approximately 580 mg/L. As you can see from the table, Henkel WB-209, Wacker Silicones SWS-214, and Union Carbide SAG 2001 are not recommended for controlling foaming from an FC-203CF concentration of 700 mg/L. The absence of a value for these products in the "700" column indicates these three products are not recommended for controlling foam at an FC-203CF concentration of 700 mg/L.

		FC-203CF Concentration (mg/L)*						
		100	300	500	600	700	800	900 1100
---	Henkel --- WB-209	20	100	190	---	---	---	
740	GE Silicones 1950 AF9020	20	100	190	270	430	500	
690	Henkel 1600 FoammasterTM DS	20	110	200	300	430	500	
---	Wacker Silicones --- SRE	20	100	190	270	400	490	
---	Wacker Silicones --- SWS-214	40	170	430	---	---	---	
530	GE Silcones 1600	20	100	190	270	430	480	

	AF93						
	GE Silicones	20	100	190	270	430	480
600	1800						
	AF72						
	Wacker Silicones	30	140	310	470	580	---
---	---						
	SE-36						
	Union Carbide	50	220	600	---	---	---
---	---						
	SAG 2001						

* See text for precautions and for extrapolating these data to other 3M AFFF products.

In situations where antifoam agents are used to control excessive foaming by 3M products used at 6% in water, 3M recommends adjusting the discharge rate so that the product concentration in the aeration basin of the wastewater treatment system will be less than 1,000 mg/L of sewage. When antifoam agents are used to control foaming by 3M products used at 3%, 3M recommends a maximum AFFF concentration of 500 mg/L in the aeration basin. These maximum concentrations are based on laboratory studies that have shown that 3M AFFF products at or below these concentrations are unlikely to cause toxicity in wastewater treatment systems. The AFFF and antifoam concentrations in the table that are greater than these maximum recommended concentrations are provided to assist customers in dealing with emergency foaming situations or where elevated concentrations are appropriate because of individual circumstances. In all cases, applicable local regulations and the antifoam Material Safety Data Sheet (MSDS) should be consulted before use.

At 3M's own wastewater treatment facilities, foaming caused by Light Water AFFF discharges has been controlled by spraying a dilution of Wacker Silicones Antifoam Emulsion SWS-214 over the aeration basin.

This dilution is prepared by mixing one part of SWS-214 in twenty parts of water. The antifoam dilution is sprayed over the aeration basin surface until the desired level of foam control is obtained. This procedure could be used as an alternative to adding the antifoam directly to the AFFF containing waste stream.

REASONS FOR 3M DISPOSAL RECOMMENDATIONS:

The primary reason for recommending discharge to a sewer is that 3M AFFF wastes are treatable in a biological wastewater treatment system. Light Water AFFF usage wastes are approximately 99% water and therefore have very low concentrations of organic compounds. The dilute nature of the waste makes alternative disposal methods, such as incineration, carbon adsorption, ultrafiltration, or reverse

osmosis, both difficult and costly. Moreover, the major components of 3M AFFF usage wastes are a biodegradable solvent, Butyl CarbitolTM (<1%), and a mixture of biodegradable and partially biodegradable surfactants (<0.3%).

Chemicals are generally considered biodegradable when the ratio of their 20-day Biochemical Oxygen Demand (BOD20) to their Chemical Oxygen Demand (COD) is greater than 0.6. This is the pass level for respirometric ready-biodegradability tests established by the Organization for Economic Cooperation and Development (OECD). The BOD20/COD for Butyl Carbitol was found to be 0.85. There are several biodegradable surfactants in these products and their BOD20/COD ratios were found to lie between 0.74 and 0.94. There are also surfactants in these products with BOD20/COD ratios less than 0.6. This includes the fluorochemical surfactants and some of the hydrocarbon surfactants. The hydrocarbon surfactants that do not meet this BOD20/COD criteria will likely fully biodegrade given more time. Some fluorochemical surfactants may have both hydrocarbon and fluorochemical portions. The fluorochemical portions of these surfactants are not known to biodegrade, but the hydrocarbon portions are likely to be biodegraded to some degree in most wastewater treatment systems and, like the fully hydrocarbon surfactants, eventually completely biodegrade. Possible fates of the nondegradable materials in wastewater treatment systems include sorption onto the microbial solids or passage out of the system with the treated wastewater. In any event, their concentration will be very low. Nonbiodegradable fluorochemical materials are used in AFFF products because they are required to make the products work. All effective AFFF products on the market today (and all fluoroprotein products as well) contain fluorochemical surfactants. Finally, laboratory tests on both the individual product components and the product concentrates have determined the low toxicity of these materials to activated sludge bacteria, so discharge to ordinary wastewater treatment systems is reasonable.

Laboratory studies have shown that foaming, not toxicity, is usually the cause of problems from improper disposal of AFFF wastes to wastewater treatment systems. In laboratory studies, wastewater containing FC-600 Light Water AFFF at 1,000 mg/L was treated successfully without toxicity. In that lab study, the foam was physically broken down and returned to the treatment system along with activated sludge solids that came out because of foaming. With these modifications to the normal treatment process, the quality of the treated effluent from the laboratory scale system was not adversely affected. Treatment at this concentration is not recommended, however, because of excessive foaming.

Light Water AFFF wastes resulting from testing the operability of a fire fighting system, such as that installed in a hanger facility, normally don't contain much fuel or oil. On the other hand, wastes from fire fighting training facilities where hydrocarbon fires are extinguished

may contain suspended oil. If oil is present, it should be separated from the waste before discharging the waste to a sewer as described above. If oil is emulsified in the waste, it may be difficult to separate but many oils can biodegrade. Furthermore, emulsified oils are more likely to biodegrade in a wastewater treatment system than are nonemulsified oils.

3M recommends metered discharge of Light Water AFFF wastes to flowing sewers because discharge to an intermittently flowing sewer could cause waste to collect and to be flushed to aeration basins at higher than recommended concentrations. Uncontrolled sewer discharge rates also could result in foam backing out of sewer drains.

THERMAL DECOMPOSITION FROM LIGHT WATER AFFF USAGE:

Thermal decomposition products resulting from Light Water AFFF usage present an insignificant hazard. Considerable confusion was caused by a precautionary statement formerly used on Light Water AFFF Material Safety Data Sheets (MSDSs). That statement was frequently misinterpreted as meaning that thermal decomposition products from usage concentration levels could cause a health hazard. The precaution once simply stated: "Thermal decomposition may produce toxic materials, including HF." This statement has now been modified to include: "Decomposition of usage concentrations does not present a hazard."

The former MSDS precaution for Light Water AFFF products is still used on the MSDSs for other 3M products containing fluorochemicals. The statement is used because it is well known that most fluorochemical materials, including such commonly used items as polytetrafluoroethylene (PTFE) coated frying pans, utensils, etc., can liberate toxic fumes including HF or perfluorobutylenes under combustion or pyrolysis conditions. However, this will occur only if very high temperature conditions exist (>300C).

Furthermore, formation of hazardous concentrations of thermal by-products is more likely in fluorocarbon containing products with high fluorine content (65 or 70%), but the fluorochemical content of 3M AFFF products is very low. For example, FC-206CF Light Water AFFF concentrate contains only about 1.1% fluorine, and when diluted to the usage concentration, it contains only about 0.06% fluorine. Thus, from a combustion or pyrolysis product hazard perspective, PTFE, which is widely known as a nontoxic, inert material, would be far more hazardous.

There are other reasons that make the production of hazardous concentrations of thermal degradation products during fire fighting with Light Water AFFF very unlikely. Most importantly, little of the fluorochemical would burn or thermally decompose. The reasons for this are that the product rapidly covers and extinguishes the fire, and the high percentage of water absorbs considerable heat, thereby cooling and limiting the decomposition of the dissolved

fluorochemical.

The 3M Industrial Hygiene Department conducted a test to confirm the lack of hazard from fluorochemical combustion when Light Water AFFF is used in fire fighting. The test was designed to simulate a "worst case" situation by maximizing the chance of fluorochemical combustion. The test burned a 2-3 inch layer of FC-203CE Light Water AFFF foam in a 10 square foot pan of gasoline inside a 20 by 20 foot wide and 15 foot high open topped concrete building. To cause the fluorochemical in the Light Water AFFF product to burn, the test operator had to stir vigorously the foam and gasoline, an atypical procedure. Stirring broke the foam barrier and allowed combustion that would normally have been extinguished by the foam. Even under this worst case situation, two HF measurements taken above and near this fire were only 0.23 and 0.16 parts per million (ppm). While not directly applicable to this situation, these measurements were below the Threshold Limit Value for HF of 3 ppm, a concentration judged not to present a health hazard for nearly all persons.

Thus, fluorochemical decomposition products from Light Water AFFF present an insignificant risk when compared to the many other hazardous decomposition products resulting from a fire. Light Water AFFF products certainly play a much more significant role in reducing the toxicity hazards of fire situations by rapidly cooling and extinguishing a fire and by covering and preventing the volatilization of other potentially toxic materials.

Date Issued: 19/02/93

Relates to Internal 3M MSDS AL-LAFF-F

Form 14705 - H - PWO

Technical Reference Guide

Light Water™ AFFF and AFFF/ATC™ Agents

Table of Contents

I. Introduction

A. Light Water™ AFFF Concentrates

Light Water™ Aqueous Film Forming Foam Concentrates are synthetic, foaming liquids designed for use with fresh, sea or brackish water. When mixed as recommended with water, Light Water™ AFFF Concentrates are excellent in control and extinguishment of hydrocarbon fuel fires.

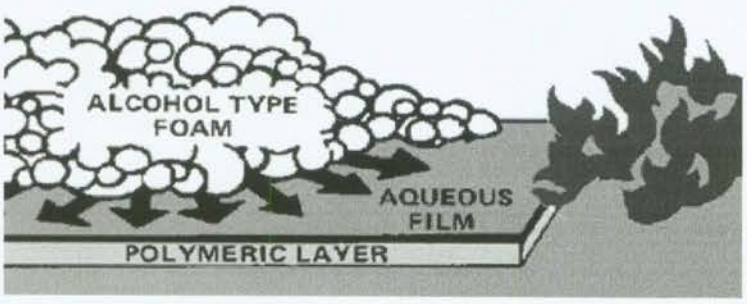
B. Light Water™ ATC™ Concentrates

Light Water™ ATC™ and ATC Plus™ AFFF are synthetic multipurpose foam-forming liquids designed for protection of water soluble solvents and water insoluble hydrocarbon flammable liquids. The effectiveness of Light Water™ ATC™ foam on a wide range of flammable liquids and ordinary combustibles eliminates the need to stock a variety of firefighting agents.

Light Water™ ATC™ is listed by U.L. as an AFFF at 3% concentration on hydrocarbons and at 6% concentration on polar solvents. Light Water™ ATC Plus™ AFFF is freeze protected to a 0° F(–18 °C) minimum use temperature.

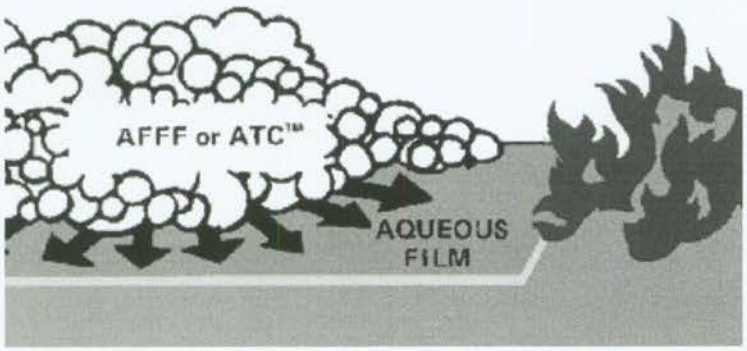
As an alcohol resistant foam on water soluble polar solvents, a cohesive polymeric layer is formed on the fuel surface. This thin layer protects the foam and its aqueous film from breakdown by polar solvents. If the protective layer should become disrupted by agitation, more of the polymeric layer is produced by means of a regenerative action known as self-healing. This unique action enables the foam to extinguish and secure effectively; thus providing burnback protection far greater than conventional non-AFFF agents.

POLAR SOLVENT FLAMMABLE LIQUID (WATER SOLUBLE)



As an AFFF on non-polar, water insoluble flammable liquids (hydrocarbons), an aqueous film drains from the foam and floats over the fuel surface. If wind or other mechanical forces disrupt the foam and film, the film regenerates from the foam. This action, unique to AFFF agents, provides an effective vapour seal which rapidly extinguishes and prevents reignition.

HYDROCARBON FLAMMABLE LIQUID (WATER INSOLUBLE)



C. Light Water™ AFFF Systems

System designs are available for optimum effectiveness of Lightwater™ AFFF and ATC™ agents. These system designs are based on listings and approvals by the recognized fire protection laboratories and the recommendations of applicable NFPA codes. Since each fire protection problem can involve unique considerations, please contact a representative from 3M, the Viking Corporation, Arrow Tank & Engineering, or Williams Fire & Hazard Control for assistance in design, equipment procurement and system installation.

II. Performance

A. General

This section identifies the advantages of using Light Water™ Agents and performance data that demonstrate their effectiveness on a broad range of flammable liquid hazards, as well as Class A type fires.

B. Advantages of Light Water™ Agents

1. Light Water™ Agents are more effective at controlling and extinguishing a flammable liquid fire than protein or fluoroprotein foams.

2. Light Water™ Agents can extinguish and protect fuels from reignition at an efficiency level as high as 40 sq. ft. of burning fuel per gallon of solution (0.025 gal./sq. ft. or 1.0 litres/sq. m.).

3. Light Water™ Foam is useful for securing non-burning surfaces of hydrocarbon fuel or polar solvent spills against ignition.

4. Storage tank protection systems can be used to suppress fuel tank fires (with resultant cooling of hot metal) and to seal against the tank shell area without great depths of foam. Utility has been demonstrated in subsurface application on storage tanks as well as conventional topside foam application systems. Light Water™ Agents are listed by UL for tank protection.

5. In addition to their use in aspirating foam equipment, Light Water™ Agents can be dispensed effectively through non-aspirating equipment including fog nozzles, water spray

devices and automatic sprinklers. Light Water™ AFFF systems using standard, non-aspirating sprinklers are listed by UL and approved by Factory Mutual.

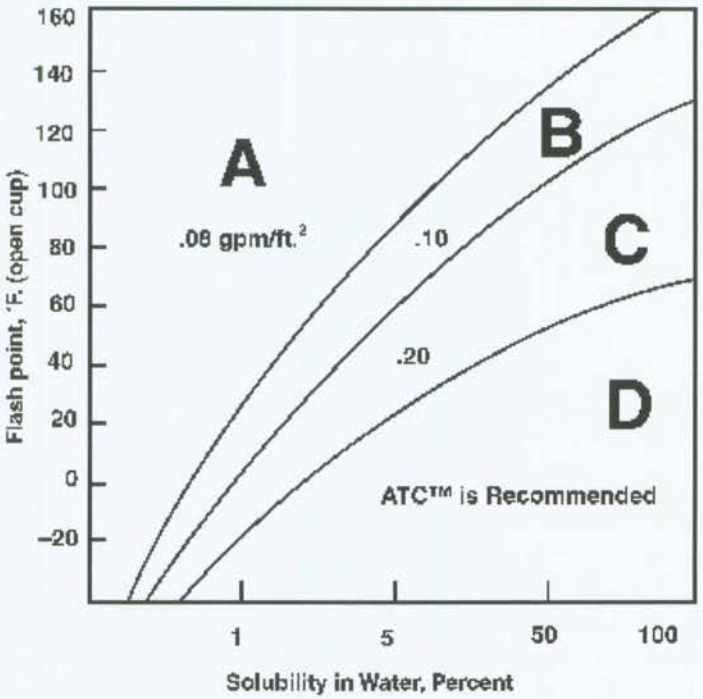
6. Light Water™ Agents can limit 3-dimensional spill fire spread to the area of the 3-D spill. This allows the use of supplemental agents, such as dry chemicals, for extinguishment.

7. Light Water™ Agents may be applied to fires simultaneously with dry chemical firefighting agents because the agents are mutually effective and compatible. Compatibility with other aqueous foamed agents is satisfactory when applied in separate foam streams.

8. Light Water™ Agents possess excellent Class A fire suppressing abilities. They can effectively extinguish deep seated fires in wood, paper, cotton and other ordinary combustibles. Additionally, they are very effective on the combination Class A and Class B fires resulting from burning rubber, plastic and other polymeric materials.

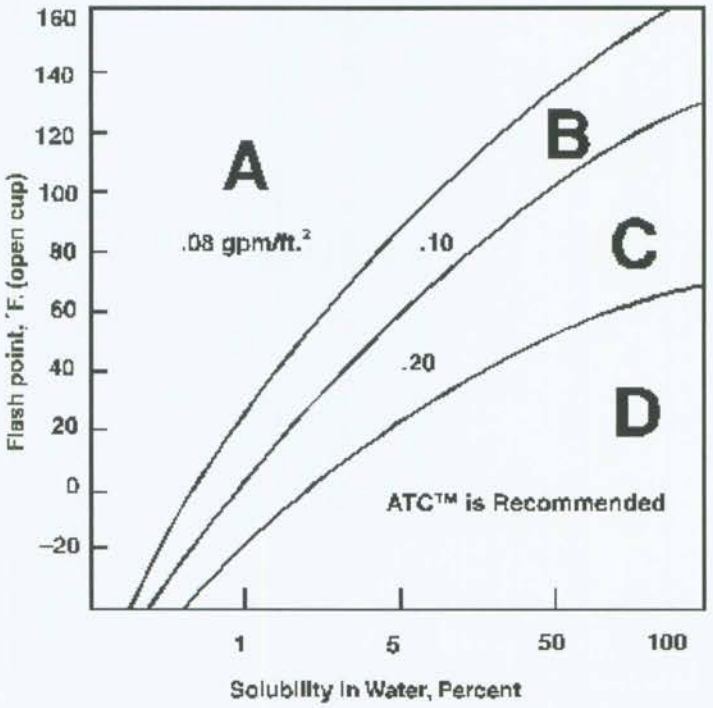
9. Light Water™ Agents are the most cost-effective agents for the protection of flammable liquid hazards since they exhibit excellent fire extinguishment, reflash securing and long shelf life. Their economy of use is reflected in a number of fire codes that allow lower rates of application as compared with ordinary foams or plain water.

C. Performance Guidelines Light Water™ AFFF on Solvent Spill Fires (Handline Application)



Light Water™ AFFF is effective at extinguishing many common flammable solvent fires. Performance guidelines for various solvent types are given in the table below.

Where solvent fires in depth are concerned, it is advisable to consider Light Water™ ATC™ foam.



Actual Fire Data Relating to Performance Guidelines Graph

	Liquid	gpm/ft²			
A	Gasoline	0.04	50	60	50
	VMP Naphtha	0.07	28	33	28
	Hexane	0.07	28	50	28
	Heptane	0.07	20	37	28
	Toluene	0.04	30	40	50
	n-Butanol	0.07	30	55	28
	Butyl Acetate	0.07	20	90	28
	MIBK	0.07	20	210	28
	Methyl Methacrylate	0.08	15	20	50
	Acetic Acid	0.07	40	45	28
	Ethanol/Hexane: 25/75	0.07	55	60	28
B	Benzene	0.14	25	45	28
	DMF	0.12	35	40	50
	Isobutyl Alcohol	0.12	60	75	50
	Morpholine	0.07	130	140	28
C	Dioxane	0.20	65	90	50
	Ethyl Acetate	0.20	18	70	28
	Ethyl Cellosolve	0.14	60	80	28
	Isopropyl Ether	0.20	40	70	50
	MEK	0.20	35	60	50
D	Acetone Methanol Ethanol	See the Tables on Pages 6 and 7 for Guidelines on the Use of Light Water™ ATC™ Foam			

Actual Light Water™ ATC™ Foam Fire Test Data – Handline Application

	Flammable Liquid	Solution concentration (%)	Application Rate* (gpm/ft.^{2})	Control Time (min:sec)	Extinguishing Time (min:sec)

U.L. Type II Application Against Backboard	Methanol (MeOH)	6	0.05	0:4	4:00
	Ethanol (EtOH)	6	0.05	0:47	3:30
	Isopropanol (IPA)	6	0.09	2:00	3:02
	Acetone	6	0.1	1:25	2:40
	Ethyl Acetate	6	0.06	0:38	1:40
	Butyl Acetate	6	0.054	0:32	1:20
	Methyl Ethyl Ketone (MEK)	6	0.054	1:4	2:40
	Mehtyl Isobutyl Ketone (MIBK)	6	0.06	0:35	1:50
	Isopropyl Ether	6	0.06	0:55	3:45
	Methyl Tertiary Butyl Ether (MTBE)	3	0.09	0:33	3:25
	Ethylenediamine	6	0.06	0:30	1:20
	Tetrahydrofuran (THF)	6	0.16	1:05	2:25
	Propionaldehyde	6	0.06	0:35	4:35
	Butyraldehyde	6	0.06	0:33	2:30
	Propylene Oxide (21 ft^2)		0.25	0:32	2:30
U.L. Type III Application	Heptane	3	0.04	0:54	1:10
	Heptane	2	0.04	1:10	1:42
	Toulene	3	0.04	2:00	2:05
	Gasoline	3	0.04	1:00	2:30
	10% Gasohol (EtOH)	3	0.04	1:20	3:30

Fire Conditions: 50 square foot pooled fuel, 2 inches depth, square metal pan, 1 minute preburn, foam expansion ratio: 6-8:1

- Not recommended for large scale fires.

Typical Light Water™ ATC™ Foam Fire Test Data – Sprinkler Application

Fire Conditions: 50 square foot pooled fuel, 1.6 inches depth, 15 second preburn, foam expansion ratio: 2-4:1. (As per U.L. 162, Rev. 5)

Flammable Liquid	Solution Concentration (%)	Application Density ($gpm/ft.^2$)	Control Time (min:sec)	Extinguishing Time (min:sec)
Isopropanol (IPA) Ethanol (EtOH)	6	0.16	1:10	2:05

Acetone	6	0.16	0:52	1:35
Methyl Ethyl Ketone (MEK)	6	0.17	2:30	2:50
Methyl Isobutyl Ketone (MIBK)	6	0.16	0:48	1:00
Heptane	6	0.16	0:25	0:32
	3	0.10	1:10	1:45

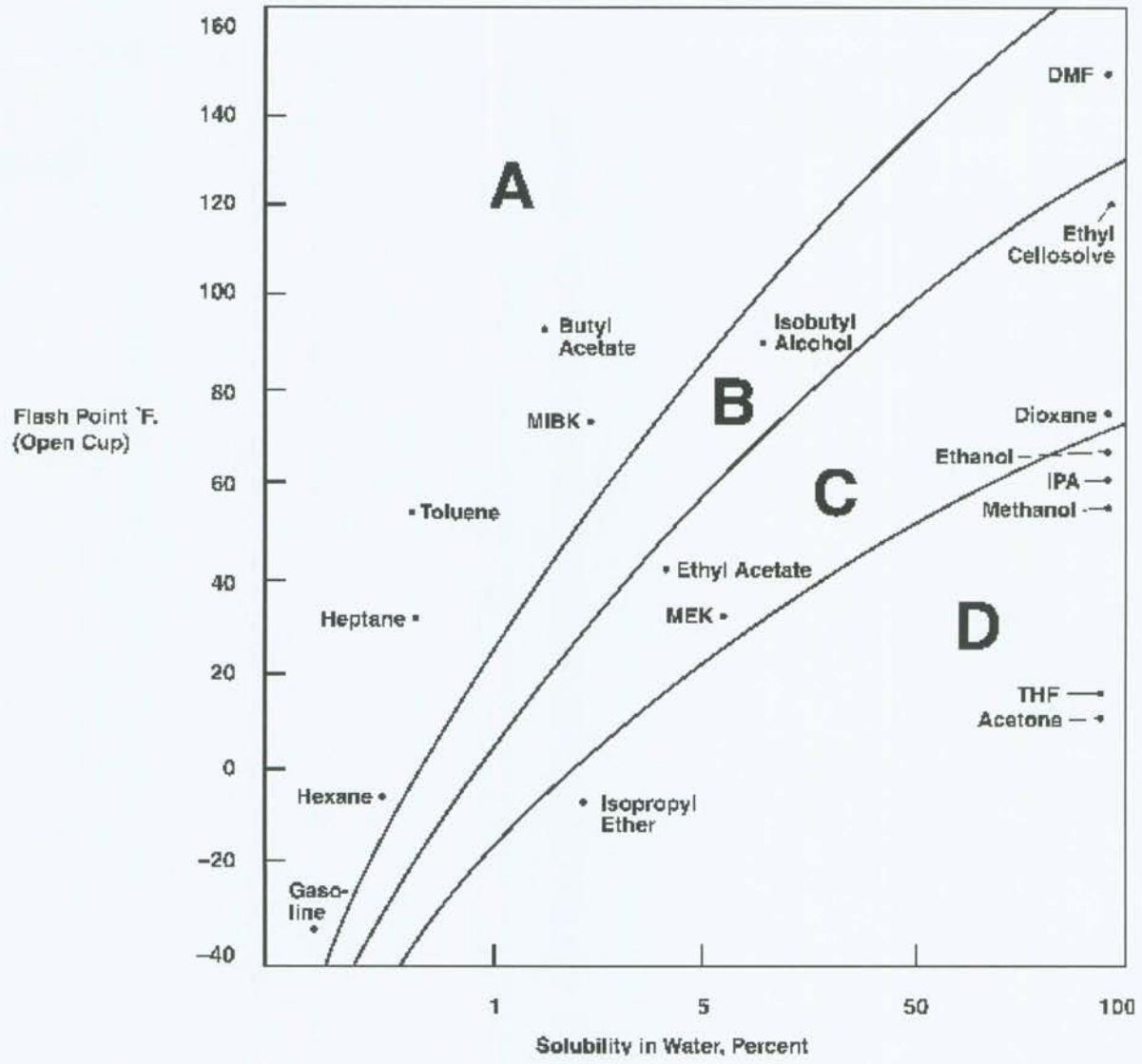
Typical Light Water™ ATC™ Foam – Tank and Dike Protection Guidelines (Recommended Application Rates are in GPM/FT^2)

		Tank Protection NFPA Type II		Spill and Dike Protection	
Graph Category	Flammable Liquid	3% ATC™ Solution	6% ATC™ Solution	3% ATC™ Solution	6% ATC™ Solution
A	Gasoline, Hexane, Heptane, VMP Naptha, n-Butanol, Butyl Acetate, MIBK, Methyl Methacrylate, AceticAcid, Gasohol (0-10% alcohol)	0.1	–	0.1	–
B	Benzene, DMF, Methyl Acrylate, Isobutyl Alcohol, Morpholine	0.1	–	0.1	–
C	Dioxane, Ethyl Acetate, Ethyl Cellosolve, Acrylonitrile, Methanol, MEK,Ethanol, Isopropyl Ether, Ethylendediamine	–	0.1	–	0.1
D	Acetone, Isopropanol, Ethyl Ether, Tetrahydrofuran, t-Butyl Alcohol	–	0.15	–	0.15

Application Rate Guidelines for Light Water™ ATC™ Foam

For those flammable liquids not included in the above table, the following graph can be used as a guideline determining application rates.

To use this chart, first look up the liquid's flash point and its water solubility. Determine their point of intersection and zone on the chart. Then refer to the graph category in the above table to determine the correct application rate. (Examples of common flammable liquids are listed in each category.) Flash point and solubility data on various flammable liquids may be found in the NFPA Hazardous Materials Handbook and in other similar sources.



III. Light Water™ Concentrates

A. Physical Properties

Light Water™ Concentrate	Nominal Use Concentration	Specific Gravity 77°F (25°C)	Viscosity, CS. 77°F (25°C)	Minimum Use Temp. °F (°C)	pH 77°F (25°C)
AFFF	6%	1.0	2	35 (1.7)	8
AFFF	1%	1.1	12	35 (1.7)	8
AFFF (Freeze Protected)	3%	1.05	8	–20 (–29)	8
AFFF	3%	1.03	4	35 (1.7)	8
ATC™	3%/6%	1.02	1980	35 (1.7)	8
ATC Plus™	3%/6%	1.05	1900	0 (–18)	8

B. Storage and Stability

Light Water™ Concentrates may be stored in their shipping containers without change in their original physical or chemical characteristics. Freezing and thawing have no adverse effect on product performance, though slight stratification may result, in which case moderate agitation before use is advised.

Long-term thermal ageing of the *concentrates* at 150°F (65°C) has shown no adverse effect in performance. Therefore, a

lifetime of at least 20 years could be expected when stored in suitable containers. Storage of *premixes* is not generally recommended for periods beyond 5 years.

C. Agent Testing

As recommended by NFPA 1 1 A-6-1. 1-5, the foam concentrate and premix quality should be assessed annually. Assessment includes tests to determine expansion, solution strength, 25% drain time, and film forming ability.

D. Water Considerations

Light Water™ Concentrates are designed for use with fresh or sea water. No problem has been encountered using brackish water or water containing a high concentration of minerals or organics.

E. Compatibility With Other Class "B" Extinguishing Agents

Occasionally Light Water™ Agents must be applied to a fire simultaneously with protein or fluoroprotein foam. Tests have shown that Light Water™ Agent can be used with either in any sequence of operation. Their use in combination detracts from the efficiency of Light Water™ Agents, but enhances the performance of protein or fluoroprotein foams.

Light Water™ Concentrates should not be mixed with any type of concentrates from other manufacturers.

Light Water™ Agent's compatibility with dry chemical agents has popularized twin unit systems. Both types of agents contribute superior knockdown; Light Water™ Agent secures against reflash while dry chemical suppresses three-dimensional fires.

F. Environmental Compatibility

Products manufactured by 3M Fire Protection Systems, including 3M Light Water™ brand foam concentrates, undergo a program of ongoing testing using internationally recognized test methods. These tests assess the impact of 3M fire fighting foam on the natural environment. Data indicate that:

1. 3M AFFF products are low in toxicity to tested aquatic organisms. (Toxicity information is available from Product Environmental Data Sheets, Material Safety Data Sheets and toxicity summary sheets for individual products.)

2. Aquatic life is not adversely affected when 3M AFFF products are used and disposed of properly.

3. 3M AFFF products can be successfully treated in biological waste water treatment systems. (Request Product Environmental Data Sheets and Disposal Recommendations from your 3M Representative.)

In addition, Light Water™ brand products have been *proven* effective, through tests and actual use, in *rapidly* extinguishing

flammable liquid fires. Because of this proven performance, we believe 3M foam extinguishing agents can provide the best available technology for controlling a flammable liquid fire, reducing its combustion by-products, and minimizing the negative environmental impact of a fire on the air, soil and water.

An evaluation of your specific situation should be based on the particular circumstances and factors involved and should include consultation with the appropriate pollution control agencies.

When environmental properties of the Light Water™ Concentrates are needed, contact Fire Protection Systems, 3M Performance Chemicals Division.

IV. Materials of Construction

Light Water™ Concentrates have a near neutral pH and show corrosion rates similar to those of water on common metals of construction. For optimum long term storage, selection of materials for the fire protection system components can be made with the aid of test data and recommendations given in this section. Specific selection of materials should be based on their function in the system. For storage tanks, involving large quantities of concentrates, the superior-rated (Code A) materials shown on page 12 are preferred. For less material exposure or areas involving smaller amounts of agent, such as lines and valves, Code B materials are quite suitable.

These data are based on laboratory tests which may not always exactly reproduce actual field usage conditions. Where possible, the user should perform his own in-service tests. Dissimilar metals should be used with care, especially if aluminium components are being considered. Galvanized steel should not be used in concentrate storage service.

Light Water™ Concentrates will remove some paints easily. Spills should be flushed immediately with water. For high spillage areas certain resistant paints are identified on Page 14. Rinsing of spills is still recommended.

Recommendations for use in Light Water™ Agent Systems are listed in the table on the next page in the order of serviceability (#1 through #4). Economic factors are a variable which will also influence the choice of materials for any specific application and location.

Recommended Materials of Construction for Equipment Handling Light Water™ AFFF

A. Tanks

Concentrate or Premix

#1 – 304 Stainless Steel

#2 – Carbon Steel with Baked Phenolic Lining and certain room temperature cured coatings

#3 – Fibreglass – Isophthalic Based Polyester with Gelcote

* #4 – Carbon Steel

B. Piping and Fittings

Concentrate

#1 – 304 S.S. (small lines – 2" and under)

* #2 – Carbon Steel (large lines – above 2")

#3 – "Transite" (Reg. T.M. of Johns-Mansville)

#4 – PVC (all sizes)

Premix or solution

* #1 – Carbon Steel

#2 – "Transite" (Reg. T.M. of Johns-Mansville)

#3 – PVC

C. Valves

Concentrate

O.S. & Y. – Cast iron body with bronze trim and seats (large valves – above 2")

Ball Valve – Bronze body with 316 S.S. trim and ball (smaller valves 2" and under)

Premix or Solution

All acceptable fire service valves.

*** D. Pumps**

Concentrate

	Number 1	Number 2
Casing	Cast Iron	Bronze
Impeller	Cast Iron	Bronze
Shaft	Hardened Stainless Steel	Carbon Steel
Seal	Mechanical, Crane #9	Packed

E. Gaskets

Most conventional gasketing materials.

F. Seals and Paints

See Tables on Pages 13 and 14.

***Important:** In certain field situations economics have dictated the use of mild steel storage containers for Light Water™ ATC™. If this is necessary, the user whould recognize that mild carbon steel is not normally recommended for Light Water™ ATC™ and should increase the frequence of inspection.

Compatibility of Concentrates with Metals of Construction

A. Superior metal for construction, very little observable corrosion or sedimentation.

B. Satisfactory metal for construction, agent can withstand exposure for at least one year, some rusting and sedimentation may occur. A yearly agent quality check is suggested when these metals are used in storage tanks.

C. Not suitable for construction.

Metal(s)		Concentrate	Fresh Water Premix	Sea Water Premix
Aluminium	6061 T-6	B	B	C (pits)
	Cast 356			
Brass, CA-260 (C26000)		A	A	B
Bronze, Cast	80/10/10/ (C93700)	B	B	B
	85/5/5/5 (C83600)			
Copper, Electrolytic, CA-110 (C11000)		A	A	B
Copper-Nickel, 90/10 (C70600)		A	A	B
Iron, Cast, SAE G-3500		B	B	B
Monel 400		A	A	B
Steel, Mild, 1010		B	B	B
Steel, Stainless	304	A	A	C (pits)
	430			
Titanium 6AL-4V		A	A	A

G. Dissimilar Metals

It is recommended that if you have dissimilar metals within your system the interface be insulated with an inner polymeric gasketing material. This gasketing material typically consists of anything from polyethylene to Teflon®.*

* "Teflon" is a registered trademark of E.I. Du Pont.

Fibreglass – Approved Construction

Light Water™ Concentrates may be stored in fibreglass reinforced plastic tanks properly constructed with approved isophthalic based polyester resins or approved epoxy resin/fibreglass systems. The common orthopthalic polyester/fibreglass composites are not recommended nor are room temperature cured epoxy systems.

Lubricants, Seals and Packing Materials Suitability with Light Water™ Concentrate

Total immersion for 14 days at 120°F. (49°C.) in Concentrate, fresh and sea water premixes:

Material Type	Material Name	Compatibility with Light Water™ Concentrate
Lubricants	Lupriplate® 630-2	Good
	Stavis® Aluminium Complex Grease	Good
	Marfack® All-Purpose	Fair

	–2 Grease	
Rubber Seals and O-Rings	EPT Synthetics	Good
	Neoprene	Fair
	Nitrile	Fair
	Butyl	Fair
Packing Materials	Asbestos Crane Style 5810	Good
	Metallic Crane Style 100-M	Good
Pipe Sealants (Dopes)	Fel-Pro® C5A	Good
	3M Sealer #4178	Good

Compatibility of Concentrates with Structural Plastics, Plastic Coatings, Elastomers, Lubricants, Packing Materials and Exterior Paints

Code:

A – Superior material for equipment construction.

B – Suitable material for long-term exposure, a yearly spot-check of material is advisable.

C – Not presently recommended for equipment construction.

* – Clear plastic samples became opaque after exposure.

* * – Isophthalic based polyester gel cotes required over fibreglass reinforced base.

* * * – Room temperature cured epoxy systems are not recommended. Some heat cured systems, especially dicyandiamide catalyzed ones, have proven satisfactory.

		Suitability with:	
Material Type	Material Type or Specific Identification	Concentrate	Premix (Fresh or Sea)
Structural Plastics	Acrylonitrile-Butadiene-Styrene (ABS)	C	B
	"Delrin"® (acetal)[1]	B	B
	Epoxy, fibreglass-reinforced	B * * *	B * * *
	"KYDEX" ® (acrylic-PVC alloy)[2]	C	B
	Polycarbonate	B	A
	Nylon	C	B
	Phenolics, canvas-based	C	C
	Plexigls (acrylic)	B *	A
	Polyester, fibreglass-reinforced	B * *	B * *

	Polyethylene, high density	B	A
	Polyethylene, low density	C	A
	Polystyrene	C	A
	Polyvinyl Chloride (PVC)	A *	A
	Polypropylene	B	A
	Fluorocarbon Plastics	A	A
Baked or "Cold Set" Plastic Coatings On Mild Steel	Polyester: Flakeline® 252[5] (50°–110° F Cure)	A	A
	Phenolic: "Heresite" ® P-403[3]	A	A
	Phenolic: "Heresite" ® P-413[3]	C	A
	Phenolic: "Plasite" ® #3055 or #3066[4], 9062, 9570	A	A
	Epoxy-Phenolic (cold-set): "Plasite" ® 7122	B	A
	"Copon"[10] TL8022, "Aropol"[11] 7241T-15		
Elastomers	Ethylene-Propylene Terpolymer (EPT)	A	A
	Natural Rubber	B	A
	Neoprene	B	B
	Nitrile Rubber	B	A
	Nylon Reinforced Nitrile	A	A
Lubricants	Aluminium Complex Grease®	A	A
	"Lubriplast" ® 630-2[7]	A	A
Packing Materials	Asbestos 5810[8]	A	A
	Metallic 100-M[8]	A	A
Exterior Paints	"Plastite" ® #7122[4]	A	A
	"Aquapon" ® UC42207[9]	B	A
	"Imron" ® Polyurethane Enamel[1]	B	A

Supplier Code: [16]Sta-Vis Oil Co., Lubricants

[1]DuPont Company [17]Fiske Bros. Refining Co.

[2]Rohm and Hass Company [18]Crane Packing Co.

[3]Heresite and Chemical Company [19]PPG Industries

[4]Wisconsin Protective Coating Corp. [10]Reliance Universal Inc.

[5]The Ceilcote Co. [11]Ashland Chemical Co.

Metals – Typical corrosion Data with Light Water™ Agents, 21 Days at 100° F (38° C) per ASTM 279-63

(Coupons are 3" x 1/2" x 1/16" or 1/8" [7.6 cm x 1.3 cm x 0.16 or 0.32 cm]. 2/3 immersed in liquid contained in 8 dram vial).

MDD – Metal weight loss in milligrams/sq. decimetre/day; MPY – Mils (thousandths of an inch) of penetration per year.

	Test Solution											
			Light Water™ AFFF						Light Water™ ATC™			
	Control Fresh Water		6% Concentrate		3% Concentrate		6% Fresh Water Premix		Concentrate		6% Fresh Water Premix	
Metal	MDD	MPY	MDD	MPY	MDD	MPY	MDD	MPY	MDD	MPY	MDD	MPY
Aluminum: 6061 T-6	4.8	2.5	0.9	0.5	0.9	0.5	1.0	0.5	0.3	0.2	0.3	0.2
Aluminum: Cast 356	6.5	3.4	0.9	0.5	1.0	0.5	1.0	0.5	0.1	0.1	0.2	0.1
Brass, CA-260	2.1	0.4	0.5	0.1	1.3	0.2	0.2	<0.1	0.4	0.1	0.4	0.1
Bronze, Cast: 80/10/10	2.6	0.4	6.8	1.1	4.8	0.8	7.5	1.2	1.7	0.3	2.4	0.4
Bronze, Cast: 85/5/5/5	2.2	0.4	2.2	0.4	3.2	0.5	4.1	0.7	0.7	0.1	1.1	0.2
Copper, Elec. CA-110	2.7	0.4	0.6	0.1	1.7	0.3	0.3	<0.1	0.5	0.1	0.2	<0.1
Copper-Nickel, 90/10	1.8	0.3	0.2	< 0.1	0.6	0.1	0.2	< 0.1	0.3	< 0.1	0.3	< 0.1
Iron, Cast, SAE G-3500	3.2	0.6	2.5	0.5	3.1	0.6	2.8	0.5	3.1	0.6	1.2	0.2
Magnesium Alloy AZ31B-H24	1.8	1.5	2.2	1.8	4.4	3.6	2.4	2.0	–	–	–	–
Monel 400	<0.1	<0.1	<0.1	<0.1	0.2	<0 1	0.1	<0.1	0.2	<0 1	0.2	<0.1
Steel, Mild, 1010 CR	4.1	0.8	3.0	0.6	3.5	0.6	3.4	0.6	2.6	0.5	2.3	0.4
Steel, Stainless: 304	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1
Steel, Stainless: 430	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	–	–	–	–
Titanium 6AL-4V	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.1	0.3	0.1

Compatibility of Elastomers with Light Water™ Agents

Properties of natural rubber, neoprene, ethylene-propylene terpolymer and poly butadiene, which are reinforced by nylon cloth, after immersion in Light Water™ Agent.

Elastomer	Property	Initial	72 Hours	168 Hours	400 Hours
Natural Rubber	Hardness	67	60	60	60
	Volume Change (%)	–	+2.77	+2.07	+2.86
Neoprene	Hardness	77	72	69	71
	Volume Change (%)	–	+2.91	+5.60	+4.92
Ethylene-Propylene Terpolymer	Hardness	80	79	80	78
	Volume Change (%)	–	+3.58	+2.69	+1.55
Poly Butadiene	Hardness	74	69	68	69
	Volume Change (%)	–	–0.29	+0.49	+0.50

3M Australia Pty. Ltd.
(A.C.N. 000 100 096)

Head Office
950 Pacific Highway, Pymble
N.S.W. Australia 2073
P.O. Box 99, Pymble
Phone: (02) 498 9333
Fax: (02) 499 2818
Telex and
Telegrams: AA121493

EMERGENCY RESPONSE

FOAM SUPPLY PROGRAMME

To better service the needs of you, our customer, in an emergency situation, our old Emergency Stock Programme has been completely upgraded.

The revised Emergency Response - Foam Supply Programme for Light Water brand AFFF/ATC is based on a 008 number which is manned 24 hours a day, every day of the year. To help you to always have access to this number, you have been supplied not only with a manual, but also with a business card for your wallet (inside cover) and a sticker for your emergency control area. (Additional cards and stickers are available upon request.)

If you need to use this programme, a state co-ordinator will be your main contact regarding emergency stocks, availability, pick-up or delivery details etc for Light Water fire fighting foam. They will also co-ordinate with you to ensure the best product for your needs is supplied. If necessary, they will also arrange shipments from interstate and overseas.

Your manual contains the following information:

* How to keep this manual and <u>your</u> contact details up-to-date.
* How the programme works.
* When supplies can be called upon.
* National stock listings.

.../2

In addition, details pertinent to your state are included:

* Emergency Foam Supply location.
* Foam quantities/products/sizes.
* Emergency contacts.
* 3M state branch and your sales representative.

You may have noticed that inside the front cover is a coded sticker. This is part of the Quality Procedure for the programme and is a requirement under 3M Australia Pty Ltd's registration for AS3902-1987/ISO9002-1987 - Quality Systems for Production and Installation.

Being a quality endorsed company confirms our commitment to serving our customers through a process of continuous improvement.

Due to you, our customer, requiring access to stocks when emergencies do arise, a range of Sorbent products (for chemical spills) is also available. If you wish to be included in this programme, please contact Lisa Grinham on (02) 498 9333.

If 3M can be of further assistance regarding your product choice for fire fighting foams, training packages for your fire crew or determining minimum foam needs for your risks, please contact Colin Beveridge on (03) 542 5325 or myself on (02) 498 9289 for assistance.

Yours sincerely,

S22 [redacted]

Euan Ritchie
National Sales Manager
INDUSTRIAL CHEMICAL PRODUCTS DIVISION

Light Water brand
Aqueous Film Forming Foam/
Alcohol Type Concentrate

24 Hour Emergency Telephone Number

008-802 902

Leave your: Name, Company and Telephone Number with our Emergency Service.

The Emergency Foam Co-ordinator will get back to you immediately to arrange foam shipments.

All orders for foam shipments must be placed with your Emergency Foam Co-ordinator.

3M
FIRE PROTECTION SYSTEMS
AFFF ATC

3M

APPROVED: S22 [redacted]

NATIONAL EMERGENCY FOAM CO-ORDINATOR
Effective Date: March 1992

Help keep this manual up to date

This manual has been issued to all organisations directly involved in the Emergency Response – Foam Supply Program for Light Water Aqueous Film Forming Foams and Alcohol Type Concentrates:-

3M Australia Pty Ltd

Department of Defence:-
Navy, Army, Airforce

Civil Aviation Authority

Fire Brigades

Fire Fighting Enterprises (Aust) Ltd
(Light Water Foam Distributors)

Participating Industrial Companies

Emergency Foam Supply Locations

The manual is designed to ensure that , should an emergency occur, access to foam supplies is easy and rapid.

Therefore, it is critical that details in this manual are always current.

Please notify any changes in telephone numbers, addresses etc., to:-

The Manager
3M Industrial Chemical Products Division

By letter: **950 Pacific Highway**
PYMBLE NSW 2073
By fax: **02 498 3921**
By phone: **02 498 9333**

Introduction

When a flammable liquid fire or spill threatens to be a major emergency, it is critical that access to fire fighting foam is easy and rapid.

With this in mind, 3M has upgraded the Emergency Response – Foam Supply Programme to make it easier for participating organisations to contact 3M and obtain the foam required.

How the Programme works

Stocks of Light Water brand Aqueous Film Forming Foam (AFFF) and Alcohol Type Concentrate (ATC) are stored by 3M in capital cities of each state and Northern Territory.

In case of an emergency, a "008" number will connect you with the 3M Emergency Service where you should leave details of your name, organisation, phone number and location of the emergency.

You will be re-contacted immediately by an Emergency Co-ordinator - your sole 3M contact - who will confirm your needs then authorise and arrange access to the locally held emergency foam supply. They will also prepare for shipment of foam stocks from interstate should this be necessary.

This service is available 24 hours a day, every day of the year.

The Emergency Foam Supply Location will be opened for access (if necessary) for collection of all or part of the foam supply. Transportation is your responsibility, though 3M will provide whatever assistance necessary. If 3M supplies transportation to or from the emergency site, this charge may be passed onto your organisation.

Foam used during the emergency will be charged at standard rates.

Foam stocks not opened can be returned to the 3M Emergency Foam Supply Location.

Immediate replacement of foam used during the emergency will be arranged to ensure that 3M can deliver foam as promised for any future emergency fire or spill.

When can Emergency Foam Supplies be called upon?

In the case of a major fire or spill, use of the Emergency Foam Supply for the following reasons is approved:-

- To assist in the extinguishing of the fire or control of the spill.
- As on-site back-up during the emergency.
- After the emergency - to replace normally held volumes of stock by any of the authorised organisations.

Under no circumstances should the Emergency Foam Supply be requested for normal commercial usage.

Emergency Foam Supply quantities & location

In detail, information is supplied about the Emergency Foam Supply in your state.

In addition, all foam supplies located across Australia are tabled for your reference - these are the back-up supplies 3M is able to respond with in case of a major emergency.

National stocks of Light Water brand AFFF & AFFF/ATC

State	Product	Unit Size	Volume
QLD	6% Prop FC-3034	200 Ltr Drum	6400 Lts
	3% Prop FC-203CE	200 Ltr Drum	2400 Lts
	3% / 6% Prop ATC FC-600	200 Ltr Drum	3200 Lts
NSW*	6% Prop FC-3034	20 Ltr Pail	6400 Lts
	3% / 6% Prop ATC FC-600	200 Ltr Drum	2400 Lts
	* plus additional stocks of a variety of products held in the National Storage Warehouse in Sydney.		
VIC	6% Prop FC-3034	200 Ltr Drum	11000 Lts
	3% / 6% Prop ATC FC-600	200 Ltr Drum	4000 Lts
SA	6% Prop FC-3034	200 Ltr Drum	13000 Lts
WA	6% Prop FC-3034	200 Ltr Drum	6400 Lts
		20 Ltr Pail	1600 Lts
TAS**	6% Prop FC-3034	200 Ltr Drum	1000 Lts
	** plus additional 1000 litres owned by Fire Fighting Enterprises.		
NT	6% Prop FC-3034	200 Ltr Drum	2000 Lts

Over 50,000 litres of stock reserved solely for Emergencies is located across Australia. In addition to this, 70,000 (min) litres of a range of fire fighting foams would be available from the 3M plant and warehouse in Sydney.

Emergency Foam Supply Quantities

Light Water brand AFFF:

6% Proportioning Product FC-3034

Quantity - 2000 litres

Containers- 10 x 200 litre drums.

3M AUSTRALIA STATE BRANCH

19 Thorton Crescent
MOIL NT 0810

or

PO Box 3569
DARWIN NT 0801

CONTACT:	STEVE SKINNER
PHONE:	S22 [redacted] 089 815 645 (24hr answering service)
FAX:	089 274 666

3M STATE SALES REPRESENTATIVE

CONTACT:	EUAN RITCHIE (National Sales Manager)
PHONE:	02 498 9289 (Direct) S22 [redacted]

3M Technical Information

3M Training Foam
Department of Defence Use

FC-3155

Description

3M™ Training Foam is an economical product for cold and hot training exercises. The product is a superconcentrate that must be diluted by adding 1 litre to 19 litres of water, then proportionate the mixture at 6% through air-aspirated or non air-aspirated equipment. The resulting foam can be used for cold training exercises to allow crews to become familiar with their equipment and have minimal environmental impact. In addition, the foam can be used for hot training exercises on hydrocarbon, non-water miscible fuels.

Typical Properties
(Not for specification purposes)

Nominal use concentration:	6%
Specific gravity @ 20°C:	1.015
Viscosity (Kinematic) @ 20°C:	2.4 centistokes
Minimum use temperature:	1 .7°C
Storage temperature:	1.7° – 49°C
Freezing point:	–2°C
pH @ 20°C:	7.3
Surface tension:	29mN/m
Appearance:	Light yellow to straw coloured liquid

Features

Visual Substitute: 3M™ Training Foam looks like an AFFF, and is used with conventional fire fighting foam making equipment.

Ready Re-ignition: Unlike an AFFF, the foam is not film forming, allowing fuel to be readily re-lit.

Cold Training: With minimum environmental impact, the foam is suitable for equipment familiarisation through cold training exercises.

Safety: As the foam is designed to be purpose-mixed for each training session, there is no risk of accidental substitution for an AFFF in a real fire situation.

3M Technical Information

Mixing Instructions

For mixing, it is recommended that an old LIGHT WATER brand AFFF 20 litre pail be used to prepare the solution. First fill the 20 litre pail with approximately 19 litres of water. Add 1 litre of the Training Foam superconcentrate to the water. Stir, tumble or shake the mixture to ensure optimal dispersion of the superconcentrate in the water.

Environmental/Toxicological Properties

3M™ Training Foam (Dep't Defence use) has undergone a programme of testing to assess the impact of foam on the natural environment. Data indicate that:

This product is low in toxicity to tested aquatic organisms and completely biodegradable. (Material Safety Data sheets are available upon request.)

Storage

3M™ Training Foam may be stored for at least 5 years without change in its performance characteristics. Freezing and thawing of the product will have no effect on its performance. Freezethaw cycling may cause slight stratification which may be overcome with moderate agitation.

Packaging

3M™ Training Foam (Dep't Defence Use) is available in standard 200 litre drums.

3M Australia Pty Limited
(A C N 000 100 096)
950 Pacific Highway Pymble NSW 2073
Phone: 136 136

3M CC&DG 3466 7/96

3M THE FOAM EXPERTS

3M Technical Information

3M Superconcentrated Training Foam

FC-3045

Description

Superconcentrated Training Foam is an economical product designed for cold and hot training exercises. The product is packaged as a one litre bottle of superconcentrate. After adding the contents of the bottle to water, proportionate the mixture at 6% through air-aspirated or non air-aspirated equipment. The resulting foam can be used for cold training exercises to allow crews to become familiar with their equipment and have minimal environmental impact. In addition, the foam can be used for hot training exercises on hydrocarbon, non-water miscible fuels.

Typical Properties (Not for specification purposes)

Nominal use concentration:	6%
Specific Gravity @ 20°C:	1.039
Viscosity (Kinematic) @ 20°C:	20 centistokes
Minimum use temperature:	1.7°C
Storage temperature:	1.7° – 49°C
Freezing point:	–8°C
pH @ 20°C:	7.2
Surface tension:	29mN/m
Appearance:	Light yellow to straw coloured liquid

Applications

3M™ Superconcentrated Training Foam should be used through conventional fire fighting foam making equipment with fresh water. Sea or brackish water can be used, but performance of the foam will decrease.

Self-educting foam nozzles or in-line inductors are common types of hardware for application. In addition, non-aspirating nozzles can be used.

Features

Visual Substitute: 3M™ Superconcentrated Foam looks like an AFFF, and is used with conventional fire fighting foam making equipment.

Ready Re-ignition: Unlike an AFFF, the foam is not film forming, allowing fuel to be readily re-lit.

Cold Training: With minimum environmental impact, the foam is suitable for equipment familiarisation through cold training exercises.

Safety: As the foam is designed to be purpose-mixed for each training session, there is no risk of accidental substitution for an AFFF in a real fire situation.

Warehousing: The foam's 1 litre superconcentrate pack requires less warehouse space than other ready made foams supplied in 20 litre pails.

3M Technical Information

Mixing Instructions

For mixing, it is recommended that an old LIGHT WATER brand AFFF 20 litre pail be used to prepare the solution. First fill the 20 litre pail with approximately 19 litres of water. Add the entire contents of the 1 litre bottle 3M™ Superconcentrated Training Foam to the 19 litres of water. Stir, tumble or shake the mixture to ensure optimal dispersion of the superconcentrate in the water.

Environmental/Toxicological Properties

3M™ Superconcentrated Training Foam has undergone a programme of testing to assess the impact of foam on the natural environment. Data indicate that:

This product is low in toxicity to tested aquatic organisms and completely biodegradable. (Material Safety Data sheets are available upon request.)

Storage

3M™ Superconcentrated Training Foam may be stored for at least 5 years without change in its performance characteristics. Freezing and thawing of the product will have no effect on its performance. Freeze-thaw cycling may cause slight stratification which may be overcome with moderate agitation.

Packaging

3M™ Superconcentrated Training Foam is available in a carton of 10 bottles, each bottle containing 1 litre of product.

3M Australia Pty Limited
(A.C.N. 000 100 096)
950 Pacific Highway Pymble NSW 2073
Phone: 136 136

3M CC&DG 3465 7/96

3M THE FOAM EXPERTS

3M Product Environmental Data Sheet

Environmental Laboratory

3M Environmental Technology and Services
935 Bush Avenue
PO Box 33331
St. Paul, MN 55133-3331
651/778-6047

Specialty Chemicals Division
3M™ Superconcentrated Training Foam
FC-3045

DESCRIPTION: Light yellow to straw-colored liquid.

COMPOSITION:

	% by Weight
Water	45 - 52
Diethylene Glycol Butyl Ether	25
Alkyl Sulfate Amine Salt +(6074P)	10 - 12
Surfactants (2) +(6080P, 6083P)	10 - 12
Sodium Alkyl Sulfate +(6077P)	3 - 7
Tolyl Triazole	0.1 - 1.0

USAGE: FC-3045 is intended for dilution and subsequent use on forest fires or other major outside conflagrations in training applications. This product is not intended for use on liquid fuel fires. For more detailed usage information, see your technical service representative.

RECOMMENDED DISPOSAL

Discharge spent solutions and small quantities (less than 5 gal.(19 L)) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HCl, incineration facilities must be capable of handling halogenated combustion products. Releases of HCl to the atmosphere through incineration can adversely affect the environment. Since regulations vary, consult applicable regulations or authorities before disposal.

PRODUCT HAZARD ASSESSMENT:

FC-3045, 3M™ Superconcentrated Training Foam

PRODUCT ENVIRONMENTAL HAZARD SUMMARY:

Biodegradation:

NOTE: The biodegradation data presented below has been extrapolated from testing results that were generated using a more dilute concentration of this product.

FC-3045 test concentration of 5 mg/L

Chemical Oxygen Demand (COD):		332,000 mg/kg
Biochemical Oxygen Demand (BOD)		
	5-Day:	325,107 mg/kg
	9-Day:	508,043 mg/kg
	20-Day:	756,561 mg/kg
	28-Day:	861,281 mg/kg

$BOD_{28}/COD = 0.865$

FC-3045 test concentration of 8.3 mg/L

Chemical Oxygen Demand (COD):		330,000 mg/kg
Biochemical Oxygen Demand (BOD)		
	5-Day:	301,115 mg/kg
	9-Day:	517,181 mg/kg
	20-Day:	859,182 mg/kg
	28-Day:	875,596 mg/kg

$BOD_{28}/COD = 0.883$

Aquatic Toxicity:

Test organism	*Study type*	*Result*
Oncorhynchus mykiss Rainbow Trout	96-hr LC_{50}	8.8 mg/L
Oncorhynchus mykiss Rainbow Trout	96-hr NOEC	6.25 mg/L

NOTE: The following aquatic toxicity data listed below has been extrapolated from testing results that were generated using a more dilute concentration of this product.

Test organism	*Study type*	*Result*
Oncorhynchus mykiss Rainbow Trout	24-hr LC_{50}	9.3 mg/L
Oncorhynchus mykiss Rainbow Trout	48-Hr LC_{50}	7.9 mg/L

Oncorhynchus mykiss Rainbow Trout	72-hr LC_{50}	7.2 mg/L
Oncorhynchus mykiss Rainbow Trout	96-hr LC_{50}	7.2 mg/L
Oncorhynchus mykiss Rainbow Trout	96-hr NOEC	4.4 mg/L

* The acute toxicity study with Rainbow Trout was conducted in accordance with ASTM Guideline E729.

Definitions:

LC_{50}: (median lethal concentration) The concentration which kills 50% of the test organisms. An LC_{50} is the usual endpoint in an acute toxicity test with fish.

EC_{50}: (median effective concentration) The concentration which induces a generalized effect on 50% of the test organisms (e.g. immobilization in Daphnia, etc.). An EC_{50} is the usual endpoint in an acute toxicity test with Daphnia and other small organisms where death is hard to determine or a specific biological process is not monitored.

IC_{50}: (median inhibitory concentration) The concentration which inhibits a biological process of the test organisms by 50% (e.g. light production, growth, respiration, etc.). An IC_{50} is the usual endpoint in toxicity tests with Microtox, algae and activated sludge respiration.

Date Issued: December 6, 2001 Supercedes: NA. Initial Issue.

Relates to 3M MSDS 07-521-0

TLV TWA: 10 mg/m³ (Value for particulate matter containing no asbestos and <1% crystalline silica,Inhalable fraction) [ACGIH]
TLV TWA: 3 mg/m³ (Value for particulate matter containing no asbestos and <1% crystalline silica,Respirable fraction) [ACGIH]
Dusts not otherwise classified, as inspirable dust;
ES TWA: 10 mg/m³
Particulate (insoluble or poorly soluble *) Not .Otherwise Specified (P.N.O.C)

TLV TWA: 10 mg/m³ Inhalable particulate
TLV TWA: 3 mg/m³ Respirable particulate
OEL-Sweden, United Kingdom: 10 mg/m³ total dust, 5 mg/m³ respirable dust

These "dusts" have little adverse effect on the lungs and do not produce toxic effects or organic disease. Although there is no dust which does not evoke some cellular response at sufficiently high concentrations, the cellular response caused by P.N.O.C.s has the following characteristics:
the architecture of the air spaces remain intact,
scar tissue (collagen) is not synthesised to any degree,
tissue reaction is potentially reversible.
Extensive concentrations of P.N.O.C.s may:
seriously reduce visibility,
cause unpleasant deposits in the eyes, ears and nasal passages,
contribute to skin or mucous membrane injury by chemical or mechanical action, per se, or by the rigorous skin cleansing procedures necessary for their removal. [ACGIH]

This limit does not apply:
to brief exposures to higher concentrations
nor does it apply to those substances that may cause physiological impairment at lower concentrations but for which a TLV has as yet to be determined.

This exposure standard applies to particles which
are insoluble or poorly soluble* in water (or, preferably, in aqueous lung fluid (if data is available) and
have a low toxicity (i.e.. are not cytotoxic, genotoxic, or otherwise chemically reactive with lung tissue, and do not emit ionizing radiation, cause immune sensitization, or cause toxic effects other than by inflammation or by a mechanism of lung overload)
* Notice of intended change

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)

direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

EYE

Safety glasses with side shields
Chemical goggles.
Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

HANDS/FEET

Wear chemical protective gloves, eg. PVC.
Wear safety footwear.

OTHER

Overalls.
Eyewash unit.

RESPIRATOR

Respiratory protection is required when ANY "Worst Case" vapour-phase concentration is exceeded (see Computer Prediction in "Exposure Standards").

Protection Factor (Min)	Half-Face Respirator	Full-Face Respirator	
10 x ES	A-AUS	-	
	A-PAPR-AUS	-	
50 x ES	-	A-AUS	
	-	A-PAPR-AUS	
100 x ES	-	A-2	
	-	A-PAPR-2	

^ - Full-face

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

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SAFE HANDLING

STORAGE AND TRANSPORT

SUITABLE CONTAINER

Polyethylene or polypropylene container
Check that containers are clearly labelled
Packaging as recommended by manufacturer.

STORAGE INCOMPATIBILITY

Segregate from oxidising materials.

STORAGE REQUIREMENTS

Store in original containers.
Keep containers securely sealed.
Store in a cool, dry, well-ventilated area.
Store away from incompatible materials and foodstuff containers.
Protect containers against physical damage and check regularly for leaks.
Observe manufacturer's storing and handling recommendations.

TRANSPORTATION

No restrictions known.

SPILLS AND DISPOSAL

MINOR SPILLS

Clean up all spills immediately.
Avoid breathing vapours and contact with skin and eyes.
Control personal contact by using protective equipment.
Contain and absorb spill with sand, earth, inert material or vermiculite.
Wipe up.
Place in a suitable labelled container for waste disposal.

MAJOR SPILLS

Clear area of personnel and move upwind.
Alert Fire Brigade and tell them location and nature of hazard.
Wear breathing apparatus plus protective gloves.
Prevent, by any means available, spillage from entering drains or water course.
Stop leak if safe to do so.
Contain spill with sand, earth or vermiculite.
Collect recoverable product into labelled containers for recycling.
Neutralise/decontaminate residue.
Collect solid residue and seal in labelled drums for disposal.
Wash area and prevent runoff into drains.
After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
If contamination of drains or waterways occurs, advise emergency services.

DISPOSAL

Recycle wherever possible or consult manufacturer for recycling options.
Consult State Land Waste Management Authority for disposal.
Bury residue in an authorised landfill.
Recycle containers if possible, or dispose of in an authorised landfill.

FIRE FIGHTERS' REPORT

EXTINGUISHING MEDIA

There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.
Wear breathing apparatus plus protective gloves for fire only.
Prevent, by any means available, spillage from entering drains or water courses.
Use fire fighting procedures suitable for surrounding area.
DO NOT approach containers suspected to be hot.
Cool fire exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.
Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

Non combustible.
Not considered to be a significant fire risk.
Expansion or decomposition on heating may lead to violent rupture of containers.
Decomposes on heating and may produce toxic fumes of carbon monoxide (CO).
May emit acrid smoke.
Other combustion products include carbon monoxide (CO) , nitrogen oxides (NOx) and hydrogen fluoride

FIRE INCOMPATIBILITY
Avoid reaction with oxidising agents.

HAZCHEM
None

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CONTACT POINT

COMPANY CONTACT
(+61 2) 9 677 5333 (24hr)

AUSTRALIAN POISONS INFORMATION CENTRE
24 HOUR SERVICE: 13 11 26
POLICE, FIRE BRIGADE OR AMBULANCE: 000

NEW ZEALAND POISONS INFORMATION CENTRE
24 HOUR SERVICE: (03) 4747 000
NZ EMERGENCY SERVICES: 111

End of Report (REVIEW)

Date of Preparation: Fri 30-Jun-2000

Print Date: Tue 19-Nov-2002

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3M Superconcentrated Training Foam

FC-3045

Description

Superconcentrated Training Foam is an economical product designed for cold and hot training exercises. The product is packaged as a one litre bottle of superconcentrate. After adding the contents of the bottle to water, proportionate the mixture at 6% through air-aspirated or non air-aspirated equipment. The resulting foam can be used for cold training exercises to allow crews to become familiar with their equipment and have minimal environmental impact. In addition, the foam can be used for hot training exercises on hydrocarbon, non-water miscible fuels.

Typical Properties (Not for specification purposes)

Nominal use concentration:	6%
Specific Gravity @ 20°C:	1.039
Viscosity (Kinematic) @ 20°C:	20 centistokes
Minimum use temperature:	1.7°C
Storage temperature:	1.7° – 49°C
Freezing point:	–8°C
pH @ 20°C:	7.2
Surface tension:	29mN/m
Appearance:	Light yellow to straw coloured liquid

Applications

3M™ Superconcentrated Training Foam should be used through conventional fire fighting foam making equipment with fresh water. Sea or brackish water can be used, but performance of the foam will decrease.

Self-educting foam nozzles or in-line inductors are common types of hardware for application. In addition, non-aspirating nozzles can be used.

Features

Visual Substitute: 3M™ Superconcentrated Foam looks like an AFFF, and is used with conventional fire fighting foam making equipment.

Ready Re-ignition: Unlike an AFFF, the foam is not film forming, allowing fuel to be readily re-lit.

Cold Training: With minimum environmental impact, the foam is suitable for equipment familiarisation through cold training exercises.

Safety: As the foam is designed to be purpose-mixed for each training session, there is no risk of accidental substitution for an AFFF in a real fire situation.

Warehousing: The foam's 1 litre superconcentrate pack requires less warehouse space than other ready made foams supplied in 20 litre pails.

Technical Information

Mixing Instructions

For mixing, it is recommended that an old LIGHT WATER ™ AFFF 20 litre pail be used to prepare the solution. First fill the 20 litre pail with approximately 19 litres of water. Add the entire contents of the 1 litre bottle 3M™ Superconcentrated Training Foam to the 19 litres of water. Stir, tumble or shake the mixture to ensure optimal dispersion of the superconcentrate in the water.

Environmental/Toxicological Properties

3M™ Superconcentrated Training Foam has undergone a programme of testing to assess the impact of foam on the natural environment. Data indicate that:

This product is low in toxicity to tested aquatic organisms and completely biodegradable. (Material Safety Data sheets are available upon request.)

Storage

3M™ Superconcentrated Training Foam may be stored for at least 5 years without change in its performance characteristics. Freezing and thawing of the product will have no effect on its performance. Freeze-thaw cycling may cause slight stratification which may be overcome with moderate agitation.

Packaging

3M™ Superconcentrated Training Foam is available in a carton of 10 bottles, each bottle containing 1 litre of product.

3M Australia Pty Limited
(A.C.N. 000 100 096)
950 Pacific Highway Pymble NSW 2000
(02) 9489 9333

3M CC&DG 3465 7/96

3M THE FOAM EXPERTS

TO: APARES

3M FC-3045 SUPERCONCENTRATED TRAINING FOAM, FIRE FIGHTING FOAM,.txt

3M AUSTRALIA PTY LIMITED
2-74 Dunheved Circuit ST MARYS NSW 1790
Phone: 136 136
Fax: (02) 9677-5170 (Toxicology Department)
EMERGENCY PHONE: (02) 9677-5333 (available 24 hours)

MATERIAL SAFETY DATA SHEET

Document ID	: 07-5217-0	Issue date	: 04/03/2002
Version	: 1.10	Supersedes date	: 19/02/2002
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

1 IDENTIFICATION

NOTE: Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
3M FC-3045 SUPERCONCENTRATED TRAINING FOAM, FIRE FIGHTING FOAM, CONCENTRATE

3M Product ID
AJ-9000-3045-0 0328684 0328696 0313429

DIVISION
SPECIALTY CHEMICALS DIVISION

INTENDED USE OF PRODUCT
Fire fighting foam

UN NUMBER	NONE ALLOCATED
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED
PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Light yellow to straw-coloured liquid

Boiling point	100 C
Vapour pressure	ca 17 mmHg Calc. @ 20C

Vapour density	ca 0.89 (Air=1) Calc. @ 20C
Evaporation rate	Not applicable
Solubility in Water	Complete
Specific gravity	ca 1.04 (Water=1)
Volatile organic compounds	262 g/L Calc. @ 20C
pH	7 - 8
Viscosity	20 centistoke @ 20C
Melting point	-8 C
Flash point	None
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not applicable

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	45 - 55
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	10 - 30
ALKYL SULFATE AMINE SALT +(6074P)	---	10 - 15
SURFACTANTS (2) +(6080P, 6083P)	---	10 - 15
SODIUM ALKYL SULFATE +(6077P)	---	3 - 7
TOLYL TRIAZOLE	29385-43-1	0.1 - 1

4 HEALTH HAZARDS

□

Effects from Eye Contact
Irritating to the eyes. Signs/symptoms can include redness, swelling, pain, tearing and hazy vision.

Effects from Skin Contact
May cause mild skin irritation (more likely after prolonged or repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation
Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, lack of coordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Irritation to upper respiratory tract: Signs/symptoms can include sore nose and throat, coughing and sneezing.

Effects from Ingestion

Ingestion is unlikely to be a route of exposure. Ingestion may cause: Irritation to the gastrointestinal tract. Signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus and blood in faeces.

5 FIRST AID

EYE CONTACT
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SKIN CONTACT
Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, seek medical attention.

SWALLOWED
If swallowed, give two glasses of water and contact a doctor or Poisons Information Centre. Do NOT induce vomiting.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Wear full protective clothing, including helmet, self-contained, positive pressure or positive pressure demand self-contained breathing apparatus, tunic and pants, bands around arms, waist and legs, full facepiece, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable.

Special Instructions for Fire Fighting
None known

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place residue in a closed container. For information on the 3M range of Sorbent materials, call 3M OH&ES on Freecall 1800 024-464.

Methods for Disposal
Discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HCl.

8 HANDLING AND STORAGE

Storage Requirements
Store at temperatures below 50 degrees C. Store at temperatures above 0 C. Keep container closed when not in use.

Incompatibility - Materials to Avoid
Store out of direct sunlight.

Recommended Ventilation
Keep container in well-ventilated area.

Use Instructions
Keep container tightly closed when not in use. No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of the hazardous decomposition products mentioned in Section 11 of this MSDS.

9 EXPOSURE CONTROLS/PROTECTION

Eye Protection
Avoid eye contact with vapour, spray, or mist. During operations in which eye exposure is likely, the following should be worn alone, or in combination, as appropriate: Full-face shield. Eye protection should comply with AS/NZS1337.

Hand Protection
During operations in which hand exposure is likely, wear appropriate gloves. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection
Avoid skin contact.

Respiratory Protection
Avoid breathing vapours, mists or spray. During operations in which inhalation exposure is likely, respiratory protection should be used. Select and use respirators in accordance with AS/NZS1715. When required, use one of the following: Half facepiece respirator with organic vapour (Type G1) and particle (Type P) filters. Full-face respirator with organic vapour (Type A) and particle filters (Type AP). For information

about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

Recommended Ventilation
Provide sufficient ventilation to maintain emissions well below exposure standards. Use with adequate dilution ventilation. If exhaust ventilation is not available, use appropriate respiratory protection.

10 EXPOSURE STANDARDS

COMMENT: No NOHSC exposure standards have been set for any of the ingredients of this product.

11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY
Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID
Not applicable

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide. Oxides of Sulfur. Hydrogen Chloride. Amine Compounds.

12 ECOTOXICITY

ENVIRONMENTAL DATA
Not determined

Other Ecotoxicity Information
Chemical Oxygen Demand (COD): 0.419g/g; 5-Day Biochemical Oxygen Demand (BOD5): 0.140g/g; 10-Day Biochemical Oxygen Demand (BOD10): 0.240g/g; 20-Day Biochemical Oxygen Demand (BOD20): 0.330g/g; 48-Hr EC50, Daphnia magna: 22mg/L; 96-Hr LC50, Fathead minnor (Pimephales promelas): 23mg/L; 30-min EC50, Photobacterium

phosphoreum (Microtox System): 15mg/L; 3-Hr IC50, Activiated Sludge respiration (OECD Method 209): >1000mg/L.

13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal
Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial

incinerator. Combustion products will include HCl. Contact your local waste authority to determine suitable disposal methods.

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14 REGULATORY INFORMATION

Product Certifications
AICS - Yes; components checked

Special Regulatory Information
Xi (Irritant)

R Code: 36

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15 OTHER INFORMATION

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product, or otherwise that in accordance with instructions of use on product packaging is the responsibility of the user.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Snr Regulatory Services Officer on (02) 9677-5179.

- Ted Schaefer
- Reg Officer →

3M AUSTRALIA PTY LIMITED
950 Pacific Highway
Pymble NSW 2073
Phone: 136 136
24HR EMERGENCY: 1800 097 146 (Australia only)

3M NEW ZEALAND LTD
250 Archers Road
Glenfield Auckland N.Z.
Phone: (9) 444 4760

MATERIAL SAFETY DATA SHEET

Document ID	: 07-5218-8	Issue date	: 19/02/2002
Version	: 1.04	Supersedes date	: 31/07/2001
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

1 IDENTIFICATION

NOTE: Not classified as Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
3M FC-3155 DEPARTMENT OF DEFENCE TRAINING FOAM, FIRE FIGHTING FOAM, CONCENTRATE - Inactive

3M Product ID
AJ-9000-3155-7 0313411

DIVISION
SPECIALTY CHEMICALS DIVISION

INTENDED USE OF PRODUCT
Fire fighting foam

UN NUMBER	NONE ALLOCATED
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED
PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Light yellow to straw-coloured liquid

Boiling point	100 C

Vapour pressure	ca 17.8 mmHg Calc. @ 20C
Vapour density	ca 0.68 (Air=1) Calc. @ 20C
Evaporation rate	Not determined
Solubility in Water	Complete
Specific gravity	1.015 (Water=1)
Volatile organic compounds	87 g/L Calc @ 20C
pH	7 - 8
Viscosity	2.4 centipoise @ 20C
Melting point	-2 C
Flash point	None
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not applicable

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	81 - 85
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	8.6
ALKYL SULFATE AMINE SALT +(6075P)	---	1 - 5
SURFACTANTS (2) +(6081P, 6084P)	---	1 - 5
SODIUM ALKYL SULFATE +(6078P)	---	1 - 5
TOLYL TRIAZOLE	29385-43-1	0.1 - 1

4 HEALTH HAZARDS

Effects from Eye Contact
Irritating to the eyes. Signs/symptoms can include redness, swelling, pain, tearing and hazy vision.

Effects from Skin Contact
May cause mild skin irritation (more likely after prolonged or repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation
Inhalation may cause: Irritation to upper respiratory tract: Signs/symptoms can include sore nose and throat, coughing and sneezing.

Effects from Ingestion
Swallowing a relatively large amount of this material is unlikely

to produce serious illness. Irritation to the gastrointestinal tract. Signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus and blood in faeces.

5 FIRST AID

EYE CONTACT
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SKIN CONTACT
Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION
Remove to fresh air.

SWALLOWED
If swallowed, give two glasses of water and contact a doctor or Poisons Information Centre. Do NOT induce vomiting.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Wear full protective clothing, including helmet, self-contained, positive pressure or positive pressure demand self-contained breathing apparatus, tunic and pants, bands around arms, waist and legs, full facepiece, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable.

Special Instructions for Fire Fighting
None known

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place residue in a closed container. For information on the 3M range of Sorbent materials, call 3M OH&ES on Freecall 1800 024-464.

Methods for Disposal

Discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HCl.

8 HANDLING AND STORAGE

Storage Requirements

Store at temperatures below 50 degrees C. Store at temperatures above 0 C. Keep container closed when not in use.

Recommended Ventilation

Keep container in well-ventilated area.

Use Instructions

Keep container tightly closed when not in use. No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of the hazardous decomposition products mentioned in Section 11 of this MSDS.

9 EXPOSURE CONTROLS/PROTECTION

Eye Protection

Avoid eye contact with vapour, spray, or mist. During operations in which eye exposure is likely, the following should be worn alone, or in combination, as appropriate: Full-face shield. Eye protection should comply with AS/NZS1337.

Hand Protection

During operations in which hand exposure is likely, wear appropriate gloves. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection

Avoid skin contact.

Respiratory Protection

Avoid breathing vapours, mists or spray. During operations in which inhalation exposure is likely, respiratory protection should be used. Select and use respirators in accordance with AS/NZS1715. When required, use one of the following: Half facepiece respirator with organic vapour (Type G1) and particle (Type P) filters. Full-face respirator with organic vapour (Type A) and particle filters (Type AP). For information about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion

As a precaution against accidental ingestion, wash hands after handling and before eating. Do not ingest.

Recommended Ventilation

Provide sufficient ventilation to maintain emissions well below exposure standards. If exhaust ventilation is not available, use appropriate respiratory protection.

10 EXPOSURE STANDARDS

COMMENT: No NOHSC exposure standards have been set for any of the ingredients of this product.

11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY
Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID
Not applicable

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide. Oxides of Sulfur. Hydrogen Chloride. Amine Compounds,

12 ECOTOXICITY

ENVIRONMENTAL DATA
Not determined

Other Ecotoxicity Information
Chemical Oxygen Demand (COD): 0.419 g/g; 5-Day Biochemical Oxygen Demand (BOD5): 0.140 g/g; 10-Day Biochemical Oxygen Demand (BOD10):0.240 g/g; 20-Day Biochemical Oxygen Demand (BOD20): 0.330 g/g; 48-Hr EC50, Daphnia magna: 72 mg/L; 96-Hr LC50, Fathead minnow (Pimephales promelas): 75 mg/L; 30-min EC50, Photobacterium phosphoreum (Microtox System): 49 mg/L; 3-Hr IC50, Activated Sludge respiration (OECD Method 209): >1000 mg/L

13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal
Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HCl. Contact your

local waste authority to determine suitable disposal methods.

14 REGULATORY INFORMATION

Product Certifications
AICS - Yes; components checked

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15 OTHER INFORMATION

REASON FOR REISSUE
19/02/02 Document inactive

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product, or otherwise that in accordance with instructions of use on product packaging is the responsibility of the user.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Snr Regulatory Services Officer on (02) 9677-5179.

Ted Schaeffer.

Graeme Ross.
s22 [redacted]

FOI 297/16/17
Item 2
Serial 7

3M FC-3045 SUPERCONCENTRATED TRAINING FOAM FIRE FIGHTING FOAM CONCENTRATE.txt

- contact 3M for Env. Data
- Does product contain PFOS/PFOA?
- Incineration specifications.
- no fluorochemicals no PFOS/PFOA
- FC3155 specifically designed (drums) ADF
- 1L bottle / 10 box.

3M AUSTRALIA PTY LIMITED
2-74 Dunheved Circuit ST MARYS NSW 1790
Phone: 136 136
Fax: (02) 9677-5170 (Toxicology Department)
EMERGENCY PHONE: (02) 9677-5333 (available 24 hours)

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MATERIAL SAFETY DATA SHEET

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Document ID	: 07-5217-0	Issue date	: 04/03/2002
Version	: 1.10	Supersedes date	: 19/02/2002
Document status	: Issued		

This MSDS has been prepared by 3M Australia Pty Limited
Toxicology Department

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1 IDENTIFICATION

NOTE: Hazardous according to criteria of NOHSC Australia.

PRODUCT NAME
3M FC-3045 SUPERCONCENTRATED TRAINING FOAM, FIRE FIGHTING FOAM, CONCENTRATE

3M Product ID
AJ-9000-3045-0 0328684 0328696 0313429

DIVISION
SPECIALTY CHEMICALS DIVISION

INTENDED USE OF PRODUCT
Fire fighting foam

UN NUMBER	NONE ALLOCATED
PROPER SHIPPING NAME	NONE ALLOCATED
DANGEROUS GOODS CLASS	NONE ALLOCATED
SUBSIDIARY RISK	NONE ALLOCATED

PACKING GROUP	NONE ALLOCATED
POISONS SCHEDULE	NONE ALLOCATED

2 PHYSICAL/CHEMICAL PROPERTIES

Appearance and Odour	Light yellow to straw-coloured liquid

Boiling point	100 C
Vapour pressure	ca 17 mmHg Calc. @ 20C
Vapour density	ca 0.89 (Air=1) Calc. @ 20C
Evaporation rate	Not applicable
Solubility in Water	Complete
Specific gravity	ca 1.04 (Water=1)
Volatile organic compounds	262 g/L Calc. @ 20C
pH	7 - 8
Viscosity	20 centistoke @ 20C
Melting point	-8 C
Flash point	None
Flammable Limits - LEL	Not applicable
Flammable Limits - UEL	Not applicable
Autoignition temperature	Not applicable

3 COMPOSITION

Ingredient Name	CAS number	Percentage
WATER	7732-18-5	45 - 55
DIETHYLENE GLYCOL BUTYL ETHER	112-34-5	10 - 30
ALKYL SULFATE AMINE SALT +(6074P)	---	10 - 15
SURFACTANTS (2) +(6080P, 6083P)	---	10 - 15
SODIUM ALKYL SULFATE +(6077P)	---	3 - 7
TOLYL TRIAZOLE	29385-43-1	0.1 - 1

4 HEALTH HAZARDS

Effects from Eye Contact

Irritating to the eyes. Signs/symptoms can include redness, swelling, pain, tearing and hazy vision.

Effects from Skin Contact

May cause mild skin irritation (more likely after prolonged or repeated contact). Signs/symptoms can include redness, swelling and itching.

Effects from Inhalation

Single overexposure, above recommended guidelines, may cause: Central Nervous System Depression: signs/symptoms can include headache, dizziness, drowsiness, lack of coordination, slowed reaction time, slurred speech, giddiness and unconsciousness. Irritation to upper respiratory tract: Signs/symptoms can include sore nose and throat, coughing and sneezing.

Effects from Ingestion

Ingestion is unlikely to be a route of exposure. Ingestion may cause: Irritation to the gastrointestinal tract. Signs/symptoms can include pain, vomiting, abdominal tenderness, nausea, blood in vomitus and blood in faeces.

5 FIRST AID

EYE CONTACT
In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

SKIN CONTACT
Flush skin with large amounts of water. If irritation persists, contact a doctor.

INHALATION
If signs/symptoms occur, remove person to fresh air. If signs/symptoms continue, seek medical attention.

SWALLOWED
If swallowed, give two glasses of water and contact a doctor or Poisons Information Centre. Do NOT induce vomiting.

6 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA
Product is a fire-extinguishing agent.

FIRE FIGHTING PROCEDURES
Wear full protective clothing, including helmet, self-contained, positive pressure or positive pressure demand self-contained breathing apparatus, tunic and pants, bands around arms, waist and legs, full facepiece, and protective covering for exposed areas of the head.

UNUSUAL FIRE AND EXPLOSION HAZARDS
None known.

EXPLOSION AVOIDANCE
Non flammable.

Special Instructions for Fire Fighting
None known

7 ACCIDENTAL RELEASE MEASURES (SPILL)

Personal Precautions
Observe precautions from other sections of this Material Safety Data Sheet.

Spill Response
Ventilate area. Contain spill. Cover with absorbent material. Collect spilled material. Clean up residue with water. Place residue in a closed container. For information on the 3M range of Sorbent materials, call 3M OH&ES on Freecall 1800 024-464.

Methods for Disposal
Discharge spent solutions and small quantities (less than 20L) to a wastewater treatment system. Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HCl.

8 HANDLING AND STORAGE

Storage Requirements
Store at temperatures below 50 degrees C. Store at temperatures above 0 C. Keep container closed when not in use.

Incompatibility - Materials to Avoid
Store out of direct sunlight.

Recommended Ventilation
Keep container in well-ventilated area.

Use Instructions

Keep container tightly closed when not in use. No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of the hazardous decomposition products mentioned in Section 11 of this MSDS.

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9 EXPOSURE CONTROLS/PROTECTION

Eye Protection

Avoid eye contact with vapour, spray, or mist. During operations in which eye exposure is likely, the following should be worn alone, or in combination, as appropriate: Full-face shield. Eye protection should comply with AS/NZS1337.

Hand Protection

During operations in which hand exposure is likely, wear appropriate gloves. Gloves made from one of the following material(s) are recommended: Butyl rubber.

Skin Protection

Avoid skin contact.

Respiratory Protection

Avoid breathing vapours, mists or spray. During operations in which inhalation exposure is likely, respiratory protection should be used. Select and use respirators in accordance with AS/NZS1715. When required, use one of the following: Half facepiece respirator with organic vapour (Type G1) and particle (Type P) filters. Full-face respirator with organic vapour (Type A) and particle filters (Type AP). For information

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about respirators, call 3M on 1800 024464.

Prevention of Accidental Ingestion

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

Recommended Ventilation

Provide sufficient ventilation to maintain emissions well below exposure standards. Use with adequate dilution ventilation. If exhaust ventilation is not available, use appropriate respiratory protection.

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10 EXPOSURE STANDARDS

COMMENT: No NOHSC exposure standards have been set for any of the ingredients of this product.

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11 STABILITY AND REACTIVITY

STABILITY AND REACTIVITY

Stable. Hazardous polymerisation will not occur.

INCOMPATIBILITY-MATERIALS TO AVOID

Not applicable

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon Monoxide, Carbon Dioxide. Oxides of Sulfur. Hydrogen Chloride. Amine Compounds,

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12 ECOTOXICITY

ENVIRONMENTAL DATA

Not determined

Other Ecotoxicity Information

Chemical Oxygen Demand (COD): 0.419g/g; 5-Day Biochemical Oxygen Demand (BOD5): 0.140g/g; 10-Day Biochemical Oxygen Demand (BOD10): 0.240g/g; 20-Day Biochemical Oxygen Demand (BOD20): 0.330g/g; 48-Hr EC50, Daphnia magna: 22mg/L; 96-Hr LC50, Fathead minnor (Pimephales promelas): 23mg/L; 30-min EC50, Photobacterium

phosphoreum (Microtox System): 15mg/L; 3-Hr IC50, Activiated Sludge respiration (OECD Method 209): >1000mg/L.

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13 DISPOSAL CONSIDERATIONS

Special Instructions for Disposal

Reduce discharge rate if foaming occurs. Large quantities may adversely affect biological wastewater treatment systems. Incinerate large quantities in an industrial or commercial incinerator. Combustion products will include HCl. Contact your local waste authority to determine suitable disposal methods.

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14 REGULATORY INFORMATION

Product Certifications

AICS - Yes; components checked

Special Regulatory Information

Xi (Irritant)

R Code: 36

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15 OTHER INFORMATION

The information on this data sheet represents our current data and best opinion as to the proper use in handling of this product under normal conditions. Any use of the product which is not in conformance with this data sheet, which involves using the product, or otherwise that in accordance with instructions of use on product packaging is the responsibility of the user.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Snr Regulatory Services Officer on (02) 9677-5179.

FOI 297/16/17
Item 2
Serial 8

3M Training Foam

FC-3155

(Department of Defence Use)

INSTRUCTIONS FOR USE:
3M Brand Training Foam is designed for use at ambient temperature as a training foam. As a superconcentrate 1 litre should be added to 19 litres of water and gently mixed. This product is then ready for 6% proportioning with water in fire-fighting foam making equipment.

NOTE:
Minimum storage temperature is 2 C, maximum storage temperature is 48 C.
Avoid contact with eyes.
Do not mix with other liquids except water.
Can be used with fresh of sea water.
Wash foam concentrate spills off painted surfaces.

Made in Australia

Date of Manufacture

0313411

200 Litres

3M Australia Pty Ltd. 2-74 Dunheved Circuit St Marys, NSW, 2760.
PH: 136136

BV-102783-14-3