Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Betamethasone 21-phosphate sodium salt

STATEMENT OF HAZARDOUS NATURE

NFPA

SUPPLIER
Company: Santa Cruz Biotechnology, Inc.
Address: 2145 Delaware Ave
Santa Cruz, CA 95060
Telephone: 800.457.3801 or 831.457.3800
Emergency Tel: CHEMWATCH: From within the US and Canada: 877-715-9305
Emergency Tel: From outside the US and Canada: +800 2436 2255 (1-800-CHEMCALL) or call +613 9573 3112

PRODUCT USE
Betamethasone is a synthetic glucocorticoid used in all conditions indicated by corticosteroid therapy except adrenal-deficiency states for which its is a lack of sodium-retaining properties make it unsuitable. Usually applied as a cream or ointment for treatment of skin disorders.

SYNONYMS
C22-H28-F-Na2-O8-P, "pregna-1, 4-diene-3, 20-dione, ", "pregna-1, 4-diene-3, 20-dione, ", "9-fluoro-11-beta, 17, 21-
trihydroxy-16-beta-methyl-, 21-(dihydrogen", phosphate), "9-fluoro-11-beta, 17, 21-trihydroxy-16-beta-methyl-, 21-
(dihydrogen", phosphate), "disodium salt", BDP, "betamethasone disodium phosphate", "betamethasone 21-disodium

Section 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
RISK
Harmful if swallowed.

POTENTIAL HEALTH EFFECTS
ACUTE HEALTH EFFECTS
Corticosteroids are a class of medications that are used to treat inflammation and suppression of the immune system. They are commonly used to treat conditions such as asthma, chronic obstructive pulmonary disease, and allergic disorders. However, like all medications, corticosteroids have potential risks and side effects.

**Hazard Ratings**

- **Corticosteroids** are associated with a variety of potential side effects, including suppression of the immune system, increased risk of infection, and changes in bone density.
- **Exposure to corticosteroids** can lead to a range of health effects, including suppression of the immune system, increased risk of infection, and changes in bone density.

**Chronic Health Effects**

- **Clinical studies** indicate that corticosteroids can cause a variety of health effects, including suppression of the immune system, increased risk of infection, and changes in bone density.

**Inhalation**

- **Inhalation of corticosteroids** can cause a variety of health effects, including suppression of the immune system, increased risk of infection, and changes in bone density.

**Skin**

- **Skin contact** with corticosteroids can cause a variety of health effects, including suppression of the immune system, increased risk of infection, and changes in bone density.

**Ingestion**

- **Accidental ingestion** of corticosteroids can be harmful and may lead to a variety of health effects, including suppression of the immune system, increased risk of infection, and changes in bone density.

**Flammability**

- **Flammable** materials should be handled with care to prevent fires and explosions.

**Section 3 - Composition / Information on Ingredients**

**Flammability:**

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Section 4 - FIRST AID MEASURES

SWALLOWED

- **IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.**
  - Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
    - For advice, contact a Poisons Information Center or a doctor.
    - Urgent hospital treatment is likely to be needed.
    - If conscious, give water to drink.
    - INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

NOTE: Wear a protective glove when inducing vomiting by mechanical means.

- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

EYE

- If this product comes in contact with the eyes:
  - Immediately hold eyelids apart and flush the eye continuously with running water.
  - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
  - Continue flushing until advised to stop by the Poisons Information Center or a doctor, or for at least 15 minutes.
  - Transport to hospital or doctor without delay.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin contact occurs:
  - Immediately remove all contaminated clothing, including footwear
  - Flush skin and hair with running water (and soap if available).
  - Seek medical attention in event of irritation.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

- The adverse effects of corticosteroids are almost always due to their use in excess of physiological requirements. Symptomatic treatment is called for. Where possible the dose should be withdrawn or reduced. Acute renal insufficiency should be treated with intravenous hydrocortisone sodium succinate with infusions of 0.9% dextrose. MARTINDALE, The Extra Pharmacopoeia, 29th Ed. Patients or individuals exposed regularly in an occupational setting, should be evaluated periodically for evidence of HPA axis suppression. The evaluation may be performed by using the ACTH stimulation, A.M. plasma cortisol and urinary free cortisol tests. If HPA axis suppression is confirmed the individual should be removed from exposure. Recovery of the HPA axis function is generally prompt upon exposure cessation. Infrequently, signs and symptoms of glucocorticosteroid insufficiency may occur, requiring supplemental systemic corticosteroids.

Section 5 - FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapour Pressure (mmHG)</td>
<td>Negligible</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**EXTINGUISHING MEDIA**

- Water spray or fog.
- Foam.
- Dry chemical powder.
**BCF (where regulations permit).**

**Carbon dioxide.**

### FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Combustible solid which burns but propagates flame with difficulty.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
- Build-up of electrostatic charge may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), hydrogen fluoride, phosphorus oxides (POx), other pyrolysis products typical of burning organic material.
- May emit poisonous fumes.
- May emit corrosive fumes.

### FIRE INCOMPATIBILITY

- Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

### PERSONAL PROTECTION

**Glasses:**
- Chemical goggles.

**Gloves:**
- Respirator:
  - Particulate

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**Section 6 - ACCIDENTAL RELEASE MEASURES**

### MINOR SPILLS

- Clean up waste regularly and abnormal spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Vacuum up or sweep up. **NOTE:** Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
- Dampen with water to prevent dusting before sweeping.
- Place in suitable containers for disposal.

### MAJOR SPILLS

- Moderate hazard.
- CAUTION: Advise personnel in area.
- Alert Emergency Responders and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent, by any means available, spillage from entering drains or water courses.
- Recover product wherever possible.
- IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.
- ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

### ACUTE EXPOSURE GUIDELINE LEVELS (AEGL) (in ppm)

**AEGL 1:** The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

**AEGL 2:** The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

**AEGL 3:** The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

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**Section 7 - HANDLING AND STORAGE**
PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- Do NOT cut, drill, grind or weld such containers
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS

- Glass container.
- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

This section includes a table with chemical symbols and codes indicating storage compatibility.

X: Must not be stored together
O: May be stored together with specific preventions
+: May be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records
- betamethasone sodium phosphate: CAS:151-73-5

MATERIAL DATA

BETAMETHASONE SODIUM PHOSPHATE:
- CEL TWA: 0.02 mg/m3
  (compare Merck, Sharp and Dohme recommendation for dexamethasone)All corticosteroids have numerous and varied pharmacological actions. In humans, single dose or short term (several days) use is virtually without harmful effects. However prolonged therapeutic use of cortico- steroids may result in suppression of the pituitary function. The daily threshold dose for this effect is approximately 0.5 mg for a 50 kg individual. Therefore typical exposure limits of about 0.02 mg/m3 have been calculated from the threshold dose. This is thought to provide about a two-fold safety factor.
Airborne particulate or vapor must be kept to levels as low as is practicably achievable given access to modern engineering controls and monitoring hardware. Biologically active compounds may produce idiosyncratic effects which are entirely unpredictable on the basis of literature searches and prior clinical experience (both recent and past).

PERSONAL PROTECTION
Consult your EHS staff for recommendations

**EYE**

- When handling very small quantities of the material eye protection may not be required.

  For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:

  - Chemical goggles
  - Face shield. Full face shield may be required for supplementary but never for primary protection of eyes
  - Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59]

**HANDS/FEET**

- **NOTE:** The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

  Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

  - frequency and duration of contact,
  - chemical resistance of glove material,
  - glove thickness and
  - dexterity

  Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

  - When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
  - When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.

  Contaminated gloves should be replaced.

  Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

  - Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
  - Double gloving should be considered.
  - PVC gloves.
  - Protective shoe covers.
  - Head covering.

  Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

  - polychloroprene
  - nitrile rubber
  - butyl rubber
  - fluorocautchouc
  - polyvinyl chloride

  Gloves should be examined for wear and/or degradation constantly.

**OTHER**

- For quantities up to 500 grams a laboratory coat may be suitable.
- For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.
- For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.
- For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.
- Eye wash unit.
- Ensure there is ready access to an emergency shower.
- For Emergencies: Vinyl suit

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker’s exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

**RESPIRATOR**

<table>
<thead>
<tr>
<th>Protection Factor</th>
<th>Half-Face Respirator</th>
<th>Full-Face Respirator</th>
<th>Powered Air Respirator</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 x PEL</td>
<td>P1</td>
<td>-</td>
<td>PAPR-P1</td>
</tr>
</tbody>
</table>
PHYSICAL PROPERTIES

- Solid.
- Mixes with water.

<table>
<thead>
<tr>
<th>State</th>
<th>Molecular Weight</th>
<th>Melting Range (°F)</th>
<th>Boiling Range (°F)</th>
<th>Flash Point (°F)</th>
<th>Decomposition Temp (°F)</th>
<th>Autoignition Temp (°F)</th>
<th>Upper Explosive Limit %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divided solid</td>
<td>Not available</td>
<td>Not applicable</td>
<td>Solubility in water (g/L)</td>
<td>pH (1% solution)</td>
<td>pH (as supplied)</td>
<td>Vapour Pressure (mmHG)</td>
<td>Specific Gravity (water=1)</td>
</tr>
<tr>
<td>516.4</td>
<td></td>
<td></td>
<td></td>
<td>Not available</td>
<td>7.5-9 (0.5%)</td>
<td>Negligible</td>
<td>Not available</td>
</tr>
</tbody>
</table>
APPEARANCE
White or almost white crystalline odourless hygroscopic powder with bitter taste; mixes with water (1:2). A solution in dioxan is dextrorotatory. Aqueous solutions of pH above 8 are stable if protected from light. Care must be taken to prevent microbial contamination of solutions to avoid hydrolysis by phosphatase.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerization will not occur.

STORAGE INCOMPATIBILITY
- Avoid reaction with oxidizing agents.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

betamethasone sodium phosphate
TOXICITY AND IRRITATION
- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>TOXICITY</th>
<th>IRRITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral (rat) LD50</td>
<td>1877 mg/kg</td>
<td>Nil Reported</td>
</tr>
<tr>
<td>Intraperitoneal (rat) LD50</td>
<td>1179 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Subcutaneous (rat) LD50</td>
<td>1363 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>
- Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

Section 12 - ECOLOGICAL INFORMATION

BETAMETHASONE SODIUM PHOSPHATE:
- DO NOT discharge into sewer or waterways.

Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>betamethasone sodium phosphate</td>
<td>HIGH</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
</tr>
</tbody>
</table>

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.
- Puncture containers to prevent re-use and bury at an authorized landfill.
- Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
- A Hierarchy of Controls seems to be common - the user should investigate:
  - Reduction
  - Reuse
  - Recycling
  - Disposal (if all else fails)
- This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
- DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: Burial in a licensed land-fill or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG
Section 15 - REGULATORY INFORMATION

betamethasone sodium phosphate (CAS: 151-73-5) is found on the following regulatory lists:
*US - California Air Toxics "Hot Spots" List (Assembly Bill 2588) Substances for which emissions must be quantified*

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE
■ Inhalation and/or skin contact may produce health damage*.
■ Cumulative effects may result following exposure*.
■ Eye contact may produce serious damage*.
■ Possible skin sensitizer*.
■ May be harmful to the fetus/embryo*.
* (limited evidence).

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■ Classification of the mixture and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.
■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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