SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier
Trade name CAPRENO® HERBICIDE
Product code (UVP) 86240661
SDS Number 102000036736
EPA Registration No. 264-1063

Relevant identified uses of the substance or mixture and uses advised against
Use Herbicide
Restrictions on use See product label for restrictions.

Information on supplier
Supplier Bayer CropScience
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
USA
Responsible Department Email: SDSINFO.BCS-NA@bayer.com
Emergency telephone no.
Emergency Telephone Number (24hr/ 7 days) 1-800-334-7577
Product Information Telephone Number 1-866-99BAYER (1-866-992-2937)

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Reproductive toxicity, Specific target organ toxicity - repeated exposure: Category 2

Labelling in accordance with regulation HCS 29CFR §1910.1200

Signal word: Warning
Hazard statements
Suspected of damaging fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wear protective gloves/ protective clothing/ eye protection/ face protection. Do not breathe mist or vapours. IF exposed or concerned: Get medical advice/ attention. Store locked up. Dispose of contents/container in accordance with local regulation.

**Hazards Not Otherwise Classified (HNOC)**
No physical hazards not otherwise classified. No health hazards not otherwise classified.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Component Name</th>
<th>CAS-No.</th>
<th>Concentration % by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiencarbazone-methyl</td>
<td>317815-83-1</td>
<td>5.6</td>
</tr>
<tr>
<td>Tembotrione</td>
<td>335104-84-2</td>
<td>28.3</td>
</tr>
<tr>
<td>Isoxadifen-ethyl</td>
<td>163520-33-0</td>
<td>11.0</td>
</tr>
<tr>
<td>Polyarylphenylether sulfate, ammonium salt</td>
<td>119432-41-6</td>
<td>3.5</td>
</tr>
</tbody>
</table>

### SECTION 4: FIRST AID MEASURES

**Description of first aid measures**

**General advice**  
When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

**Inhalation**  
Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

**Skin contact**  
Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

**Eye contact**  
Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

**Ingestion**  
Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

**Most important symptoms and effects, both acute and delayed**

**Symptoms**  
To date no symptoms are known.

**Indication of any immediate medical attention and special treatment needed**

**Treatment**  
Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.
SECTION 5: FIREFIGHTING MEASURES

Extinguishing media
Suitable Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable High volume water jet

Special hazards arising from the substance or mixture
In the event of fire the following may be released: Carbon monoxide (CO), Carbon dioxide (CO2), Hydrogen cyanide (hydrocyanic acid), Hydrogen fluoride, Hydrogen chloride (HCl), Nitrogen oxides (NOx), Sulphur oxides

Advice for firefighters
Special protective equipment for firefighters Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
Further information Keep out of smoke. Fight fire from upwind position. Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat. Do not allow run-off from fire fighting to enter drains or water courses.

Flash point No flash point - Determination conducted up to the boiling point.

Auto-ignition temperature 420 °C / 788 °F
Lower explosion limit No data available
Upper explosion limit No data available
Explosivity Not explosive
92/69/EEC, A.14 / OECD 113

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Precautions Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up
Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.

Additional advice Use personal protective equipment. If the product is accidentally spilled, do not allow to enter soil, waterways or waste water canal. Do not allow product to contact non-target plants.
Reference to other sections
- Information regarding safe handling, see section 7.
- Information regarding personal protective equipment, see section 8.
- Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling
Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Hygiene measures
Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers
Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Control parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiencarbazone-methyl</td>
<td>317815-83-1</td>
<td>10 mg/m³ (TWA)</td>
<td></td>
<td>OES BCS*</td>
</tr>
<tr>
<td>Tembotrione</td>
<td>335104-84-2</td>
<td>0.15 mg/m³ (SK-SEN)</td>
<td></td>
<td>OES BCS*</td>
</tr>
<tr>
<td>Isoxadifen-ethyl</td>
<td>163520-33-0</td>
<td>1 mg/m³ (SK-SEN)</td>
<td></td>
<td>OES BCS*</td>
</tr>
</tbody>
</table>

*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection
When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

Hand protection
Chemical resistant nitrile rubber gloves
SAFETY DATA SHEET

CAPRENO® HERBICIDE

Eye protection
Chemical resistant goggles must be worn.

Skin and body protection
Wear long-sleeved shirt and long pants and shoes plus socks.

General protective measures
Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water.
Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
beige to yellow

Physical State
Liquid

Odor
characteristic

Odour Threshold
No data available

pH
2.4 - 3.2 (100 %) (23 °C)

Vapor Pressure
No data available

Vapor Density (Air = 1)
No data available

Density
1.22 g/cm³ (20 °C)

Evaporation rate
No data available

Boiling Point
97 °C / 206.6 °F

Melting / Freezing Point
No data available

Water solubility
dispersible

Minimum Ignition Energy
Not applicable

Decomposition temperature
Stable under normal conditions.

Partition coefficient: n-octanol/water
Not applicable

Viscosity
950 - 1,400 cps
300 - 500 mPa.s (20 °C) Velocity gradient 20 /s
120 - 200 mPa.s (20 °C) Velocity gradient 100 /s

Flash point
No flash point - Determination conducted up to the boiling point.

Auto-ignition temperature
420 °C / 788 °F

Lower explosion limit
No data available

Upper explosion limit
No data available

Explosivity
Not explosive

92/69/EEC, A.14 / OECD 113

Other information
Further safety related physical-chemical data are not known.
SECTION 10: STABILITY AND REACTIVITY

Reactivity

Thermal decomposition Stable under normal conditions.

Chemical stability Stable under recommended storage conditions.

Possibility of hazardous reactions No hazardous reactions when stored and handled according to prescribed instructions.

Conditions to avoid Extremes of temperature and direct sunlight.

Incompatible materials No data available

Hazardous decomposition products No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes Eye contact, Skin contact, Ingestion

Immediate Effects

Eye Moderate eye irritation.

Skin May cause slight irritation. Harmful if absorbed through skin.

Ingestion Harmful if swallowed.

Information on toxicological effects

Acute oral toxicity LD50 (female Rat) > 2,000 mg/kg

Acute inhalation toxicity LC50 (Rat) > 2.0 mg/l
Exposure time: 4 h
Determined in the form of liquid aerosol.
highest concentration tested
No deaths

Acute dermal toxicity LD50 (male/female combined Rat) > 2,000 mg/kg

Skin corrosion/irritation Slight irritant effect - does not require labelling. (Rabbit)

Serious eye damage/eye irritation Slight irritant effect - does not require labelling. (Rabbit)

Respiratory or skin sensitisation Skin: Non-sensitizing. (Guinea pig)
OECD Test Guideline 406, Buehler test
Skin: Non-sensitizing. (Mouse)
OECD Test Guideline 429, local lymph node assay (LLNA)

Assessment STOT Specific target organ toxicity – repeated exposure
Thiencarbazone-methyl did not cause specific target organ toxicity in experimental animal studies. Tembotrione caused specific target organ toxicity in experimental animal studies in the following organ(s): Eyes, Kidney, Liver.
Isoxadifen-ethyl did not cause specific target organ toxicity in experimental animal studies.

**Assessment mutagenicity**

Thiencarbazone-methyl was not mutagenic or genotoxic in a battery of in vitro and in vivo tests. Tembotrione was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests. Isoxadifen-ethyl was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

**Assessment carcinogenicity**

Thiencarbazone-methyl was not carcinogenic in a lifetime feeding study in rats. Thiencarbazone-methyl caused at high dose levels an increased incidence of tumours in mice in the following organ(s): urinary bladder. The tumours seen with Thiencarbazone-methyl were caused through the chronic irritation due to the presence of bladder stones. Tembotrione caused an increased incidence of tumours in rats in the following organ(s): Cornea. The mechanism that triggers tumours in rodents and the type of tumours observed are not relevant to humans. Isoxadifen-ethyl was not carcinogenic in lifetime feeding studies in rats and mice.

**ACGIH**

None.

**NTP**

None.

**IARC**

None.

**OSHA**

None.

**Assessment toxicity to reproduction**

Thiencarbazone-methyl did not cause reproductive toxicity in a two-generation study in rats. Tembotrione did not cause reproductive toxicity in a two-generation study in rats. Isoxadifen-ethyl did not cause reproductive toxicity in a two-generation study in rats.

**Assessment developmental toxicity**

Thiencarbazone-methyl did not cause developmental toxicity in rats and rabbits. Tembotrione caused developmental toxicity only at dose levels toxic to the dams. Tembotrione caused a delayed ossification of foetuses, an increased incidence of variations. The developmental effects seen with Tembotrione are related to maternal toxicity. Isoxadifen-ethyl did not cause developmental toxicity in rats and rabbits.

**Further information**

Only acute toxicity studies have been performed on the formulated product. The non-acute information pertains to the active ingredient(s).

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**SECTION 12: ECOLOGICAL INFORMATION**
Toxicity to fish
LC50 (Oncorhynchus mykiss (rainbow trout)) 6.06 mg/l
Exposure time: 96 h

Toxicity to aquatic invertebrates
EC50 (Daphnia magna (Water flea)) 83.1 mg/l
Exposure time: 48 h

Toxicity to aquatic plants
EC50 (Raphidocelis subcapitata (freshwater green alga)) 40.6 mg/l
Growth rate; Exposure time: 72 h
EC50 (Lemna gibba (gibbous duckweed)) 0.0181 mg/l
Growth rate; Exposure time: 7 d

Biodegradability
Thiencarbazone-methyl: Not rapidly biodegradable
Tembotrione: Not rapidly biodegradable
Isoxadifen-ethyl: Not rapidly biodegradable

Koc
Thiencarbazone-methyl: Koc: 100
Tembotrione: Koc: 66
Isoxadifen-ethyl: Koc: 2512

Bioaccumulation
Thiencarbazone-methyl: Does not bioaccumulate.
Tembotrione: Does not bioaccumulate.
Isoxadifen-ethyl: Does not bioaccumulate.

Mobility in soil
Thiencarbazone-methyl: Moderately mobile in soils
Tembotrione: Mobile in soils
Isoxadifen-ethyl: Slightly mobile in soils

Additional ecological information
No other effects to be mentioned.

Environmental precautions
Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark.
Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water.
Do not apply when weather conditions favor runoff or drift.
Drift or runoff from treated areas may adversely affect non-target plants.
Apply this product as specified on the label.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods
Product
Do not contaminate water, food, or feed by disposal.
Dispose in accordance with all local, state/provincial and federal regulations.
Contaminated packaging

Follow advice on product label and/or leaflet.
Triple rinse containers.
Puncture container to avoid re-use.
Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning.
If burned, stay out of smoke.
Do not use containers for other products.

RCRA Information
Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR
Not dangerous goods / not hazardous material

IMDG
UN number 3082
Class 9
Packaging group III
Marine pollutant YES
Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (THIENCARBAZONE-METHYL, ISOXADIFEN-ETHYL SOLUTION)

IATA
UN number 3082
Class 9
Packaging group III
Environm. Hazardous Mark YES
Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (THIENCARBAZONE-METHYL, ISOXADIFEN-ETHYL SOLUTION )

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

SECTION 15: REGULATORY INFORMATION

EPA Registration No. 264-1063
US Federal Regulations
TSCA list
Water 7732-18-5
Glycerine 56-81-5
Isoxadifen-ethyl 163520-33-0
Butoxypolyethylene-/propylene glycol 9038-95-3
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
Isoxadifen-ethyl 163520-33-0
SARA Title III - Section 302 - Notification and Information
None.
SARA Title III - Section 313 - Toxic Chemical Release Reporting
None.
US States Regulatory Reporting
CA Prop65
This product does not contain any substances known to the State of California to cause cancer.
This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients
Glycerine 56-81-5 MN, RI
Sodium hydroxide 1310-73-2 CA, CT, IL, MN, NJ, RI

EPA/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 required on the pesticide label:

Signal word: Caution!

Hazard statements: Harmful if swallowed or absorbed through skin.
Moderate eye irritation.
Avoid contact with skin, eyes and clothing.
Wash thoroughly with soap and water after handling.

SECTION 16: OTHER INFORMATION
Abbreviations and acronyms
49CFR Code of Federal Regulations, Title 49
ACGIH US. ACGIH Threshold Limit Values
ATE Acute toxicity estimate
CAS-Nr. Chemical Abstracts Service number
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
EINECS European inventory of existing commercial substances
ELINCS European list of notified chemical substances
IARC International Agency for Research on Cancer
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods
N.O.S.: Not otherwise specified
NTP: US. National Toxicology Program (NTP) Report on Carcinogens
OECD: Organization for Economic Co-operation and Development
TDG: Transportation of Dangerous Goods
TWA: Time weighted average
UN: United Nations
WHO: World Health Organization

NFPA 704 (National Fire Protection Association):
Health - 2  Flammability - 1  Instability - 1  Others - none

Health - 1  Flammability - 1  Physical Hazard - 0  PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: New Safety Data Sheet due to change in numbering scheme.

Revision Date: 04/04/2019

This information is provided in good faith but without express or implied warranty. The customer assumes all responsibility for safety and use not in accordance with label instructions. The product names are registered trademarks of Bayer.