SAFETY DATA SHEET

SECTION 1: IDENTIFICATION

Product Name: Fluorouracil Topical Solution USP, 2% and 5%

Product No.: 51672-4062
51672-4063

Distributor: Taro Pharmaceuticals U.S.A., Inc.
3 Skyline Drive, Hawthorne, New York 10532
Telephone: 1-888-TARO-USA

Recommended Use: Fluorouracil is recommended for the topical treatment of multiple actinic or solar keratoses. In the 5% strength it is also useful in the treatment of superficial basal cell carcinomas when conventional methods are impractical, such as with multiple lesions or difficult treatment sites. Safety and efficacy in other indications have not been established.

Restrictions on Use: Fluorouracil may cause fetal harm when administered to a pregnant woman.

Fluorouracil should not be used in patients with dihydropyrimidine dehydrogenase (DPD) enzyme deficiency.

Fluorouracil is contraindicated in women who are or may become pregnant during therapy. If this drug is used during pregnancy, or if the patient becomes pregnant while using this drug, the patient should be apprised of the potential hazard to the fetus.

Fluorouracil is also contraindicated in patients with known hypersensitivity to any of its components.

Substance Class: Antineoplastic

Formula: $C_4H_3FN_2O_2$

M.W.: 130.08

SECTION 2: HAZARD(S) IDENTIFICATION

Physical Hazards: Not classified.

Health Hazards:

Acute toxicity, oral	Category 3
Serious eye damage/eye irritation	Category 2B
Germ cell mutagenicity	Category 1B
Reproductive toxicity	Category 1B
Specific target organ toxicity, repeated exposure	Category 1 (bone marrow)

Environmental Hazards: Not classified.

OSHA Defined Hazards: Not classified.

Label Elements

Signal Word: Danger

Hazard Statement: Toxic if swallowed. Causes eye irritation. May cause genetic defects. May damage fertility or the unborn child. Causes damage to organs (bone marrow) through prolonged or repeated exposure.

Precautionary Statement

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

Response: If swallowed: Immediately call a poison center/doctor. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention. Rinse mouth. If eye irritation persists: Get medical advice/attention.

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Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) Not Otherwise Classified (HNOC): Not classified.

Other Hazards Which Do Not Result In Classification: None known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredient:	Fluorouracil	CAS#: 51-21-8
Inactive Ingredients:	Propylene glycol, tromethamine, hydroxypropyl cellulose, parabens (methyl and propyl), edetate disodium and purified water.	

SECTION 4: FIRST-AID MEASURES

Inhalation: Move to fresh air. Call a physician if symptoms develop or persist.

Skin Contact: Rinse skin with water/shower. Get medical attention if irritation develops and persists.

Eye Contact: Rinse cautiously with water for several minutes. Get medical attention if irritation develops and persists.

Ingestion: Rinse mouth thoroughly. Get medical attention if symptoms occur. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance.

Most Important Symptoms/Effects, Acute and Delayed: Irritation of eyes and mucous membranes. Bone marrow depression.

Indication of Immediate Medical Attention and Special Treatment Needed: Provide general supportive measures and treat symptomatically. Perform gastric lavage. Protect airways by placement in Trendelenburg and left lateral decubitus position, or by endotracheal intubation. Control any seizures first. Administer activated charcoal as a slurry. Monitor bone marrow toxicity, bleeding tendency, and infection. Septicemia may be a fatal complication. Allopurinol may reduce the toxicity of this material. Uridine rescue may reduce toxicity of this material. (Meditext).

General Information: Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: Water spray, dry chemical, carbon dioxide, or foam as appropriate for surrounding fire and materials.

Unsuitable Extinguishing Media: None known.

Specific Hazards arising from the Chemical: No unusual fire or explosion hazards noted.

Special Protective Equipment and Precautions for Firefighters: Wear suitable protective equipment.

Fire-Fighting Equipment/Instructions: As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.

Specific Methods: Cool containers exposed to flames with water until well after the fire is out.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of dust from the spilled material. Ensure adequate ventilation. Wear appropriate personal protective equipment.

Methods and Materials for Containment and Cleaning Up: Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid the generation of dusts during clean-up. Wash spill site.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling: Clean equipment and work surfaces with suitable detergent or solvent after use. After removing gloves, wash hands and other exposed skin thoroughly. Use of a designated area is recommended for handling of potent materials.

Conditions for Safe Storage, Including Any Incompatibilities: Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.

Store at 25°C (77°F); excursions permitted to 15°-30°C (59°-86°F).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Biological Limit Values: No biological exposure limits noted for the ingredient(s).

Exposure Guidelines: No exposure standards allocated.

Appropriate Engineering Controls: Airborne exposure should be controlled primarily by engineering controls such as general dilution ventilation, local exhaust ventilation, or process enclosure. Local exhaust ventilation is generally preferred to general exhaust because it can control the contaminant at its source, preventing dispersion into the work area. An industrial hygiene survey involving air monitoring may be used to determine the effectiveness of engineering controls. Effectiveness of engineering controls intended for use with highly potent materials should be assessed by use of nontoxic surrogate materials. Avoid any open handling of this material, particularly for grinding, crushing, weighing or other dust-generating or aerosol-generating procedures. Use a laboratory fume hood, vented enclosure, glovebox, or other effective containment.

Individual Protection Measures, Such As Personal Protective Equipment

Eye/Face Protection: Safety glasses with sideshields are recommended. Face shields or goggles may be required if splash potential exists or if corrosive materials are present. Approved eye protection (e.g., bearing the ANSI Z87 or CSA stamp) is preferred. Maintain eyewash facilities in the work area.

Skin Protection

Hand Protection: Chemically compatible gloves. For handling solutions, ensure that the glove material is protective against the solvent being used. Use handling practices that minimize direct hand contact. Employees who are sensitive to natural rubber (latex) should use nitrile or other synthetic nonlatex gloves. Use of powdered latex gloves should be avoided due to the risk of latex allergy. This material is extremely potent. To reduce the risk of contamination of skin and surfaces, wear two pairs of gloves. Remove the outer gloves after handling and cleanup of the material, and remove the inner gloves only after removing other personal protective equipment.

Other: For handling of laboratory scale quantities, a disposable lab coat or isolation gown over street clothes is recommended. Where significant quantities are handled, work clothing and booties may be necessary to prevent take-home contamination.

Respiratory Protection: Where respirators are deemed necessary to reduce or control occupational exposures, use NIOSH-approved respiratory protection and have an effective respirator program in place (applicable U.S. regulation OSHA 29 CFR 1910.134).

General Hygiene Considerations: Handle in accordance with good industrial hygiene and safety practice.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: N/A

Physical State (Liquid/Solid/Gas): Liquid

Specific Gravity (H_2O=1): N/A

Evaporation Rate (Butyl Acetate=1): N/A

Solubility: N/A

Appearance: Clear, colorless viscous solution

Odor Description: N/A

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Not available.

Chemical Stability: Stable at normal conditions.

Possibility Of Hazardous Reactions: No dangerous reaction known under conditions of normal use.

Conditions to Avoid: None known.

Incompatible Materials: Strong bases. Strong oxidizing agents.

Hazardous Decomposition Products: NOx. F-. Irritating and/or toxic fumes or gases. Emits toxic fumes under fire conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Ingestion: Toxic if swallowed.
Inhalation: Due to lack of data the classification is not possible.
Skin Contact: Due to lack of data the classification is not possible.
Eye Contact: Causes eye irritation.

Symptoms Related to the Physical, Chemical, and Toxicological Characteristics: Stomach pain. Cramps. Nausea. Vomiting. Heartburn. Diarrhea. Fever. Chills. Cough. Lower back or side pain. Painful or difficult urination. Black or bloody stools. Bleeding or bruising. Pinpoint red spots on skin. Skin rash. Itching. Hair loss. Loss of appetite. Weakness. Tingling and prickling sensations. Changes in vision. Tearing. Confusion.

Medical Conditions Aggravated By Exposure: Heart disease. Impaired kidney function. Impaired liver function. Infection. Bone marrow depression. Tumor cell infiltration of bone marrow. Chickenpox, existing or recent. Herpes zoster Dihydropyrimidine dehydrogenase (DPD) deficiency. Recent cytotoxic drug or radiation therapy.

Acute Toxicity: Toxic if swallowed.

Product	Species	Test Results
Fluorouracil (CAS 51-21-8)		
Acute		
Oral		
LD50	Dog	30 mg/kg
	Mouse	115 mg/kg
	Rat	230 mg/kg

Skin Corrosion/Irritation: Based on available data, the classification criteria are not met.

Serious Eye Damage/Eye Irritation: Causes eye irritation.

Respiratory or Skin Sensitization

Respiratory Sensitization: Due to lack of data the classification is not possible.

Skin Sensitization: Due to lack of data the classification is not possible.

Germ Cell Mutagenicity: May cause genetic defects. This material tested positive in a battery of in vivo and in vitro genotoxicity assays, including germ cell tests.

Carcinogenicity: Based on available data, the classification criteria are not met.

IARC: Group 3; this material is not classifiable as to its carcinogenicity in humans.

Secondary malignancies are potential delayed effects of many antineoplastic agents, although it is not clear whether the effect is related to their mutagenic or immunosuppressive action. The effect of dose and duration of therapy is also unknown, although risk seems to increase with long-term use.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: No ecotoxicity data noted for the ingredient(s).

Persistence and Degradability: No data is available on the degradability of this product.

Bioaccumulative Potential: Not available.

Mobility in Soil: Not available.

Other Adverse Effects: Not available.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Dispose in accordance with all applicable regulations.

Local Disposal Regulations: Not available.

Hazardous Waste Code: Not regulated.

Waste from Residues/Unused Products: Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

Contaminated Packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

SECTION 14: TRANSPORT INFORMATION

DOT

UN Number: UN2811
UN Proper Shipping Name: Toxic solid, organic, n.o.s. (Fluorouracil)
Transport Hazard Class(es)
Class: 6.1
Subsidiary Risk -
Packing Group: III

IATA

UN Number: UN2811

UN Proper Shipping Name: Toxic solid, organic, n.o.s. (Fluorouracil)
Transport hazard class(es)
Class: 6.1
Subsidiary Risk: -
Packing Group: III
Other Information
Passenger and Cargo Aircraft: Allowed.
Cargo Aircraft Only: Allowed.

SECTION 15: REGULATORY INFORMATION

U.S. Federal Regulations: CERCLA/SARA Hazardous Substances - Not applicable.
All components are on the U.S. EPA TSCA Inventory List.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard Categories: **Immediate Hazard** - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard – No

SARA 302 Extremely Hazardous Substance

Chemical Name	CAS Number	Reportable Quantity	Threshold Planning Quantity	Threshold Planning Quantity, Lower Value	Threshold Planning Quantity, Upper Value
Fluorouracil	51-21-8	500		500 lbs	10000 lbs

SARA 311/312 Hazardous Chemical: Yes

SARA 313 (TRI reporting)

Chemical Name	CAS Number	% by wt.
Fluorouracil	51-21-8	100

Other Federal Regulations
Safe Drinking Water Act (SDWA): Not regulated.

Food and Drug Administration (FDA): Not regulated.

U.S. State Regulations:
U.S. California Proposition 65: Warning: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

SECTION 16: OTHER INFORMATION

Contact: Taro Pharmaceuticals U.S.A., Inc., Regulatory Affairs Department
3 Skyline Drive, Hawthorne, NY 10532

Preparation and/or Revision Date: December 2016

D I S C L A I M E R

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