1 Identification

· Product identifier
  · Trade name: Caffeine
  · Article number: 14118
  · CAS Number: 58-08-2
  · EC number: 200-362-1
  · Index number: 613-086-00-5

· Application of the substance / the mixture
  This product is for research use - Not for human or veterinary diagnostic or therapeutic use.

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier: Cayman Chemical Co.
    1180 E. Ellsworth Rd.
    Ann Arbor, MI 48108
    USA
  · Information department: Product safety department
  · Emergency telephone number:
    During normal opening times: +1 (734) 971-3335
    US/CANADA: 800-424-9300
    Outside US/CANADA: 703-741-5970

2 Hazard(s) identification

· Classification of the substance or mixture
  GHS07
  Acute Tox. 4 H302 Harmful if swallowed.

· Label elements
  · GHS label elements
    The substance is classified and labeled according to the Globally Harmonized System (GHS).
  · Hazard pictograms
    GHS07

(Contd. on page 2)
Trade name: Caffeine

- **Signal word** Warning
- **Hazard-determining components of labeling:** Caffeine
- **Hazard statements**
  - H302 Harmful if swallowed.
- **Precautionary statements**
  - P264 Wash thoroughly after handling.
  - P270 Do not eat, drink or smoke when using this product.
  - P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.
  - P330 Rinse mouth.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
- **Classification system:**
  - NFPA ratings (scale 0 - 4)
    - Health = 2
    - Fire = 1
    - Reactivity = 0
  - HMIS-ratings (scale 0 - 4)
    - HEALTH Health = 2
    - FIRE Fire = 1
    - REACTIVITY Reactivity = 0
- **Other hazards**
- **Results of PBT and vPvB assessment**
  - PBT: Not applicable.
  - vPvB: Not applicable.

**3 Composition/information on ingredients**

- **Chemical characterization:** Substances
- **CAS No. Description**
  - 58-08-2 Caffeine
- **Identification number(s)**
  - EC number: 200-362-1
  - Index number: 613-086-00-5

**4 First-aid measures**

- **Description of first aid measures**
  - **General information:** Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  - **After inhalation:** Supply fresh air; consult doctor in case of complaints.
  - **After skin contact:** Generally the product does not irritate the skin.
  - **After eye contact:** Rinse opened eye for several minutes under running water.
  - **After swallowing:** Immediately call a doctor.
  - **Information for doctor:**
    - Most important symptoms and effects, both acute and delayed
      - May cause anemia, cough, CNS depression, drowsiness, headache, heart damage, lassitude (weakness, exhaustion), liver damage, narcosis, reproductive effects, teratogenic effects.
      - No further relevant information available.
Trade name: Caffeine

5 Fire-fighting measures

· Extinguishing media
· Suitable extinguishing agents: CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· Special hazards arising from the substance or mixture: No further relevant information available.
· Advice for firefighters
· Protective equipment: No special measures required.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures: Not required.
· Environmental precautions: Do not allow to enter sewers/surface or ground water.
· Methods and material for containment and cleaning up: Dispose contaminated material as waste according to item 13.
· Reference to other sections
See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.
· Protective Action Criteria for Chemicals

- PAC-1:
  Substance is not listed.

- PAC-2:
  Substance is not listed.

- PAC-3:
  Substance is not listed.

7 Handling and storage

· Handling:
· Precautions for safe handling: No special precautions are necessary if used correctly. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure. Keep away from sources of ignition. Take precautionary measures against static discharge.
· Information about protection against explosions and fires: No special measures required.
· Conditions for safe storage, including any incompatibilities
· Storage: Store in accordance with information listed on the product insert.
· Requirements to be met by storerooms and receptacles: No special requirements.
· Information about storage in one common storage facility: Not required.
· Further information about storage conditions: None.
· Specific end use(s): No further relevant information available.
8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.

· Control parameters

· Components with limit values that require monitoring at the workplace: Not required.

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
  Wash hands before breaks and at the end of work.

· Breathing equipment: Not required.

· Protection of hands:
  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· Material of gloves
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· Penetration time of glove material
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· Eye protection: Not required.

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:
  Form: Solid
  Color: Not determined.
  Odor: Characteristic

· Structural Formula
  C8H10N4O2

· Molecular Weight
  194.2 g/mol

· Odor threshold: Not determined.

· pH-value: Not applicable.

· Change in condition
  Melting point/Melting range: 235–237 °C (455–458.6 °F)
  Boiling point/Boiling range: 178 °C (352.4 °F)

· Flash point: Not applicable.

· Flammability (solid, gaseous): Product is not flammable.

· Decomposition temperature: Not determined.

· Auto igniting: Not determined.

· Danger of explosion: Product does not present an explosion hazard.
53.1.21

· Explosion limits:
  Lower: Not determined.
  Upper: Not determined.

· Vapor pressure: Not applicable.

· Density at 20 °C (68 °F): 1.23 g/cm³ (10.26435 lbs/gal)

· Bulk density: 220 kg/m³
  Relative density: Not determined.
  Vapor density: Not applicable.
  Evaporation rate: Not applicable.

· Solubility in / Miscibility with
  Water: Soluble.

· Partition coefficient (n-octanol/water): Not determined.

· Viscosity:
  Dynamic: Not applicable.
  Kinematic: Not applicable.
  VOC content: 0.00 %

· Solids content: 100.0 %

· Other information
  No further relevant information available.

10 Stability and reactivity

· Reactivity
  No further relevant information available.

· Chemical stability

· Thermal decomposition / conditions to be avoided:
  No decomposition if used according to specifications.

· Possibility of hazardous reactions
  No dangerous reactions known.

· Conditions to avoid
  No further relevant information available.

· Incompatible materials: No further relevant information available.

· Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

· Information on toxicological effects

· Acute toxicity:

  · LD/LC50 values that are relevant for classification:
    ATE (Acute Toxicity Estimate)
    Oral LD50: 192 mg/kg (rat)

  58-08-2 Caffeine
    Oral LDLO: 400 mg/kg (wmn)
    LD50: 192 mg/kg (rat)
    TDLO: 140 mg/kg (chd)
    Intraperitoneal LD50: 240 mg/kg (rat)
    Subcutaneous LD50: 170 mg/kg (rat)
Primary irritant effect:
- On the skin: No irritant effect.
- On the eye: No irritating effect.
- Sensitization: No sensitizing effects known.

Additional toxicological information:
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer) 3
  - NTP (National Toxicology Program) Substance is not listed.
  - OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.

12 Ecological information
- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
- Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    - Water hazard class 1 (Assessment by list): slightly hazardous for water
    - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.
  - Other adverse effects: No further relevant information available.

13 Disposal considerations
- Waste treatment methods
  - Recommendation:
    - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
  - Uncleaned packagings:
    - Recommendation: Disposal must be made according to official regulations.
    - Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information
- UN-Number
  - DOT, IMDG, IATA UN2811
- UN proper shipping name
  - DOT Toxic solids, organic, n.o.s. (Caffeine)
### Trade name: Caffeine

<table>
<thead>
<tr>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOXIC SOLID, ORGANIC, N.O.S. (Caffeine)</td>
<td>Toxic solid, organic, n.o.s. (Caffeine)</td>
</tr>
</tbody>
</table>

#### Transport hazard class(es)

- **DOT**
  - Class: 6.1 Toxic substances
  - Label: 6.1

#### IMDG, IATA

- **Class**: 6.1 Toxic substances
- **Label**: 6.1

#### Packing group

- **DOT, IMDG, IATA**: III

#### Environmental hazards:

Not applicable.

- **Special precautions for user**: Warning: Toxic substances
- **Hazard identification number (Kemler code)**: 60
- **EMS Number**: F-A,S-A
- **Stowage Category**: A

- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**: Not applicable.

#### Transport/Additional information:

- **DOT**
  - **Quantity limitations**:
    - On passenger aircraft/rail: 100 kg
    - On cargo aircraft only: 200 kg

- **IMDG**
  - **Limited quantities (LQ)**: 5 kg
  - **Excepted quantities (EQ)**:
    - Code: E1
    - Maximum net quantity per inner packaging: 30 g
    - Maximum net quantity per outer packaging: 1000 g

- **IATA**
  - **Remarks**: When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

- **UN "Model Regulation"**: UN 2811 TOXIC SOLID, ORGANIC, N.O.S. (CAFFEINE), 6.1, III
### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  No further relevant information available.

- **Sara**
  Substance is not listed.

- **Section 355 (extremely hazardous substances):**
  Substance is not listed.

- **Section 313 (Specific toxic chemical listings):**
  Substance is not listed.

- **TSCA (Toxic Substances Control Act):**
  ACTIVE

- **Hazardous Air Pollutants**
  Substance is not listed.

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    Substance is not listed.
  - **Chemicals known to cause reproductive toxicity for females:**
    Substance is not listed.
  - **Chemicals known to cause reproductive toxicity for males:**
    Substance is not listed.
  - **Chemicals known to cause developmental toxicity:**
    Substance is not listed.

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    Substance is not listed.
  - **TLV (Threshold Limit Value)**
    Substance is not listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    Substance is not listed.
  - **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

All chemicals may pose unknown hazards and should be used with caution. This SDS applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. Cayman Chemical Company assumes no responsibility for incidental or consequential damages, including lost profits, arising from the use of these data. It shall be the user’s responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Cayman Chemical Company assumes no responsibility for the completeness or accuracy of the information contained herein.

- **Department issuing SDS:** Environment protection department.
- **Contact:** -
- **Date of preparation / last revision** 04/19/2022 / -
- **Abbreviations and acronyms:**
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
Trade name: Caffeine

IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
tPVb: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4