SAFETY DATA SHEET
according to the OSHA Hazard Communication Standard

CADET™ HERBICIDE

Version	Revision Date:	SDS Number:	Date of last issue: 04/17/2018
1.6	10/04/2024	50000406	Date of first issue: 04/17/2018

SECTION 1. IDENTIFICATION

Product identifier
Product name CADET™ HERBICIDE

Other means of identification
Product code 50000406

Recommended use of the chemical and restrictions on use
Recommended use Herbicide

Restrictions on use Use as recommended by the label.
Do not use product for anything outside of the above specified uses.

Manufacturer or supplier's details

Manufacturer
FMC Corporation
2929 WALNUT ST
PHILADELPHIA PA 19104
USA
(215) 299-6000
SDS-Info@fmc.com

Supplier Address
FMC Corporation
2929 Walnut Street
Philadelphia PA 19104
USA

Emergency telephone

For leak, fire, spill or accident emergencies, call:
1 800 / 424-9300 (CHEMTREC - U.S.A.)
1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)

Medical emergency:
U.S.A. & Canada: +1 800 / 331-3148
All other countries: +1 651 / 632-6793 (Collect)

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 4

Acute toxicity (Inhalation) : Category 4

Carcinogenicity	:	Category 2
Reproductive toxicity	:	Category 1B
Specific target organ toxicity - single exposure	:	Category 3 (Respiratory system)
Specific target organ toxicity - repeated exposure	:	Category 2
Aspiration hazard	:	Category 1

GHS label elements

Hazard pictograms :

Signal Word : DANGER

Hazard Statements :
H227 Combustible liquid.
H304 May be fatal if swallowed and enters airways.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H360 May damage fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary Statements :

Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P260 Do not breathe mist or vapors.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P314 Get medical attention if you feel unwell.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P331 Do NOT induce vomiting.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Fluthiacet-methyl	117337-19-6	10.3
acetophenone	98-86-2	>= 30 - < 50
N-methyl-2-pyrrolidone	872-50-4	>= 20 - < 30
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5	>= 10 - < 20

SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.
Symptoms of poisoning may appear several hours later.
Do not leave the victim unattended.

If inhaled : Move to fresh air.
Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.
If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.

In case of skin contact : Take off all contaminated clothing immediately.
Wash contaminated clothing before re-use.
Wash off immediately with plenty of water for at least 15 minutes.
Get medical attention immediately if irritation develops and

persists.

In case of eye contact	:	Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	May be fatal if swallowed and enters airways. Harmful if inhaled. May cause respiratory irritation. Suspected of causing cancer. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection and use the recommended protective clothing Avoid inhalation, ingestion and contact with skin and eyes. If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	The product contains petroleum distillates which may pose an aspiration pneumonia hazard. Do not induce vomiting: contains petroleum distillates and/or aromatic solvents. Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Dry chemical, CO2, water spray or regular foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	High volume water jet Do not spread spilled material with high-pressure water streams.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Fire may produce irritating, corrosive and/or toxic gases. Carbon oxides Fluorinated compounds Chlorinated compounds Hydrogen cyanide Hydrogen chloride

Hydrogen fluoride
Sulfur oxides
Nitrogen oxides (NOx)
Chlorine compounds

Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Special protective equipment for fire-fighters	:	Firefighters should wear protective clothing and self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Never return spills in original containers for re-use. Mark the contaminated area with signs and prevent access to unauthorized personnel. Only qualified personnel equipped with suitable protective equipment may intervene. For disposal considerations see section 13.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.
Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.

Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : No smoking.
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
acetophenone	98-86-2	TWA	10 ppm	ACGIH
		TWA	10 ppm	US WEEL
N-methyl-2-pyrrolidone	872-50-4	TWA	15 ppm 60 mg/m3	US WEEL
		STEL	30 ppm 120 mg/m3	US WEEL
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5	TWA	200 mg/m3 (total hydrocarbon vapor)	ACGIH
2-methylnaphthalene	91-57-6		0.05 ppm 3 mg/100 cm2	ACGIH
1-methylnaphthalene	90-12-0		0.05 ppm 3 mg/100 cm2	ACGIH
naphthalene	91-20-3	TWA	10 ppm	ACGIH
		TWA	10 ppm 50 mg/m3	NIOSH REL
		ST	15 ppm 75 mg/m3	NIOSH REL
		TWA	10 ppm 50 mg/m3	OSHA Z-1
		STEL	15 ppm 75 mg/m3	OSHA P0
		TWA	10 ppm 50 mg/m3	OSHA P0

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
N-methyl-2-pyrrolidone	872-50-4	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	End of shift (As soon as possible after exposure ceases)	100 mg/l	ACGIH BEI

Personal protective equipment

Respiratory protection : Not required; except in case of aerosol formation.

No personal respiratory protective equipment normally required.

Hand protection

Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Protective measures : Wear suitable gloves and eye/face protection.
Plan first aid action before beginning work with this product.
Always have on hand a first-aid kit, together with proper instructions.
Ensure that eye flushing systems and safety showers are located close to the working place.
Wear suitable protective equipment.

Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color	:	gold
Odor	:	bitter almond
Odor Threshold	:	No data available
pH	:	6 - 8 Concentration: 1 % (1% solution in water)
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	ca. 189.00 °F / 87.22 °C
Evaporation rate	:	No data available
Flammability (liquids)	:	Sustains combustion
Self-ignition	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	1.06 g/cm3
Bulk density	:	No data available
Solubility(ies)		
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available

Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	Vapors may form explosive mixture with air. No decomposition if stored and applied as directed.
Conditions to avoid	:	Heat, flames and sparks. Avoid extreme temperatures. Avoid formation of aerosol.
Incompatible materials	:	Avoid strong acids, bases, and oxidizers.
Hazardous decomposition products	:	Carbon oxides Nitrogen oxides (NOx) Sulfur oxides Hydrogen fluoride

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if inhaled.

Product:

Acute oral toxicity	:	LD50 (Rat): 2,537 mg/kg Remarks: Based on data from similar materials
Acute inhalation toxicity	:	LC50 (Rat): > 2.73 mg/l Exposure time: 4 h Test atmosphere: dust/mist Remarks: Based on data from similar materials
Acute dermal toxicity	:	LD50 (Rabbit): > 2,020 mg/kg Remarks: Based on data from similar materials

Components:

Fluthiacet-methyl:

Acute oral toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg Method: FIFRA 81.01 Assessment: The substance or mixture has no acute oral toxicity Remarks: no mortality LD50 (Mouse, male and female): > 5,000 mg/kg Assessment: The substance or mixture has no acute oral toxicity Remarks: no mortality
Acute inhalation toxicity	:	LC50 (Rat, male and female): > 2.02 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Symptoms: hypoactivity, Breathing difficulties Assessment: The substance or mixture has no acute inhalation toxicity LC50 (Rat): > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity Remarks: no mortality
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Assessment: The component/mixture is minimally toxic after single contact with skin. Remarks: no mortality LD50 (Rabbit, male and female): > 2,000 mg/kg Method: EPA OPP 81-2 GLP: yes Remarks: no mortality

acetophenone:

Acute oral toxicity	:	LD50 (Rat, male and female): 2,081 mg/kg
Acute dermal toxicity	:	LD50 (Rat, male and female): 3,300 mg/kg

N-methyl-2-pyrrolidone:

Acute oral toxicity	:	LD50 (Rat): 4,150 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	:	LC0 (Rat): > 5.1 mg/l Exposure time: 4 h

Test atmosphere: vapor
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 402

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Acute oral toxicity : LD50 (Rat, male and female): > 5,000 mg/kg
Method: OECD Test Guideline 401
Remarks: Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat): > 4.688 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Species : Rabbit
Result : slight irritation

Components:

Fluthiacet-methyl:

Species : Rabbit
Assessment : No skin irritation
Result : No skin irritation

acetophenone:

Species : Rabbit
Result : No skin irritation

N-methyl-2-pyrrolidone:

Species : Rabbit
Method : OECD Test Guideline 404
Result : irritating

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species	:	Rabbit
Assessment	:	Repeated exposure may cause skin dryness or cracking.
Result	:	No skin irritation
Remarks	:	Minimal effects that do not meet the threshold for classification. Based on data from similar materials

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Species	:	Rabbit
Result	:	slight irritation
Remarks	:	Vapors may cause irritation to the eyes, respiratory system and the skin.

Components:

Fluthiacet-methyl:

Species	:	Rabbit
Result	:	No eye irritation
Assessment	:	No eye irritation

acetophenone:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	Draize Test

N-methyl-2-pyrrolidone:

Species	:	Rabbit
Result	:	irritating
Method	:	OECD Test Guideline 405

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species	:	Rabbit
Assessment	:	No eye irritation
Remarks	:	Minimal effects that do not meet the threshold for classification. Based on data from similar materials

Respiratory or skin sensitization

Skin sensitization

Based on available data, the classification criteria are not met.

Respiratory sensitization

Based on available data, the classification criteria are not met.

Product:

Result : Does not cause skin sensitization.
Remarks : Based on data from similar materials

Components:

Fluthiacet-methyl:

Routes of exposure : Skin contact
Species : Guinea pig
Method : FIFRA 81.06
Result : Does not cause skin sensitization.

Test Type : Buehler Test
Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Did not cause sensitization on laboratory animals.
GLP : yes

acetophenone:

Test Type : Draize Test
Species : Guinea pig
Result : Does not cause skin sensitization.

N-methyl-2-pyrrolidone:

Method : OECD Test Guideline 429
Result : Not a skin sensitizer.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Test Type : Maximization Test
Species : Guinea pig
Result : Not a skin sensitizer.
Remarks : Based on data from similar materials

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

Fluthiacet-methyl:

Genotoxicity in vitro : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse

Result: negative

acetophenone:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative

N-methyl-2-pyrrolidone:

Genotoxicity in vitro : Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: unscheduled DNA synthesis assay
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse
Method: OECD Test Guideline 474
Result: negative

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Genotoxicity in vitro : Test Type: reverse mutation assay
Method: OECD Test Guideline 471
Result: negative
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Bone marrow chromosome aberration.

Species: Rat
Application Route: inhalation (vapor)
Result: negative

Carcinogenicity

Suspected of causing cancer.

Product:

Carcinogenicity - Assessment	:	Limited evidence of carcinogenicity in animal studies

Components:

Fluthiacet-methyl:

Species	:	Mouse, male
Application Route	:	Oral
LOAEL	:	10 mg/kg bw/day
Result	:	positive
Target Organs	:	Liver
Remarks	:	Likely to be carcinogenic to humans (US EPA)

Species	:	Rat, male
Application Route	:	Oral
LOAEL	:	130 mg/kg bw/day
Result	:	positive
Target Organs	:	Pancreas, pancreatic islet
Remarks	:	Likely to be carcinogenic to humans (US EPA)

Carcinogenicity - Assessment	:	Limited evidence of carcinogenicity in animal studies

N-methyl-2-pyrrolidone:

Species	:	Rat, male and female
Application Route	:	Oral
NOAEL	:	207 - 283 mg/kg bw/day
Result	:	negative

Species	:	Rat, male
Application Route	:	Inhalation
NOAEC	:	0.04 mg/l
Result	:	negative

Species	:	Mouse, male
Application Route	:	Oral
NOAEL	:	89 mg/kg body weight
Method	:	OECD Test Guideline 451
Result	:	negative

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species	:	Rat, male and female

Application Route	:	inhalation (vapor)
Exposure time	:	12 month(s)
NOAEC	:	1.8 mg/l
Result	:	negative
Remarks	:	Based on data from similar materials

Carcinogenicity - Assessment	:	Not classifiable as a human carcinogen.

IARC Group 2B: Possibly carcinogenic to humans
naphthalene 91-20-3

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP Reasonably anticipated to be a human carcinogen
naphthalene 91-20-3

Reproductive toxicity

May damage fertility or the unborn child.

Product:

Reproductive toxicity - Assessment	:	Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

Components:

Fluthiacet-methyl:

Effects on fertility	:	Test Type: Two-generation study General Toxicity Parent: NOEL: 1.4 mg/kg bw/day Early Embryonic Development: NOEL: 36 mg/kg bw/day Method: OECD Test Guideline 416 GLP: yes
Reproductive toxicity - Assessment	:	Animal testing showed no reproductive toxicity.

acetophenone:

Effects on fertility	:	Test Type: one-generation reproductive toxicity Species: Rat, male and female Application Route: Oral Dose: 0, 75, 225, 750 mg/kg bw/day General Toxicity Parent: NOAEL: 750 mg/kg bw/day General Toxicity F1: LOAEL: 750 mg/kg bw/day Method: OECD Test Guideline 422 Result: negative Test Type: one-generation reproductive toxicity Species: Rat, female Application Route: Oral Dose: 0, 75, 225, 750 mg/kg bw/day

General Toxicity Parent: LOAEL: 750 mg/kg bw/day
Method: OECD Test Guideline 422
Result: negative

Effects on fetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Dose: 125, 300, 750mg/kgbw/day
Duration of Single Treatment: 20 d
General Toxicity Maternal: LOAEL: 300 mg/kg bw/day
Embryo-fetal toxicity.: LOAEL: 300 mg/kg bw/day
Method: OECD Test Guideline 414

N-methyl-2-pyrrolidone:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 416
Result: positive

Effects on fetal development : Test Type: Pre-natal
Species: Rat
Application Route: Oral
Method: OECD Test Guideline 414
Result: positive

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

STOT-single exposure

May cause respiratory irritation.

Product:

Assessment : May cause respiratory irritation.

Components:

acetophenone:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

N-methyl-2-pyrrolidone:

Assessment : May cause respiratory irritation.

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Product:

Assessment : The substance or mixture is classified as specific target organ

toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

Fluthiacet-methyl:

Species	:	Rat, male
NOAEL	:	6.19 mg/kg
LOAEL	:	216 mg/kg
Application Route	:	Oral
Exposure time	:	90 d
Method	:	OECD Test Guideline 408
Target Organs	:	Liver

Species	:	Rat, male
LOAEL	:	4.2 mg/kg
Application Route	:	Oral
Exposure time	:	14 d
Method	:	OECD Test Guideline 407
GLP	:	yes
Target Organs	:	Liver

acetophenone:

Species	:	Rat, male and female
NOAEL	:	250 mg/kg bw/day
LOAEL	:	500 mg/kg bw/day
Application Route	:	Oral - gavage
Exposure time	:	90 d
Method	:	OECD Test Guideline 408

N-methyl-2-pyrrolidone:

Species	:	Rat, male
NOAEL	:	169 mg/kg
Application Route	:	Oral

Species	:	Mouse, male
NOAEL	:	89 mg/kg
Application Route	:	Oral
Method	:	OECD Test Guideline 408
Target Organs	:	Liver

Species	:	Rabbit
NOAEL	:	826 mg/kg
Application Route	:	Dermal

Species	:	Rat, male
	:	3 mg/l
Application Route	:	inhalation (vapor)
Target Organs	:	Testes

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Species	:	Rat, male and female
NOAEC	:	0.9 - 1.8 mg/l
Application Route	:	inhalation (vapor)
Exposure time	:	12 Months

Aspiration toxicity

May be fatal if swallowed and enters airways.

Product:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Components:

Fluthiacet-methyl:

The substance does not have properties associated with aspiration hazard potential.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

May be fatal if swallowed and enters airways.

Experience with human exposure

Components:

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Skin contact	:	Symptoms: Repeated exposure may cause skin dryness or cracking.

Further information

Product:

Remarks	:	Solvents may degrease the skin.

Components:

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Remarks	:	Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Fluthiacet-methyl:

Toxicity to fish	:	LC50 (Cyprinodon variegatus (sheepshead minnow)): 0.15 - 0.17 mg/l Exposure time: 96 h Test Type: flow-through test LC50 (Cyprinus carpio (Carp)): 0.51 - 0.83 mg/l Exposure time: 96 h Method: EPA OPP 72-1
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Crustaceans): 2.3 mg/l Exposure time: 48 h Method: No information available. NOEC (Daphnia magna (Water flea)): 0.035 mg/l Exposure time: 21 d Test Type: flow-through test
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 0.00251 mg/l Exposure time: 72 h NOEC (Lemna gibba (duckweed)): 0.0017 mg/l Exposure time: 14 d IC50 (Lemna gibba (duckweed)): 0.0075 mg/l Exposure time: 14 d
Toxicity to fish (Chronic toxicity)	:	NOEC (Fish): 0.0027 mg/l Exposure time: 21 d Method: No data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.035 mg/l Exposure time: 21 d
Toxicity to soil dwelling organisms	:	NOEC (Eisenia fetida (earthworms)): 948 mg/kg Method: OECD Test Guideline 207
Toxicity to terrestrial organisms	:	LC50 (Colinus virginianus (Bobwhite quail)): > 5,620 mg/kg Exposure time: 5 d Method: EPA OPP 71-2 (Avian Dietary Toxicity Test) LD50 (Apis mellifera (bees)): > 100 µg/bee Remarks: Contact

acetophenone:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 162 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia magna (Water flea)): 528 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae/aquatic plants	:	NOEC (Pseudokirchneriella subcapitata (algae)): 24.8 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 EC50 (Pseudokirchneriella subcapitata (green algae)): 40 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to microorganisms	:	IC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h Method: OECD Test Guideline 209

N-methyl-2-pyrrolidone:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1,000 mg/l Exposure time: 24 h LC50 (Palaeomonetes vulgaris (Grass shrimp)): 1,107 mg/l Exposure time: 96 h
Toxicity to algae/aquatic plants	:	EC50 (Desmodesmus subspicatus (green algae)): 600.5 mg/l Exposure time: 72 h
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 12.5 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
Toxicity to microorganisms	:	EC50 (activated sludge): 100 mg/l Exposure time: 48 h EC50 (activated sludge): > 600 mg/l Exposure time: 30 min

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Toxicity to fish	:	LL50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EL50 (Daphnia magna (Water flea)): 1.4 mg/l Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants	:	EL50 (Pseudokirchneriella subcapitata (green algae)): 1 - 3 mg/l Exposure time: 24 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EL50 (Daphnia magna (Water flea)): 0.89 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
Toxicity to microorganisms	:	LL50 (Tetrahymena pyriformis): 677.9 mg/l Exposure time: 72 h Test Type: Growth inhibition

Persistence and degradability

Components:

Fluthiacet-methyl:

Biodegradability	:	Result: Not readily biodegradable.

acetophenone:

Biodegradability	:	Inoculum: activated sludge Result: Readily biodegradable. Biodegradation: 64.7 % Exposure time: 14 d Method: OECD Test Guideline 301C

N-methyl-2-pyrrolidone:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 73 % Exposure time: 28 d

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 58.6 % Exposure time: 28 d Method: OECD Test Guideline 301F Remarks: Based on data from similar materials

Bioaccumulative potential

Components:

Fluthiacet-methyl:

Bioaccumulation	:	Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water	:	log Pow: 3.77

acetophenone:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 0.47
Method: QSAR

Partition coefficient: n-octanol/water : log Pow: 1.65

N-methyl-2-pyrrolidone:

Partition coefficient: n-octanol/water : log Pow: -0.46 (77 °F / 25 °C)

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Bioaccumulation : Remarks: The product/substance has a potential to bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3.72
Method: QSAR

Mobility in soil

Components:

Fluthiacet-methyl:

Distribution among environmental compartments : Remarks: Slightly mobile in soils

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Distribution among environmental compartments : Remarks: Expected to partition to sediment and wastewater solids. Moderately volatile.

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fluthiacet-methyl)
Class	:	9
Packing group	:	III
Labels	:	9
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (Fluthiacet-methyl)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	964
Packing instruction (passenger aircraft)	:	964
Environmentally hazardous	:	yes

IMDG-Code

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Fluthiacet-methyl)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR Road
Not regulated as a dangerous good

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 304 Extremely Hazardous Substances Reportable Quantity

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Carcinogenicity
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

acetophenone	98-86-2	>= 30 - < 50 %
N-methyl-2-pyrrolidone	872-50-4	>= 20 - < 30 %
naphthalene	91-20-3	>= 0.1 - < 1 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

acetophenone	98-86-2	>= 30 - < 50 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

acetophenone	98-86-2	>= 30 - < 50 %
2-methylnaphthalene	91-57-6	>= 1 - < 5 %
1-methylnaphthalene	90-12-0	>= 1 - < 5 %

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

naphthalene	91-20-3	>= 0.1 - < 1 %
sulphuric acid	7664-93-9	>= 0 - < 0.1 %

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

naphthalene	91-20-3	>= 0.1 - < 1 %
sulphuric acid	7664-93-9	>= 0 - < 0.1 %

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations

Massachusetts Right To Know

acetophenone	98-86-2
N-methyl-2-pyrrolidone	872-50-4
1-methylnaphthalene	90-12-0
sulphuric acid	7664-93-9

Pennsylvania Right To Know

acetophenone	98-86-2
N-methyl-2-pyrrolidone	872-50-4
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5
Fluthiacet-methyl	117337-19-6
2-methylnaphthalene	91-57-6
Castor oil, ethoxylated	61791-12-6
1-methylnaphthalene	90-12-0
naphthalene	91-20-3

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

N-methyl-2-pyrrolidone	872-50-4

Washington Chemicals of High Concern

N-methyl-2-pyrrolidone	872-50-4

California Prop. 65

WARNING: This product can expose you to chemicals including naphthalene, sulphuric acid, which is/are known to the State of California to cause cancer, and N-methyl-2-pyrrolidone, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Permissible Exposure Limits for Chemical Contaminants

acetophenone	98-86-2

N-methyl-2-pyrrolidone	872-50-4

The ingredients of this product are reported in the following inventories:

TCSI	:	Not in compliance with the inventory
TSCA	:	Product contains substance(s) not listed on TSCA inventory.
AIIC	:	Not in compliance with the inventory
DSL	:	Not applicable
ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	Not in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	Not in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
TECI	:	Not in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

FIFRA information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

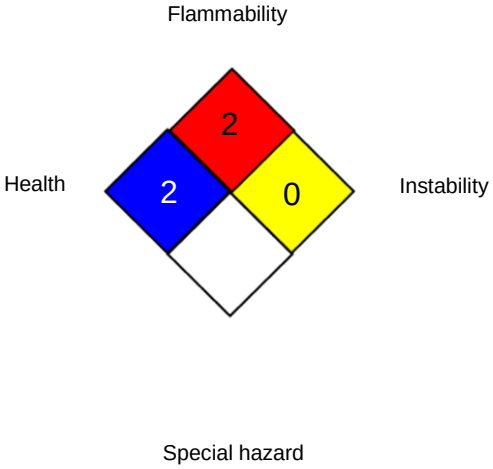
WARNING

Causes substantial but temporary eye injury, Do not get in eyes or on clothing., Wear protective eyewear (goggles, face shield, or safety glasses)., Harmful if swallowed, Harmful if absorbed through the skin., Avoid contact with skin, eyes and clothing.

SECTION 16. OTHER INFORMATION

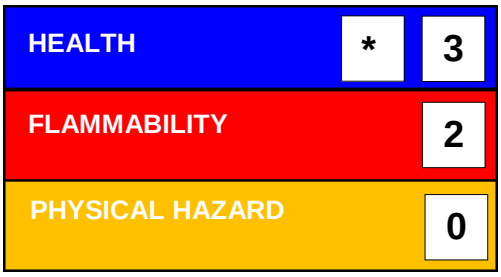
Further information

NFPA 704:



0 No health threat, **1** Slightly Hazardous, **2** Hazardous, **3** Extreme danger, **4** Deadly

HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
US WEEL	:	USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA Z-1 / TWA	:	8-hour time weighted average
US WEEL / TWA	:	8-hr TWA
US WEEL / STEL	:	Short-Term TWA

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport

Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Disclaimer

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US / EN

Prepared by:

FMC Corporation

End of Material Safety Data Sheet