SAFETY DATA SHEETS

This SDS packet was issued with item:

078823776

The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).

078340256 078340264 078340272 078340280 078340306 078340314 078340322 078340330 078343157 078910906 078910913

The safety data sheets (SDS) in this packet apply to one or more components included in the items listed below. Items listed below may require one or more SDS. Please refer to invoice for specific item number(s).

078343165 078343173 078343181 078343207 078343215 078343223 078343231 078823628 078823636 078823644 078823651 078823677 078823685 078823693 078823701 078823727 078823735 078823743 078823750 078823784 078823792 078823800 078910896 078910897 078910898 078910899 078910900 078910901 078910902 078910903 078910907 078910908 078910909 078910910 078910911 078910912

MATERIAL SAFETY DATA SHEET

FRONTLINE® Plus for Dogs

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Recommended use: Treatment and prevention of flea infestation, and control of brown dog ticks, paralysis ticks and biting lice on dogs and puppies

Supplier name: Merial Australia Pty Ltd
Address: Building D, 12-24 Talavera Road
Macquarie Park NSW 2113
Telephone number (toll-free): 1800 808 691
All hours emergency phone number - Poisons Information Centre 131126 anywhere in Australia

SECTION 2 HAZARDS IDENTIFICATION

Classified as hazardous according to the National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)].
Classified as Dangerous Goods according to the ADG Code (Class 3 PG III - flammable liquid).

Risk phrase(s) (Hazard): FLAMMABLE (R10)
HARMFUL BY INHALATION AND IN CONTACT WITH SKIN AND IF SWALLOWED (R20/21/22)
IRRITATING TO EYES (R36)

Safety phrase(s)): KEEP OUT OF THE REACH OF CHILDREN (S2)
(Precautionary statements KEEP CONTAINER TIGHTLY CLOSED AND IN A WELL-VENTILATED PLACE. (S7/9)
KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING (S16)
DO NOT EMPTY INTO DRAINS (S29)
TAKE PRECAUTIONARY MEASURES AGAINST STATIC DISCHARGES (S33)
IF SWALLOWED, SEEK MEDICAL ADVICE IMMEDIATELY AND SHOW THE CONTAINER OR LABEL. (S46)

APPROVED CRITERIA:CLASSIFICATION: HARMFUL Xn
SUSDP CLASSIFICATION -
POISONS SCHEDULE: 5
ADG CODE CLASSIFICATION: Class 3 (Flammable liquid)
UN No. 1170 (See also Sections 14-16)
LOCAL EFFECTS OF PRODUCT:
TARGET ORGANS:
INHALATION: Harmful if vapour or spray is inhaled. May cause irritation to nose, throat and respiratory tract, lethargy or dizziness.
SKIN CONTACT: May cause irritation.
EYE CONTACT: Irritant. May cause burning, redness and swelling.
INGESTION: Harmful. May cause nausea, vomiting, abdominal pain,
CARCINOGEN STATUS: Not classified by NOHSC, NTP or IARC

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Content %	Classification	Risk phrase
Fipronil Technical	120068-37-3	10	Harmful Xn	R 20/21-36
Methoprene	40596-69-8	9	Not classified	-
Ethanol	64-17-5	7.9	Flammable	R 10
Non-hazardous ingredients	Confidential	~10	Not classified	-
Glycol ether		to 100	Not classified	-

SECTION 4 FIRST AID MEASURES

ADVICE:	For advice, contact a Poisons Information Centre (Phone 131 126 anywhere in Australia), or call a doctor at once.
INHALATION:	If vapour or mist inhaled, remove from contaminated area. If adverse effects occur, contact a doctor and show this MSDS.
SKIN CONTACT:	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.
EYE CONTACT:	If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
INGESTION:	If swallowed urgent hospital treatment is likely to be needed. Follow instruction of Poisons Information Centre.
Notes to physician:	The active ingredient Fipronil, is a phenylpyrazole that disrupts normal nerve function by blocking GABA-gated chloride channels. The action is selectively toxic to insects. Methoprene is of low toxicity with an NOEL rat is 250 mg/kg/day.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS:	Flammable.
EXTINGUISHING MEDIA:	Water spray/fog, dry chemical, CO2 or alcohol-resistant foam.
FIRE FIGHTING:	
Special advice in case of fire:	Emergency workers should wear full protective equipment and supplied-air breathing apparatus. Toxic or irritant gases, vapours or particulates may be generated in a fire. Spray water on containers to cool. Contain contaminated fire-fighting water.
Hazardous products of combustion:	Oxides of carbon and nitrogen, various organic substances.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Emergency procedures. Initial Emergency response Guide: 14

If spill or leak is of significant quantity, move non-essential persons away. Remove any sources of ignition from area. Seal leak if safe to do so. Remove leaking packages to space with good ventilation of area and place in over-bin. Contain spill with absorbent material such as dry sand or kitty litter. Do not allow to enter drains or sewer. Sweep up used absorbent and pack in properly labelled container for disposal. Wet down contaminated area with water, cover with absorbent and sweep up and place in labelled container. Consult waste authority regarding disposal.

OCCUPATIONAL RELEASE: As for accidental release. Wear impervious gloves, eye protection and half-face respirator with organic vapour element, to deal with a large spill or leak.

SECTION 7 HANDLING AND STORAGE

SAFETY DIRECTIONS:	Will irritate the eyes and skin. Avoid contact with eyes and skin. Wash hands after use. Keep away from foodstuffs and beverages. Do not eat, drink or smoke when using the product. Do not inhale vapours or mists.
HANDLING AND STORAGE	Classified as Dangerous Goods of Class 3 PG III according to the Australian Dangerous goods Code 6th edition. Surface transport must comply with the ADG Code. Special storage conditions may apply to a site if more than 1000 L of the liquid is stored. Store and stow away from oxidising agents. Do not store with food. Store in original container below 30°C away from oxidising agents.
Ventilation:	Store significant quantities where there is good natural ventilation.
Sources of ignition:	Store away from sources of ignition such as power points, switches, motors, naked flames and spark-producing equipment.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

No ingredients that require workplace atmosphere monitoring have been identified by the manufacturer.

EXPOSURE LIMITS: NOHSC TWA = 1880 mg/m^3 for ethanol
NOHSC STEL= None established

No exposure limits have been established for toxic ingredients such as the active ingredient.
The Time Weighted Average (TWA) is the concentration of the substance in the worker's breathing zone, exposure to which over 8-hour days, 5-day weeks over a working lifetime, should not cause any undue discomfort or health impairment to nearly all workers. The Short Term Exposure Limit (STEL), means a 15 minute TWA exposure which should not be exceeded and should not be repeated within 60 minutes or more than four times per day.

Exposure Controls / Industrial hygiene:

VENTILATION:	Not required where there is good natural ventilation.
RESPIRATOR:	Not required for normal handling.
EYE PROTECTION:	Not required for normal use. Avoid contact with eyes. Wear eye protection if there is likelihood of splashing.
SKIN PROTECTION:	Not required for normal use, however, if used frequently or animals on which the product has been used are handled frequently, wear impervious gloves.

Personal Protective Equipment

EYE PROTECTION:	If required as outlined above or if cleaning-up a large spill or leak, use chemical goggles complying with AS 1337 / 1337.
SKIN PROTECTION:	If required as outlined above or if cleaning-up a large spill or leak, wear impervious gloves such as PVC coated cotton gloves complying with AS/NZS 2161.2.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Slightly viscous amber liquid.
Odour.	Alcoholic
pH.	Not relevant
Boiling point/range.	78 ^{o} C (ethanol)
Freezing Point	Not determined
Melting point	Not determined
Solubility in water	Soluble in all proportions
pH	5.2
Specific gravity or density.	1.020 g/cc
Flash point	36 deg.C.
Upper explosive limits in air	19 %
Lower explosive limit	4.3 %
Auto-ignition temperature.	190 deg.C (estimate)
Particle size.	Not relevant
Volatile organic compounds.	~8 %
Viscosity.	9.73 mm^2/s
Octanol/water partition coefficient.	Not determined
Reactivity	Not an oxidising agent.
Burning characteristics.	Flammable
Incompatible materials.	Strong oxidizing agents or peroxide formers.

SECTION 10 STABILITY & REACTIVITY

Thermal decomposition:	Not expected at normal temperatures.
Dangerous reactions:	None known.
REACTIVITY:	Stable but readily oxidised by oxidising agents such as pool and spa chlorine, permanganates, chlorates and may catch fire in contact with them.
CONDITIONS TO AVOID:	Contact with any oxidising agent, strong acids and strong alkali. Incompatible with oxidising agents.
HAZARDOUS DECOMPOSITION:	No significant decomposition expected at normal temperatures.
POLYMERISATION:	No hazardous polymerisation will occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Does not contain heavy metals or halogenated compounds.
Health effects from the likely routes of exposure

LD50 acute oral rat:	750 mg/kg
LD50 acute dermal rat:	5000 mg/kg
Skin irritation (rabbit):	Mild skin irritant
Eye irritation (rabbit):	Eye irritant
Sensitisation (guinea pig):	Not a sensitising agent
Genotoxicity	Not available
LOCAL EFFECTS OF PRODUCT:	Irritant to eyes and skin.
TARGET ORGANS:	Eyes, Skin, CNS.
HAZARDOUS INGREDIENTS:	Fipronil R-PHRASE 20/21-36 HARMFUL BY INHALATION AND IN CONTACT WITH SKIN
MUTAGENICITY DATA:	Not available
Subacute to chronic toxicity:	There are no data on the reproductive effects of this mixture. One component of this product produced slight adverse reproductive effects at 2.5% in drinking water. For Fipronil, the No Effect Level (NOEL) for adverse reproductive effects in rats was approximately 2.5 mg/kg-day, with higher doses causing adverse effects. Ethanol is a known reproductive toxin, with overexposure to bulk volumes during pregnancy associated with numerous adverse effects on the foetus. Acute and chronic overexposure to bulk volumes of Technical Fipronil produced adverse neurological effects in animals (rabbits), including changes in neuromuscular endpoints and seizures.
Additional toxicological information:	Symptoms of respiratory depression or central nervous system depression (fatigue, lethargy or dizziness) may occur if exposed to bulk volumes of ingredients.

SECTION 12 ECOLOGICAL INFORMATION

The following Information applies to the Fipronil active ingredient, not the product:

Environmental fate:	Not available
Biological elimination:	Not available
Bioaccumulation potential:	Not available
Mobility:	Not available
TOXICITY TO FISH:	Rainbow Trout LC50 0.25 mg/L/24hr - poisonous to fish.
TOXICITY TO DAPHNIA:	190g/L EC50 48 hr (*D. magna)*
TOXICITY TO ALGA:	Not available
TOXICITY TO BACTERIA:	IC50 (respiration) Not availalble
READY BIODEGRADABILITY:	Not available

The following Information is on the Methoprene active ingredient, not the product**:**

TOXICITY TO DAPHNIA:	360g/L EC50 48 hr (*D. magna)*

SECTION 13 DISPOSAL CONSIDERATIONS

Special precautions:	As the active ingredient is highly toxic to aquatic organisms, great care is need to ensure that the product does not reach a drain, waterway or unpaved soil. Individual used pipettes may be disposed of by wrapping in absorbent paper and disposal to household garbage. For the disposal of the clean-up materials from a significant spill or leak, consult waste authority.

SECTION 14 TRANSPORT INFORMATION

Surface transport:

UN Number	1170
UN Proper Shipping Name	Ethanol Solution
Class and subsidiary risk	3 (no sub-risk)
Packing Group	III
Special precautions for user	SP144 SP184
Hazchem Code	2[Y]
Labelling:	Transport packaging to comply with ADG Code labelling requirements for Class 3 PG III DG.
Transport as :	DG of Class 3 PG III
Incompatible stowage:	Do not stow with DG of Class 1, Class 2.3, Class 4.2, Class 5.1, Class 5.2 or Class 7

Maritime transport:

UN Number	1170
UN Proper Shipping Name	Ethanol Solution
Page:	3337-1
Class and subsidiary risk	3.3 (no sub-risk)
Packing Group	III
EMS NO.	F-E, S-D
MFAG:	305

Air transport ICAO-TI and IATA-DGR:

UN Number	1170
UN Proper Shipping Name	Ethanol Solution
Class and subsidiary risk	3 (no sub-risk)
Packing Group	III

SECTION 15 REGULATORY INFORMATION

This product is registered with the Australian Pesticides & Veterinary Medicines Authority; APVMA Approval Number: 54523.

Consult Australian Standard AS1940 for guidance regarding storage facilities for DG of Class 3.

SECTION 16 OTHER INFORMATION

Classification for storage requirements of AS 1940.

As the Closed flash point is between 23 deg.C and 60.5 deg.C, the classification of "Class 3 flammable liquid" may need to be taken into account for compliance with AS 1940.

Do not allow product to reach ground water, water course or sewage system. Poisonous to fish and plankton.

ACRONYMS USED IN THIS MSDS

SUSDP	Standard for the Uniform scheduling of Drugs and Poisons
ADG Code	Australian Dangerous Goods (DG) Code
CAS No.	Chemical Abstracts number
UN No.	United Nations identifying number for DG
R-phrases	Risk phrases identifying main hazard of ingredient or product
S-phrases	Safety phrases identifying main safety measures to be used
NOHSC	National Occupational; Health and Safety Commission
NTP	National Toxicology Programme (USA)
IARC	International Agency for Research on Cancer
AICS	Australian Inventory of Chemical Substances
HAZCHEM	Code for information for emergency services

Frontline is a registered trademark of Merial.

SUPPLIER STATEMENT: The product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with legal regulations.. The information in this MSDS is based on the level of knowledge at the time of preparation and relates to the product in the state in which it is supplied. The information describes the product from the safety point of view and is not intended to guarantee any particular properties and shall not establish a legally valid contractual relationship.

MATERIAL SAFETY DATA SHEET

FRONTLINE® Plus for Dogs

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Recommended use: Treatment and prevention of flea infestation, and control of brown dog ticks, paralysis ticks and biting lice on dogs and puppies

Supplier name: Merial Australia Pty Ltd
Address: Building D, 12-24 Talavera Road
Macquarie Park NSW 2113
Telephone number (toll-free): 1800 808 691
All hours emergency phone number - Poisons Information Centre 131126 anywhere in Australia

SECTION 2 HAZARDS IDENTIFICATION

Classified as hazardous according to the National Occupational Health and Safety Commission's Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)].
Classified as Dangerous Goods according to the ADG Code (Class 3 PG III - flammable liquid).

Risk phrase(s) (Hazard): FLAMMABLE (R10)
HARMFUL BY INHALATION AND IN CONTACT WITH SKIN AND IF SWALLOWED (R20/21/22)
IRRITATING TO EYES (R36)

Safety phrase(s)): KEEP OUT OF THE REACH OF CHILDREN (S2)
(Precautionary statements KEEP CONTAINER TIGHTLY CLOSED AND IN A WELL-VENTILATED PLACE. (S7/9)
KEEP AWAY FROM SOURCES OF IGNITION - NO SMOKING (S16)
DO NOT EMPTY INTO DRAINS (S29)
TAKE PRECAUTIONARY MEASURES AGAINST STATIC DISCHARGES (S33)
IF SWALLOWED, SEEK MEDICAL ADVICE IMMEDIATELY AND SHOW THE CONTAINER OR LABEL. (S46)

APPROVED CRITERIA:CLASSIFICATION: HARMFUL Xn
SUSDP CLASSIFICATION -
POISONS SCHEDULE: 5
ADG CODE CLASSIFICATION: Class 3 (Flammable liquid)
UN No. 1170 (See also Sections 14-16)
LOCAL EFFECTS OF PRODUCT:
TARGET ORGANS:
INHALATION: Harmful if vapour or spray is inhaled. May cause irritation to nose, throat and respiratory tract, lethargy or dizziness.
SKIN CONTACT: May cause irritation.
EYE CONTACT: Irritant. May cause burning, redness and swelling.
INGESTION: Harmful. May cause nausea, vomiting, abdominal pain,
CARCINOGEN STATUS: Not classified by NOHSC, NTP or IARC

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Content %	Classification	Risk phrase
Fipronil Technical	120068-37-3	10	Harmful Xn	R 20/21-36
Methoprene	40596-69-8	9	Not classified	-
Ethanol	64-17-5	7.9	Flammable	R 10
Non-hazardous ingredients	Confidential	~10	Not classified	-
Glycol ether		to 100	Not classified	-

Obtained by Global Safety Management,
www.globalsafetynet.com (877) 682-7460

SECTION 4 FIRST AID MEASURES

ADVICE: For advice, contact a Poisons Information Centre (Phone 131 126 anywhere in Australia), or call a doctor at once.

INHALATION: If vapour or mist inhaled, remove from contaminated area. If adverse effects occur, contact a doctor and show this MSDS.

SKIN CONTACT: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

EYE CONTACT: If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.

INGESTION: If swallowed urgent hospital treatment is likely to be needed. Follow instruction of Poisons Information Centre.

Notes to physician: The active ingredient Fipronil, is a phenylpyrazole that disrupts normal nerve function by blocking GABA-gated chloride channels. The action is selectively toxic to insects. Methoprene is of low toxicity with an NOEL rat is 250 mg/kg/day.

SECTION 5 FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Flammable.

EXTINGUISHING MEDIA: Water spray/fog, dry chemical, CO2 or alcohol-resistant foam.

FIRE FIGHTING:

Special advice in case of fire: Emergency workers should wear full protective equipment and supplied-air breathing apparatus. Toxic or irritant gases, vapours or particulates may be generated in a fire. Spray water on containers to cool. Contain contaminated fire-fighting water.

Hazardous products of combustion: Oxides of carbon and nitrogen, various organic substances.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Emergency procedures. Initial Emergency response Guide: 14

If spill or leak is of significant quantity, move non-essential persons away. Remove any sources of ignition from area. Seal leak if safe to do so. Remove leaking packages to space with good ventilation of area and place in over-bin. Contain spill with absorbent material such as dry sand or kitty litter. Do not allow to enter drains or sewer. Sweep up used absorbent and pack in properly labelled container for disposal. Wet down contaminated area with water, cover with absorbent and sweep up and place in labelled container. Consult waste authority regarding disposal.

OCCUPATIONAL RELEASE: As for accidental release. Wear impervious gloves, eye protection and half-face respirator with organic vapour element, to deal with a large spill or leak.

SECTION 7 HANDLING AND STORAGE

SAFETY DIRECTIONS: Will irritate the eyes and skin. Avoid contact with eyes and skin. Wash hands after use. Keep away from foodstuffs and beverages. Do not eat, drink or smoke when using the product. Do not inhale vapours or mists.

HANDLING AND STORAGE Classified as Dangerous Goods of Class 3 PG III according to the Australian Dangerous goods Code 6th edition. Surface transport must comply with the ADG Code.

Special storage conditions may apply to a site if more than 1000 L of the liquid is stored. Store and stow away from oxidising agents. Do not store with food. Store in original container below 30°C away from oxidising agents.

Ventilation: Store significant quantities where there is good natural ventilation.

Sources of ignition: Store away from sources of ignition such as power points, switches, motors, naked flames and spark-producing equipment.

Obtained by Global Safety Management,
www.globalsafetymgt.com (877) 682-7460

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

No ingredients that require workplace atmosphere monitoring have been identified by the manufacturer.

EXPOSURE LIMITS: NOHSC TWA = 1880 mg/m^3 for ethanol
NOHSC STEL= None established

No exposure limits have been established for toxic ingredients such as the active ingredient.
The Time Weighted Average (TWA) is the concentration of the substance in the worker's breathing zone, exposure to which over 8-hour days, 5-day weeks over a working lifetime, should not cause any undue discomfort or health impairment to nearly all workers. The Short Term Exposure Limit (STEL), means a 15 minute TWA exposure which should not be exceeded and should not be repeated within 60 minutes or more than four times per day.

Exposure Controls / Industrial hygiene:

VENTILATION:	Not required where there is good natural ventilation.
RESPIRATOR:	Not required for normal handling.
EYE PROTECTION:	Not required for normal use. Avoid contact with eyes. Wear eye protection if there is likelihood of splashing.
SKIN PROTECTION:	Not required for normal use, however, if used frequently or animals on which the product has been used are handled frequently, wear impervious gloves.

Personal Protective Equipment

EYE PROTECTION:	If required as outlined above or if cleaning-up a large spill or leak, use chemical goggles complying with AS 1337 / 1337.
SKIN PROTECTION:	If required as outlined above or if cleaning-up a large spill or leak, wear impervious gloves such as PVC coated cotton gloves complying with AS/NZS 2161.2.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Slightly viscous amber liquid.
Odour.	Alcoholic
pH.	Not relevant
Boiling point/range.	78 ^{o} C (ethanol)
Freezing Point	Not determined
Melting point	Not determined
Solubility in water	Soluble in all proportions
pH	5.2
Specific gravity or density.	1.020 g/cc
Flash point	36 deg.C.
Upper explosive limits in air	19 %
Lower explosive limit	4.3 %
Auto-ignition temperature.	190 deg.C (estimate)
Particle size.	Not relevant
Volatile organic compounds.	~8 %
Viscosity.	9.73 mm^2/s
Octanol/water partition coefficient.	Not determined
Reactivity	Not an oxidising agent.
Burning characteristics.	Flammable
Incompatible materials.	Strong oxidizing agents or peroxide formers.

SECTION 10 STABILITY & REACTIVITY

Thermal decomposition:	Not expected at normal temperatures.
Dangerous reactions:	None known.
REACTIVITY:	Stable but readily oxidised by oxidising agents such as pool and spa chlorine, permanganates, chlorates and may catch fire in contact with them.
CONDITIONS TO AVOID:	Contact with any oxidising agent, strong acids and strong alkali. Incompatible with oxidising agents.
HAZARDOUS DECOMPOSITION:	No significant decomposition expected at normal temperatures.
POLYMERISATION:	No hazardous polymerisation will occur.

Obtained by Global Safety Management,
www.globalsafetynet.com (877) 683-7460

SECTION 11 TOXICOLOGICAL INFORMATION

Does not contain heavy metals or halogenated compounds.
Health effects from the likely routes of exposure

LD50 acute oral rat:	750 mg/kg
LD50 acute dermal rat:	5000 mg/kg
Skin irritation (rabbit):	Mild skin irritant
Eye irritation (rabbit):	Eye irritant
Sensitisation (guinea pig):	Not a sensitising agent
Genotoxicity	Not available
LOCAL EFFECTS OF PRODUCT:	Irritant to eyes and skin.
TARGET ORGANS:	Eyes, Skin, CNS.
HAZARDOUS INGREDIENTS:	Fipronil R-PHRASE 20/21-36 HARMFUL BY INHALATION AND IN CONTACT WITH SKIN
MUTAGENICITY DATA:	Not available
Subacute to chronic toxicity:	There are no data on the reproductive effects of this mixture. One component of this product produced slight adverse reproductive effects at 2.5% in drinking water. For Fipronil, the No Effect Level (NOEL) for adverse reproductive effects in rats was approximately 2.5 mg/kg-day, with higher doses causing adverse effects. Ethanol is a known reproductive toxin, with overexposure to bulk volumes during pregnancy associated with numerous adverse effects on the foetus. Acute and chronic overexposure to bulk volumes of Technical Fipronil produced adverse neurological effects in animals (rabbits), including changes in neuromuscular endpoints and seizures.
Additional toxicological information:	Symptoms of respiratory depression or central nervous system depression (fatigue, lethargy or dizziness) may occur if exposed to bulk volumes of ingredients.

SECTION 12 ECOLOGICAL INFORMATION

The following Information applies to the Fipronil active ingredient, not the product:

Environmental fate:	Not available
Biological elimination:	Not available
Bioaccumulation potential:	Not available
Mobility:	Not available
TOXICITY TO FISH:	Rainbow Trout LC50 0.25 mg/L/24hr - poisonous to fish.
TOXICITY TO DAPHNIA:	190g/L EC50 48 hr (*D. magna)*
TOXICITY TO ALGA:	Not available
TOXICITY TO BACTERIA:	IC50 (respiration) Not availalble
READY BIODEGRADABILITY:	Not available

The following Information is on the Methoprene active ingredient, not the product**:**

TOXICITY TO DAPHNIA:	360g/L EC50 48 hr (*D. magna)*

SECTION 13 DISPOSAL CONSIDERATIONS

Special precautions:	As the active ingredient is highly toxic to aquatic organisms, great care is need to ensure that the product does not reach a drain, waterway or unpaved soil. Individual used pipettes may be disposed of by wrapping in absorbent paper and disposal to household garbage. For the disposal of the clean-up materials from a significant spill or leak, consult waste authority.

Obtained by Global Safety Management,
www.globalsafetynet.com (877) 683-7460

SECTION 14 TRANSPORT INFORMATION

Surface transport:

UN Number	1170
UN Proper Shipping Name	Ethanol Solution
Class and subsidiary risk	3 (no sub-risk)
Packing Group	III
Special precautions for user	SP144 SP184
Hazchem Code	2[Y]
Labelling:	Transport packaging to comply with ADG Code labelling requirements for Class 3 PG III DG.
Transport as :	DG of Class 3 PG III
Incompatible stowage:	Do not stow with DG of Class 1, Class 2.3, Class 4.2, Class 5.1, Class 5.2 or Class 7

Maritime transport:

UN Number	1170
UN Proper Shipping Name	Ethanol Solution
Page:	3337-1
Class and subsidiary risk	3.3 (no sub-risk)
Packing Group	III
EMS NO.	F-E, S-D
MFAG:	305

Air transport ICAO-TI and IATA-DGR:

UN Number	1170
UN Proper Shipping Name	Ethanol Solution
Class and subsidiary risk	3 (no sub-risk)
Packing Group	III

SECTION 15 REGULATORY INFORMATION

This product is registered with the Australian Pesticides & Veterinary Medicines Authority; APVMA Approval Number: 54523.

Consult Australian Standard AS1940 for guidance regarding storage facilities for DG of Class 3.

SECTION 16 OTHER INFORMATION

Classification for storage requirements of AS 1940.

As the Closed flash point is between 23 deg.C and 60.5 deg.C, the classification of "Class 3 flammable liquid" may need to be taken into account for compliance with AS 1940.

Do not allow product to reach ground water, water course or sewage system. Poisonous to fish and plankton.

Obtained by Global Safety Management,
www.globalsafetynet.com, (877) 682-7460

ACRONYMS USED IN THIS MSDS

SUSDP	Standard for the Uniform scheduling of Drugs and Poisons
ADG Code	Australian Dangerous Goods (DG) Code
CAS No.	Chemical Abstracts number
UN No.	United Nations identifying number for DG
R-phrases	Risk phrases identifying main hazard of ingredient or product
S-phrases	Safety phrases identifying main safety measures to be used
NOHSC	National Occupational; Health and Safety Commission
NTP	National Toxicology Programme (USA)
IARC	International Agency for Research on Cancer
AICS	Australian Inventory of Chemical Substances
HAZCHEM	Code for information for emergency services

Frontline is a registered trademark of Merial.

SUPPLIER STATEMENT: The product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with legal regulations.. The information in this MSDS is based on the level of knowledge at the time of preparation and relates to the product in the state in which it is supplied. The information describes the product from the safety point of view and is not intended to guarantee any particular properties and shall not establish a legally valid contractual relationship.

Obtained by Global Safety Management,
www.globalsafetynet.com, (877) 682-7460

SAFETY DATA SHEET

Version Date: 30 January 2016
Supersedes: None

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: FRONTLINE® GOLD For Dogs

Reference Number: EPA REG#2596-178-65331 (112393)

The following information is intended to give general health and safety guidance on the manufacturing, storage and transport of the mixture. Professional and non-professional users should consult label and package inserts for the proper use, storage and disposal of this mixture.

Chemical Family: Mixture: phenylpyrazole, pyridine, terpenoid
Chemical Name: Mixture
Synonyms: NA
Formula: None
Product Use: FRONTLINE® GOLD For Dogs is used in veterinary medicine for the treatment and prevention/control of ectoparasites on Dogs.

COMPANY ADDRESS
Merial, Inc.
3239 Satellite Boulevard
Duluth, Georgia 30096-4640

EMERGENCY INFORMATION:
HEALTH INFORMATION **1-888-637-4251, option 3 (U.S.A. and Canada)**
SPILL INFORMATION **CHEMTREC® (In the U.S.A.): 1-800-424-9300**
CHEMTREC® (International): 1-703-527-3887 (call collect)

2. HAZARDS IDENTIFICATION

Danger

Emergency Overview

Flammable liquid and vapor. Harmful if swallowed. May be harmful in contact with skin. Causes mild skin irritation. Causes eye irritation. Causes damage to central nervous system through single or prolonged/repeated exposure. Very toxic to aquatic life. Do not eat, drink, or smoke when handling this mixture. Wash hands thoroughly after handling.

Risk phrase(s):

R10	Flammable
R21	Harmful In Contact With Skin
R36	Irritating To Eyes
R38	Irritating To Skin
R48	Danger Of Serious Damage To Health By Prolonged Exposure
R25	Toxic If Swallowed

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R50 Very Toxic To Aquatic Organisms

Safety Phrase(s):

S2 Keep Out Of The Reach Of Children
S7/9 Keep Container Tightly Closed And In A Well-Ventilated Place
S16 Keep Away From Sources Of Ignition - No Smoking
S29 Do Not Empty Into Drains
S33 Take Precautionary Measures Against Static Discharges
S24 Avoid Contact With Skin
S28 After Contact With Skin, Wash Immediately With Plenty Of Water
S25 Avoid Contact With Eyes
S26 In case Of Contact With Eyes, Rinse Immediately With Plenty Of Water And Seek Medical Advice
S46 If Swallowed, Seek Medical Advice Immediately And Show The Container Or Label
S60 Avoid Release To The Environment

The following three boxes are relevant to GHS classification and are not labeling guides.

Physical Hazard (GHS Classification)	Category	Pictogram	Signal Word	Hazard Statement
Flammable liquid	3		Warning	Flammable liquid and vapor (H226)

Health Hazard (GHS Classification)	Category	Pictogram	Signal Word	Hazard Statement
Acute Oral Toxicity	4		Warning	Harmful if swallowed (H302)
Acute Dermal Toxicity	5	No Symbol	Warning	May be harmful in contact with skin (H313)
Dermal Irritation	3	No Symbol	Warning	Causes mild skin irritation (H316)
Ocular Irritation	2B	No Symbol	Warning	Causes eye irritation (H320)
SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:	1		Danger	Causes damage to organs (CNS) (H370)
SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:	1		Danger	Causes damage to organs (CNS) through prolonged or repeated exposure (H372)

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Environmental Hazard (GHS Classification)	Category	Pictogram	Signal Word	Hazard Statement
Acute Aquatic Hazard	1		Warning	Very toxic to aquatic life (H400)

POTENTIAL HEALTH EFFECTS

The following potential human health effects are the results of the exposure to the mixture or extrapolated from the individual ingredients of the mixture.

EYE:	The mixture is irritating to the eyes.
SKIN:	The mixture produces mild skin irritation. The mixture is not anticipated to produce skin sensitization.
INHALATION:	The mixture is not anticipated to produce vapors in a sufficient quantity that would be irritating to eyes, skin, nose and/or throat.
INGESTION:	The mixture is harmful if swallowed.
CHRONIC EFFECTS:	The mixture is not anticipated to be carcinogenic, mutagenic, a reproductive toxin or a developmental toxin.
SIGNS AND SYMPTOMS OF EXPOSURE:	Signs and symptoms of exposure may include sweating, nausea, vomiting, headache, abdominal pain, dizziness, agitation, weakness and/or tonic-clonic seizures.
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:	None known.

POTENTIAL ENVIRONMENTAL EFFECTS	Some ingredients of this mixture are very toxic to aquatic life. Avoid release to the environment.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS No.	% W / V
Fipronil	120068-37-3	5-10
Pyriproxyfen	95737-68-1	0-1
S-methoprene	65733-16-6	5-10
Ethanol	64-17-5	5-10
Non Hazardous Substances		69-85

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4. FIRST AID MEASURES

EYE CONTACT: In case of contact or if eyes become irritated during administration, immediately flush eyes with plenty of water for at least 15 minutes. If ocular irritation persists, seek medical attention.

SKIN CONTACT: If skin or hair contact occurs, remove contaminated clothing and shoes and flush skin and/or hair with plenty of water for at least 15 minutes. Launder contaminated clothing before reuse. If skin irritation develops and persists or recurs, seek medical attention.

INHALATION: If inhaled, remove from contaminated area. Administer artificial respiration if not breathing. If lungs become irritated or breathing is difficult during use of the product, move to fresh air and seek medical attention.

INGESTION: If swallowed, do NOT induce vomiting and seek immediate medical attention.

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5. FIRE FIGHTING MEASURES

UNUSUAL FIRE AND EXPLOSION HAZARDS: Prevent accumulation of vapors. When heated to decomposition, may produce oxides of carbon and nitrogen.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical extinguishers, foam, water fog or spray. Large fires with “alcohol”-type foam extinguishers. Use extinguishing media appropriate for surrounding materials. Contain contaminated fire-fighting water.

PROTECTION OF FIREFIGHTERS: Fire fighters should wear approved/certified positive pressure self-contained breathing apparatus and full protective equipment.

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6. ACCIDENTAL RELEASE MEASURES

For transportation-related and large spills call CHEMTREC at 1-800-424-9300. If outside the U.S.A., call CHEMTREC collect at 1-703-527-3887.

For small spills, use protective equipment as prescribed in Section 8. Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Dispose contaminated material in sealed container as waste according to Section 13.

PERSONAL PRECAUTIONS: Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Follow protective measures provided under Personal Protection in Section 8.

ENVIRONMENTAL PRECAUTIONS: Avoid release to the environment.

METHODS FOR CLEANING UP: For small spills, soak up with absorbent materials and place in properly labeled containers.

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7. HANDLING AND STORAGE

HANDLING: No smoking, eating, or drinking while using this mixture. Keep container tightly closed when not in use. Provide for adequate ventilation to prevent accumulation of vapors. Avoid prolonged or repeated exposure. Do not get in eyes, on skin or clothing. Keep away from incompatible materials (see Section 10).

PROTECTION AGAINST EXPLOSION AND FIRES: Keep ignition sources away. Do not smoke. Protect against electrostatic charges. Ground/bond container and receiving equipment. Use explosion-proof electrical, ventilating, and/or lighting equipment. Use only non-sparking tools.

STORAGE: Store in a well-ventilated place. Keep cool. Store locked up.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION (INDUSTRIAL)

The following ingredient(s) has exposure limits.

Component	OSHA PEL (TWA) ppm	OSHA PEL (TWA) mg/m^3	ACGIH TLV® (TWA) ppm	ACGIH TLV® (TWA) mg/m^3
Ethanol (CAS No. 64-17-5)	1000	1900	1000	-

ENGINEERING CONTROLS: Use local exhaust ventilation to prevent accumulation of vapors.

EYE / FACE PROTECTION: Wear chemical splash goggles when cleaning spilled mixture or if the potential for eye contact exists, wear safety glasses with side shields for normal handling.

SKIN PROTECTION: Wear butyl rubber, neoprene, vinyl or other chemical resistant impervious gloves.

RESPIRATORY PROTECTION: Wear approved/certified respirator when cleaning up spills. For normal use, ensure adequate exhaust ventilation.

GENERAL HYGIENE CONSIDERATIONS: Do not eat, drink, or smoke while using this mixture. Wash hands thoroughly after use.

OTHER: Provide emergency shower and eyewash facility in close proximity to use. Remove contaminated clothing and launder before reuse or discard.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid, clear
Color:	Light Yellow
Odor:	No data
pH:	No data
Melting/Freezing Point:	No data
Boiling Point:	No data
Flash Point:	45°C(113°F) Method Used: TCC
Flammability:	No data
Lower Explosive Limit:	No data

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Upper Explosive Limit:	No data
Autoignition Temperature:	No data
Decomposition Temperature:	No data
Vapor Pressure:	No data
Vapor Density:	No data
Solubility in Water:	Not soluble
Specific gravity:	8.37 LB/GA
Viscosity:	No data

10. STABILITY AND REACTIVITY

STABILITY:	Stable under normal conditions.
CONDITIONS TO AVOID:	Avoid exposure to heat, sparks, or flame.
MATERIALS TO AVOID:	Avoid strong oxidizing agents
HAZARDOUS DECOMPOSITION PRODUCTS:	When heated to decomposition may produce oxides of carbon and nitrogen as well as other uncharacterized decomposition products.
HAZARDOUS POLYMERIZATION:	Will not occur.

11. TOXICOLOGICAL INFORMATION

POTENTIAL EXPOSURE ROUTES: This mixture may be encountered through skin contact, eye contact or ingestion.

ACUTE TOXICITY DATA: *The following toxicity data are derived from the ingredients of the mixture, and are considered relevant to the final mixture.*

Parameter	Result	Comments
Acute Oral (LD_{50})	ATE >800 mg/kg (Category 4; GHS)	Classification of mixture on the basis of information/data on ingredients
Acute Dermal (LD_{50})	ATE >2000 mg/kg (Category 5; GHS)	Classification of mixture on the basis of information/data on ingredients
Acute Inhalation (LC_{50})	NE	
Ocular Irritant	Yes (Category 2B; GHS)	Classification of mixture on the basis of information/data on ingredients
Dermal Irritant	Yes (Category 2A; GHS)	Classification of mixture on the basis of information/data on ingredients
Dermal Sensitizer	Non-sensitizing	Classification of mixture on the basis of information/data on ingredients

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The following toxicity data are derived from the ingredients of the mixture, and are considered relevant to the final mixture.

CARCINOGENICITY:	**U.S. EPA:** Fipronil is classified as a "Group C - possible human carcinogen," based on laboratory animal studies (increased thyroid tumors in male and female rats). Based on known species sensitivity differences between rat and human, the rat thyroid tumors are not regarded as relevant for human health risk assessment. None of the remaining ingredients in the mixture are considered to be carcinogenic by U.S. EPA. **IARC:** No ingredient of this product, which is present at levels greater than or equal to 0.1%, is identified as probable, possible or confirmed human carcinogen by IARC. **ACGIH:** No ingredient of this product, which is present at levels greater than or equal to 0.1%, is identified as a carcinogen or potential carcinogen by ACGIH. **NTP:** No ingredient of this product, which is present at levels greater than or equal to 0.1%, is identified as a known or anticipated carcinogen by NTP. **OSHA:** No ingredient of this product, which is present at levels greater than or equal to 0.1%, is identified as a carcinogen or potential carcinogen by OSHA.
MUTAGENICITY:	No ingredient of this product, which is present at levels greater than or equal to 0.1%, is identified as a known or anticipated mutagenic toxin.
REPRODUCTIVE EFFECTS:	No ingredient of this product, which is present at levels greater than or equal to 0.1%, is identified as a known or anticipated reproductive toxins.
TERATOGENICITY/ DEVELOPMENTAL EFFECTS:	No ingredient of this product, which is present at levels greater than or equal to 0.1%, is identified as a known or anticipated teratogenic or developmental toxins.
SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE:	Based on the concentration of fipronil in the mixture, the specific target organ toxicity – single exposure classification is a Category 1. Animal studies and human pharmacovigilance reports identify fipronil as a neurotoxicant. Signs and symptoms include: sweating, nausea, vomiting, headache, abdominal pain, dizziness, agitation, weakness and/or tonic-clonic seizures.
SPECIFIC TARGET ORGAN TOXICITY – REPEATED EXPOSURE:	Based on the concentration of fipronil in the mixture, the specific target organ toxicity – repeated exposure classification is a Category 1. Animal studies and human pharmacovigilance reports identify fipronil as a neurotoxicant. Signs and symptoms include: sweating, nausea, vomiting, headache, abdominal pain, dizziness, agitation, weakness and/or tonic-clonic seizures.
INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:	None known

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12. ECOLOGICAL INFORMATION

The following toxicity data are derived from the ingredients of the mixture, and are considered relevant to the mixture.

TOXICITY: Fipronil, pyriproxyfen and S-methoprene are considered toxic to highly toxic to aquatic organisms. The LC_{50}/EC_{50} for the ingredients ranged from 0.009 to >100 mg/L for freshwater fish, invertebrates and plants. Based on these values and their relative percent volume within the mixture, the mixture is considered a Category 1 Acute Aquatic Hazard (GHS standards).

PERSISTENCE AND DEGRADABILITY: Based upon biodegradation testing, computer modeling and physico-chemical characteristics of the ingredients in the mixture, the mixture is considered inherently biodegradable in the environment.

BIOACCUMULATION POTENTIAL: Based on the K_{ow} of the ingredients in the mixture, some of the ingredients have the potential for bioaccumulation. However, fugacity modeling and biodegradation testing suggest that the potential for bioaccumulation of those ingredients is low. Therefore, it is considered that the mixture will not persist in the environment.

MOBILITY IN SOIL: Based on the K_{oc} of the ingredients in the mixture and fugacity modeling, the mixture is not considered to have a high probability of mobility through the soil.

RESULTS OF PBT AND vPvB ASSESSMENT: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

13. DISPOSAL CONSIDERATIONS

Responsibility for proper waste disposal is with the owner of the waste. Dispose of all waste mixture and containers in accordance with national, regional, state and local regulations.

SPECIAL PRECAUTIONS: As the active ingredients are toxic to highly toxic to aquatic organisms, great care is need to ensure that the product does not reach a drain, waterway or unpaved soil.

PREFERRED METHOD OF DISPOSAL: Individual used ampoules / phials may be disposed of by wrapping in absorbent paper and disposal to household garbage. For the disposal of the clean-up materials from a significant spill or leak, negotiate with the EPA responsible for the jurisdiction. Incineration may be permitted by local authority; otherwise secure landfill should be used, if approved by local authority.

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14. TRANSPORT INFORMATION

Air Transport ICAO-TI and IATA-DGR:	ICAO/IATA Class:	3
	UN/ID Number:	1170
	Label:	3
	Packing Group:	III
	Proper Shipping Name:	Ethanol Solution (Ethyl Alcohol Solution)
Maritime Transport IMDG:	IMDG Class:	3
	UN Number:	1170
	Label:	3
	Packaging Group:	III
	EMS Number:	F-E, S-D
	Marine Pollutant:	Yes
	Proper Shipping Name:	Ethanol Solution (Ethyl Alcohol Solution)
USDOT Regulations:	Hazard Class:	3
	Identification Number:	1170
	Packing Group:	III
	Proper Shipping Name: (technical name)	Ethanol Solution (Ethyl Alcohol Solution)

15. REGULATORY INFORMATION

GHS Hazard Phrase:	H226	Flammable liquid and vapor
	H302	Harmful if swallowed
	H313	May be harmful in contact with skin
	H316	Causes mild skin irritation
	H320	Causes eye irritation
	H370	Causes damage to organs (CNS)
	H372	Causes damage to organs (CNS) through prolonged or repeated exposure
	H400	Very toxic to aquatic life with long lasting effects
GHS Precautionary Phrases - Prevention:	P280	Wear protective gloves/protective clothing/eye protection/face protection
GHS Precautionary Phrases - Response:	P313/P316	Call a POISON CENTER or doctor/physician if you feel unwell.
	P313 + P312	
	P303 + P361 + P353	If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P391	Collect spillage.
GHS Precautionary Phrases - Disposal:	P501	Dispose of contents/container to in accordance with local/regional/national/international regulation.

United States:

This mixture is exempt from classification under Environmental Protection Agency (EPA) Superfund Amendments and Reauthorization Act (SARA), Hazardous Substances List or Toxic Substances Control Act (TSCA)

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STATE RIGHT-TO-KNOW STATUS:

Component	CA	NJ	PA	MA
Fipronil	Not listed	Not listed	Not listed	Not listed
Pyriproxyfen	Not listed	Not listed	Not listed	Not listed
S-methoprene	Not listed	Not listed	Not listed	Not listed
Ethanol	Listed	Listed	Listed	Listed

CA = California Proposition 65 NJ = New Jersey
PA = Pennsylvania MA = Massachusetts

Canada:

This mixture is exempt from classification under Workplace Hazardous Materials Information System (WHMIS) Requirements of the *Hazardous Products Act* and Controlled Products Regulations.

16. OTHER INFORMATION

Information contained within this document was based on the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) (a.k.a. Purple Book).

KEY/LEGEND USED:

NE = Not Established
ATE = Acute Toxicity Estimate
GHS = Globally Harmonized System of Classification and Labeling of Chemicals
LD_{50} = The median lethal dose where 50% mortality is noted
LC_{50} = The median lethal concentration (in air or solution) where 50% mortality is noted
TWA = Time Weighted Average
OSHA PEL = Occupational Safety and Health Association Permissible Exposure Limits
ACGIH TLV = American Conference of Governmental Industrial Hygienists Threshold Limit Values

REVISION: None

DISCLAIMER: The requirements or recommendations of any relevant site or working procedure, system or policy in force or arising from any risk assessment involving the substance or mixture should take precedence over any of the guidance contained in this safety data sheet where there is a difference in the information given.

To the best of our knowledge, the information provided in this safety data sheet is accurate at the date of publication and will be updated as and when appropriate. However, neither Merial nor any of its subsidiaries or parents assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards may be described herein, Merial cannot guarantee that these are the only hazards that exist.

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