

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: Gemstar LC
EPA Registration No. 70051-45
Product Type: Bio-insecticide
Active Ingredient: *Helicoverpa zea* nuclear polyhedrosis virus
CAS No.: Not applicable

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Bio-insecticide
Uses advised against: Any use not listed on the label

1.3. Details of the supplier of the safety data sheet

Name: Certis U.S.A., LLC
Address: 9145 Guilford Road, Suite 175
Columbia, Maryland 21046
U.S.A.
Phone Number: +01 (800) 255-3924
Website: <http://www.certisusa.com>

1.4. Emergency telephone number

Emergency number: +1 800 255-3924

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Hazard Classification: Not classified as hazardous by OSHA
EPA Signal Word: Caution (refer to section 15)
Hazard Statements: None
Pictogram: None
Precautionary Statements: Causes moderate eye irritation. Avoid inhalation or contact with eyes, skin, or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling or using the toilet.

2.2 Other Hazards: None Known

SECTION 3: Composition/information on ingredients

3.1 Substances

Component	CAS#	% by weight
<i>Helicoverpa zea</i> nuclear polyhedrosis virus	Not applicable	0.64

SECTION 4: First aid measures

4.1. Description of first aid measures

- Generic measures** Call poison control center or doctor for treatment advice. Have the product container with you when calling or going to a treatment center
- Eye Contact:** Immediately flush with water holding eye open for 15-20 minutes. Remove contact lenses after 5 minutes if present and continue rinsing eye.
- Skin Contact:** Remove contaminated clothing and wash affected area with plenty of water.
- 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.
- Ingestion:** If ingested, call poison control centre or doctor for treatment advice.

4.2. Most important symptoms and effects, both acute and delayed

None specified

4.3. Indication of any immediate medical attention and special treatment needed

None specified

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable Extinguishing Media:** Water mist, alcohol resistant foam, dry powder, carbon dioxide
- Unsuitable Extinguishing Media:** None known

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products: None known

5.3. Advice for firefighters

Protection of Firefighters: None specified

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing
Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible remove wash thoroughly and change into clean clothes.

For emergency responders: None specified

6.2. Environmental precautions

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters or rinsate.

6.3. Methods and material for containment and cleaning up

Methods for Containment: Recover any clean product for reuse.

Methods for Clean-Up: Do not allow wash water to contaminate water supplies. Dispose of in accordance with local regulations for disposal of non-hazardous waste.

Other Information: None

6.4. Reference to other sections

See Section 8 for occupational exposure limits and risk management measures. Refer to Section 13 for disposal considerations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Applicators must wear:

Waterproof gloves

Long sleeved shirt and long pants

Shoes plus socks

Mixers and loaders must wear dust/mist filtering respirator meeting NIOSHA standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause sensitization.

Follow manufacturer's instructions for maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

7.2. Conditions for safe storage, including any incompatibilities

Do not contaminate water, food or feed by storage or disposal.

Store this product in original sealed container in a cool dry place inaccessible to children and pets. Bioactivity may be impaired by storage above 90°F. Product can be stored at room temperature for up to 60 days, but should be refrigerated for longer storage. Freezing will not harm this product.

7.3. Specific end use(s)

To avoid wastes use all materials in this container by application according to the label directions. If wastes cannot be avoided offer remaining product to a waste disposal program (often such programs are run by state or local governments or industry).

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

OSHA Permissible Exposure Limits (PELs): Not determined

ACGIH Threshold Limit Values: Not determined

Other Exposure Limits: None determined

8.2. Exposure controls

Engineering Controls: None specified

Personal Protective Equipment

Eye/Face Protection: None specified

Skin Protection Long sleeved shirt and pants

Hand Protection: Water proof gloves

Body Protection: Shoes plus socks

Respiratory Protection: Mixers and loaders must wear dust/mist filtering respirator meeting NIOSHA standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause sensitization.

Thermal Hazards: None

General Hygiene Considerations: Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing
Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible remove wash thoroughly and change into clean clothes.

Environmental exposure controls: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters or rinsate.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Grey/brown liquid

Odour: Mild earthy

Odour Threshold:	Not determined
pH:	6-7
Melting Point / Freezing Point:	Not determined
Initial Boiling Point:	Not determined
Boiling Range:	Not determined
Flash Point:	>200°C
Evaporation Rate:	Not determined
Flammability (solid, gas):	Not applicable
Lower & Upper Flammability Limits:	Not applicable
Vapour Pressure:	Not determined
Vapour Density:	Not determined
Density:	1.04 – 1.218 g/ml
Solubility:	99%
Partition Coefficient (n-octanol/water):	Not known
Auto-ignition Temperature:	Not known
Decomposition Temperature:	Not known
Viscosity:	Not determined
Explosive Properties:	None
Oxidising Properties:	None

9.2. Other information

Not available.

SECTION 10: Stability and reactivity

<u>10.1. Reactivity</u>	Not determined
<u>10.2. Chemical stability</u>	Stable when stored according to label
<u>10.3. Possibility of hazardous reactions</u>	None known
<u>10.4. Conditions to avoid</u>	None known
<u>10.5. Incompatible materials</u>	None known
<u>10.6. Hazardous decomposition products</u>	None known

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Toxicological information on the substance or mixture:

LD₅₀ (oral) > 5000 mg/kg, rat (test conducted with technical concentrate)

LD₅₀ (dermal) > 5050 mg/kg, rat (test conducted with technical concentrate)
LC₅₀ (inhalation) > 2.15 mg/L, (test conducted with technical concentrate)

Skin corrosion / irritation: Slightly irritating, (test conducted with technical concentrate)
Eye irritation: Minimally and reversibly irritating.
Respiratory or skin sensitization: Gemstar Technical Concentrate is not a sensitizer in guinea pigs.

Other information on adverse health effects:

Carcinogenicity

NTP Listed: Not applicable
IARC Listed: Not applicable
OSHA: Not applicable

11.2 Reference to other sections

See Section 4 for symptoms and acute and delayed effects.

SECTION 12: Ecological information

12.1. Toxicity

Test species	Test method	Test substance	LC ₅₀
Quail	30-day Oral Tox	Gemstar LC	Not toxic, infectious, or pathogenic at a dose of 10 ⁸ CFU/animal
<i>Daphnia magna</i>	48-hour Static acute	Gemstar Technical Concentrate	EC ₅₀ 48 h > 67 mg a.i./ L
<i>Apis mellifera</i>	48 hour oral	Gemstar Technical Concentrate	LD ₅₀ > 100 µg/bee
<i>Apis mellifera</i>	48 hour contact	Gemstar Technical Concentrate	LD ₅₀ > 100 µg/bee

12.2. Persistence and degradability

Not persistent, rapidly degraded in air by UV light.

12.3. Bioaccumulative potential

Bioaccumulation not expected. Do not apply directly to water.

12.4. Mobility in soil

Baculoviruses have the ability to leach through soil but risk of reaching groundwater is low.

12.5. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal Instructions: Do not contaminate water, food, or feed by storage and disposal

Pesticide Storage: Store this product in original sealed container in a cool, dry place inaccessible to children and pets. Bioactivity may be impaired by storage above 90°F. Product can be stored at room temperature for up to 60 days, but should be refrigerated for longer storage. Freezing will not harm this product.

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local government, or by industry.)

Container Handling: Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration. Do not burn, unless allowed by State and local ordinances.

SECTION 14: Transportation information

14.1. UN number

Not regulated.

14.2. UN proper shipping name

Not regulated.

14.3. Transport hazard class(es)

Not regulated.

14.4. Packing group

Not regulated.

14.5. Environmental hazards

Not regulated.

14.6. Special precautions for user

Not regulated.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not regulated.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EPA: This product is a pesticide product registered by the United States 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 (SDS), and for workplace labels of non-pesticidal chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION, KEEP OUT OF REACH OF CHILDREN

Causes moderate eye irritation.

Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

<u>OSHA:</u>	N/A
<u>TSCA Status:</u>	Exempt
<u>CERCLA Reportable Quantity:</u>	N/A
<u>SARA Title III:</u>	
Section 302:	N/A
Section 311/312:	N/A
Section 313:	N/A
<u>RCRA Status:</u>	N/A

SECTION 16: Other information

Disclaimer:

To the best of our knowledge, the information contained herein is accurate. However, neither Certis USA nor any of its subsidiaries assume 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 material may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

SDS Authoring Information:

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SDS Prepared by:	Certis U.S.A. L.L.C.