Safety data sheet
FREQUENCY HERBICIDE

Revision date: 2009/06/02
Version: 1.0
(30471889/SDS_CPA_US/EN)

1. Substance/preparation and company identification

Company
BASF CORPORATION
100 Campus Drive
Florham Park, NJ 07932

24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP

Substance number: 000000104631
Molecular formula: C16 H17 N3 O5 S
Molecular weight: 363.4 g/mol
Chemical family: phenyl pyrazole, derivative
Synonyms: topramezone (active ingredient)

2. Composition/information on ingredients

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Content (W/W)</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>210631-68-8</td>
<td>29.7 %</td>
<td>Topramezone</td>
</tr>
<tr>
<td></td>
<td>70.3 %</td>
<td>Proprietary ingredients</td>
</tr>
</tbody>
</table>

3. Hazard identification

Emergency overview
CAUTION: May cause moderate but temporary irritation to the eyes.
HARMFUL IF SWALLOWED.
HARMFUL IF ABSORBED THROUGH SKIN.
KEEP OUT OF REACH OF CHILDREN.
Avoid contact with the skin, eyes and clothing.

Potential health effects
See Product Label for additional precautionary statements.

Primary routes of exposure
Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

Acute toxicity:
Slightly toxic after single ingestion. Slightly toxic after short-term skin contact. Slightly toxic after short-term inhalation.

Irritation:
May cause slight irritation to the skin. May cause moderate but temporary irritation to the eyes.

Sensitization:
Skin sensitizing effects were not observed in animal studies.
Medical conditions aggravated by overexposure:
Individuals with pre-existing diseases of the respiratory system, skin or eyes may have increased susceptibility to excessive exposures.

Potential environmental effects

Aquatic toxicity:
There is a high probability that the product is not acutely harmful to fish.
There is a high probability that the product is not acutely harmful to aquatic invertebrates.
Very toxic (acute effect) to aquatic plants.

Terrestrial toxicity:
With high probability not acutely harmful to terrestrial organisms.

4. First-aid measures

General advice:
First aid providers should wear personal protective equipment to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or physician for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

If inhaled:
Remove the affected individual into fresh air and keep the person calm.

If on skin:
Rinse skin immediately with plenty of water for 15 - 20 minutes.

If in eyes:
Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

If swallowed:
Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Do not induce vomiting. Have person sip a glass of water if able to swallow.

Note to physician
Antidote: No known specific antidote.
Treatment: Treat symptomatically.

5. Fire-fighting measures

Flash point: (DIN EN 22719; ISO 2719) Non-flammable.
Autoignition: 430 °C
Flammability: not readily ignited
Self-ignition temperature: Based on the water content the product does not ignite.

Suitable extinguishing media:
foam, dry extinguishing media, carbon dioxide, water spray

Hazards during fire-fighting:
carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Sulphur dioxide, Hydrogen chloride, hydrogen fluoride, halogenated hydrocarbons, Hydrocarbons.
If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of substances mentioned can be released in case of fire.
Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drains or waterways.

6. Accidental release measures

Personal precautions:
Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

Environmental precautions:
Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain contaminated water/firefighting water.

Cleanup:
Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

7. Handling and storage

Handling
General advice:
RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed. Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return residues to the storage containers. Follow label warnings even after container is emptied. The substance/product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours. Wear suitable personal protective clothing and equipment.

Protection against fire and explosion:
The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear. Avoid extreme heat. Keep away from oxidizable substances. Electrical equipment should conform to national electric code. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

Storage
General advice:
Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.

Storage incompatibility:
General: Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.
Temperature tolerance
Protect from temperatures below: 0 °C
The product can crystallize below the limit temperature.
Protect from temperatures above: 40 °C
Changes in the properties of the product may occur if substance/product is stored above indicated
temperature for extended periods of time.

8. Exposure controls and personal protection

Users of a pesticidal product should refer to the product label for personal protective equipment
requirements.

Advice on system design:
Whenever possible, engineering controls should be used to minimize the need for personal protective
equipment.

Personal protective equipment

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING
WORKERS:

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic
evapour/particulate respirator. For situations where the airborne concentrations may exceed the level for which
an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or
Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus
(SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:
Chemical resistant protective gloves. Protective glove selection must be based on the user's assessment of
the workplace hazards.

Eye protection:
Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if
splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron,
protective boots, chemical-protection suit.

General safety and hygiene measures:
Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment.
Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial
hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves
must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off
immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed
before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work.
Keep away from food, drink and animal feeding stuffs.

9. Physical and chemical properties

Form: liquid, suspension
Odour: aromatic
Colour: pale beige
pH value: approx. 3.9 (measured with the undiluted substance)
approx. 3.2 (10 g/l) (as a dispersion)
crystallization temperature: -4.3 °C
Boiling point: approx. 100 °C
Vapour pressure: approx. 23.3 hPa (20 °C) Information applies to the solvent.
10. Stability and reactivity

**Conditions to avoid:**

**Substances to avoid:**
No substances known that should be avoided.

**Hazardous reactions:**
The product is chemically stable. Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

**Decomposition products:**
No hazardous decomposition products if stored and handled as prescribed/indicated., Prolonged thermal loading can result in products of degradation being given off.

**Thermal decomposition:**
Possible thermal decomposition products:
carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Sulphur dioxide, Hydrocarbons
Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released.

**Corrosion to metals:**
Corrosive effects to metal are not anticipated.

**Oxidizing properties:**
not fire-propagating
Not an oxidizer.

11. Toxicological information

**Acute toxicity**

**Oral:**
LD50/rat/male/female: > 2,000 mg/kg

**Inhalation:**
LC50/rat/male/female: > 5.8 mg/l / 4 h

**Dermal:**
LD50/rat/male/female: > 4,000 mg/kg

**Skin irritation:**
May cause slight irritation to the skin.

**Eye irritation:**
May cause moderate but temporary irritation to the eyes.
Sensitization:
guinea pig: Skin sensitizing effects were not observed in animal studies.

Genetic toxicity:
Information on: Topramezone
Results from a number of mutagenicity studies with microorganisms, mammalian cell culture and mammals are available. Taking into account all of the information, there is no indication that the substance is mutagenic.

Carcinogenicity:
Information on: Topramezone
When given in high doses, the substance was carcinogenic in animal studies. Based on its mechanism of action, a carcinogenic potential is not expected after exposure to low doses.

Reproductive toxicity:
Information on: Topramezone
Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Developmental toxicity/teratogenicity:
Information on: Topramezone
The results of animal studies gave indication of a developmental toxic/teratogenic effects with high doses.

12. Ecological information

Environmental fate and transport

Biodegradation:
Evaluation: Not readily biodegradable (by OECD criteria).

Environmental toxicity

Information on: Topramezone
Acute and prolonged toxicity to fish:
OECD 203; ISO 7346; 84/449/EEC, C.1 static
Rainbow trout/LC50 (96 h): > 100 mg/l
Nominal concentration.

Information on: Topramezone
Acute toxicity to aquatic invertebrates:
Daphnia magna/EC50 (48 h): > 100 mg/l

Information on: Topramezone
Toxicity to aquatic plants:
OECD Guideline 201 green algae/EC50 (96 h): 67.7 mg/l

Other ecotoxicological advice:
The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

13. Disposal considerations

Waste disposal of substance:
Safety data sheet
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Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container disposal:
Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: This product is not regulated by RCRA.

14. Transport information

Reference Bill of Lading

15. Regulatory information

Federal Regulations

Registration status:
TSCA, US released / exempt
OSHA hazard category: Skin and/or eye irritant

SARA hazard categories (EPCRA 311/312): Acute

State regulations

CA Prop. 65:
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

16. Other information

Refer to product label for EPA registration number.

Recommended use: herbicide

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