1 Identification

· Product identifier
  · Trade name: Betamethasone
  · Synonym
    9-fluoro-11β,17,21-trihydroxy-16β-methyl-pregna-1,4-diene-3,20-dione
    NSC 39470
    SCH 4831

· Article number: 20363

· CAS Number: 378-44-9

· EC number: 206-825-4

· Application of the substance / the mixture
  For research use only - not for human or veterinary 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
  · GHS08 Health hazard

  Repr. 1B  H360  May damage fertility or the unborn child.
  STOT RE 2  H373  May cause damage to the kidneys and the liver through prolonged or repeated exposure.

· Label elements

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

· Hazard pictograms

  · GHS08

· Signal word: Danger

· Hazard statements
  May damage fertility or the unborn child.
Trade name: Betamethasone

(Contd. from page 1)

May cause damage to the kidneys and the liver through prolonged or repeated exposure.

· **Precautionary statements**
  Obtain special instructions before use.
  Do not handle until all safety precautions have been read and understood.
  Do not breathe dust/fume/gas/mist/vapors/spray.
  Wear protective gloves/protective clothing/eye protection/face protection.
  IF exposed or concerned: Get medical advice/attention.
  Get medical advice/attention if you feel unwell.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
  · **NFPA ratings (scale 0 - 4)**
    Health = 0
    Fire = 0
    Reactivity = 0
  · **HMIS-ratings (scale 0 - 4)**
    HEALTH: Health = *1
    FIRE: Fire = 0
    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**
    378-44-9 Betamethasone
  · **Identification number(s)**
  · **EC number:** 206-825-4

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:** If symptoms persist consult 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.

(Contd. on page 3)
5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    Use fire fighting measures that suit the environment.
    A solid water stream may be inefficient.
- 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
  Keep container tightly closed.
  Store in accordance with information listed on the product insert.
- Storage:
  - 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:
  The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
  The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
  At this time, the remaining constituent has no known exposure limits.
  At this time, the other constituents have no known exposure limits.

· 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.
  Store protective clothing separately.

· Breathing equipment:
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· Protection of hands:

Protective gloves

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:

Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:
  Form: Crystalline
  Color: Not determined.
Trade name: Betamethasone

| · Odor: | Characteristic |
| · Structural Formula | C22H29FO5 |
| · Molecular Weight | 392.5 g/mol |
| · Odor threshold: | Not determined. |
| · pH-value: | Not applicable. |

| · Change in condition |
| · Melting point/Melting range: | Undetermined. |
| · Boiling point/Boiling range: | Undetermined. |
| · 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. |

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

| · 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. |

| · Solubility in / Miscibility with Water: | Not determined. |
| · Partition coefficient (n-octanol/water): | Not determined. |

| · Viscosity: |
| · Dynamic: | Not applicable. |
| · Kinematic: | Not applicable. |

| · SOLUBILITY |
| ~0.1 mg/ml in a 1:10 solution of DMSO:PBS (pH 7.2); ~3, 30, 25 mg/ml in EtOH, DMSO, DMF |

| · 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: | strong oxidizing agents |
| · Hazardous decomposition products: | carbon oxides, hydrogen fluoride |

(Contd. from page 4)
11 Toxicological information

- RTECS Number TU4000000
- Information on toxicological effects
  - Acute toxicity:
    - LD/LC50 values that are relevant for classification:
      - Oral LD50 >4,500 mg/kg (mouse)
      - Intraperitoneal TDLO 150 µg/kg/female 16-18 days af (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) Substance is not listed.
      - 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 (Self-assessment): 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.
14 Transport information

- **UN-Number**
  DOT, IMDG, IATA: not regulated

- **UN proper shipping name**
  DOT, IMDG, IATA: not regulated

- **Transport hazard class(es)**
  DOT, ADN, IMDG, IATA: not regulated

- **Packing group**
  DOT, IMDG, IATA: not regulated

- **Environmental hazards:**
  Not applicable.

- **Special precautions for user**
  Not applicable.

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

- **UN "Model Regulation":**
  Not regulated

15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - Sara
  - Section 355 (extremely hazardous substances): Substance is not listed.
  - Section 313 (Specific toxic chemical listings): Substance is not listed.
  - TSCA (Toxic Substances Control Act): Substance is not listed.
  - 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 established by ACGIH) Substance is not listed.
  - NIOSH-Ca (National Institute for Occupational Safety and Health) Substance is not listed.

- **GHS label elements**
  The substance is classified and labeled according to the Globally Harmonized System (GHS).

- **Signal word** Danger

- **Hazard statements**
  May damage fertility or the unborn child.
  May cause damage to the kidneys and the liver through prolonged or repeated exposure.
Trade name: Betamethasone

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Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS**: Environment protection department.
- **Contact**: -
- **Date of preparation / last revision**: 08/31/2020 / -
- **Abbreviations and acronyms**:
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - 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)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: 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
  - Repr. 1B: Reproductive toxicity – Category 1B
  - STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2