SAFETY DATA SHEET

1. Identification

Product identifier **Fluorouracil Injection, USP**

Other means of identification

Product code 16729-276-38 – 100 mL Pharmacy Bulk Vial, 16729-276-67 – Shelf Pack (20 mL Vials x 10), 16729-276-68 – Shelf Pack (10 mL Vials x 10), 16729-276-05 – 20 mL Vial, 16729-276-11 – 50 mL Pharmacy Bulk Vial, 16729-276-03 – 10 mL Vial

Synonyms FLUOROURACIL INJECTION, USP, 50 MG/ML, 10 ML, 20 ML, 50 ML & 100 ML * Fluorouracil Injection, USP, 50 mg/mL * Fluoroblastin * Fluroblastin * Adrucil * 2,4 (1H, 3H)-pyrimidinedione, 5-fluoro-5-fluorouracil

Recommended use Antineoplastic.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Distributor

Company name Accord Healthcare, Inc.

Address 1009 Slater Road Suite
210-B Durham, NC 27703, USA.

Telephone number 1-919-941-7880

Fax 1-919-941-7881

Contact Name Technical Representative

Website www.accord-healthcare.com

Emergency telephone number 1-800-424-9300 Call CHEMTREC Day or Nigh

Manufacturer

Company name Intas Pharmaceuticals Limited,

Address Plot No.: 457 – 458,
Village: Matoda, Taluka: Sanand,
Sarkhej - Bavla Highway,
District: Ahmedabad
Gujarat, India. 382 210

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Acute toxicity, oral	Category 4
Germ cell mutagenicity	Category 1B
Reproductive toxicity	Category 1A
Reproductive toxicity	Effects on or via lactation

Environmental hazards

Hazardous to the aquatic environment, acute hazard	Category 2

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Harmful if swallowed. May cause genetic defects. May damage fertility or the unborn child. May cause harm to breast-fed children. Toxic to aquatic life.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist or vapor. Do not eat, drink or smoke when using this product. Avoid contact during pregnancy/while nursing. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Avoid release to the environment.

Response If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If exposed or concerned: Get medical advice/attention.

Storage Store locked up.

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

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information Fluorouracil Injection, USP, is a solution containing 5-fluorouracil, an analog of the pyrimidine uracil. It is an anti-neoplastic used in the treatment of some types of cancer. It may also be used topically for treating malignant or pre-malignant lesions of the skin. It is cytotoxic, neurotoxic, and in the workplace, should also be considered a potential occupational reproductive hazard, harmful to the fetus, potentially irritating to the skin, eyes and respiratory tract, and a photosensitizer. Based on clinical use, possible target organs may include the bone marrow, gastrointestinal system, nervous system, cardiovascular system, skin and the fetus.

Finished Pharmaceutical products in their final packages are not subject to OSHA labeling requirements. Handling pharmaceutical products in workplace is subject to OSHA requirements for labeling.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
5-FLUOROURACIL	51-21-8	Proprietary
Sodium hydroxide	1310-73-2	Proprietary

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Active: Each vial contains 5-Fluorouracil for injection at 50 mg/ml, 10 ml, 20 ml, 50 ml, & 100 ml. Inactive: Each Fluorouracil for Injection vial contains: Sodium Chloride as well as Sodium Hydroxide added to adjust pH to approximately 9.2 (10 & 20 mL vials) & 8.6 – 9.4 (50 & 100 mL vials).

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.

Skin contact Remove contaminated clothing. Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Hold eyelids apart and flush eyes with plenty of water for 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Never give anything by mouth to a victim who is unconscious or is having convulsions. 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. Get medical advice/attention if you feel unwell.

Most important symptoms/effects, acute and delayed In clinical use, adverse effects may include bone marrow and gastrointestinal toxicity. Adverse effects on bone marrow include leucopenia, thrombin, and anemia. Adverse gastrointestinal effects may include nausea, vomiting, stomatitis, gastrointestinal ulceration and bleeding, diarrhea, or hemorrhage. Rashes and alopecia are also common. Ocular irritation, central neurotoxicity (cerebellar ataxia), and myocardial ischemia have also occurred. Topical application of solutions or creams with 1-5% fluorouracil caused skin irritation and allergic skin reactions. These solutions or creams can also cause eye irritation. Dermatitis and, rarely, erythema multiforme have been reported.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: Pre-existing hypersensitivity to 5-fluorouracil or other components in this formulation; pre-existing bone marrow, gastrointestinal, nervous system cardiovascular or skin disorders; pregnancy.

General information IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed such as: Carbon monoxide. Carbon dioxide. Nitrogen oxides. Fluorine compounds.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards The product is not flammable. No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Prevent product from entering drains. Stop the flow of material, if this is without risk. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Provide adequate ventilation. Do not breathe mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices. Follow OSHA guidelines on the safe handling of cytotoxic products.

Conditions for safe storage, including any incompatibilities Store locked up. Store at 20 – 25 ºC (68 - 77ºF). Protect from light. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection	If significant eye exposure is anticipated, the use of chemical safety goggles is recommended.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	Respiratory protection not required, under normal use. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. If respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Colorless solution.
Physical state	Liquid.
Form	Crystalline solid or powder
Color	White/off-white.
Odor	Not available.
Odor threshold	Not available.
pH	8.6 - 9.4
Melting point/freezing point	539.6 °F (282 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Partially soluble in cold water.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.

Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Light. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Strong acids.
Hazardous decomposition products	Carbon oxides. Nitrogen oxides. Hydrogen fluoride.

11. Toxicological information

Information on likely routes of exposure

Inhalation May cause slight respiratory tract irritation. Not a likely route of exposure under normal product handling conditions. May be harmful if inhaled. May cause inhalation hypersensitivity (occupational asthma) in sensitive individuals.

Skin contact May cause skin irritation. May be harmful in contact with skin. May cause allergic skin disorders in sensitive individuals.

Eye contact Direct contact with eyes may cause temporary irritation.

5-FLUOROURACIL (CAS 51-21-8)
Irritancy test
Result: Irritant
Species: Rabbit
Organ: Eye
Severity: Mild

Ingestion Not a likely route of exposure under normal product handling conditions. Harmful if swallowed.

5-FLUOROURACIL (CAS 51-21-8) May cause gastrointestinal toxicity

Symptoms related to the physical, chemical and toxicological characteristics In clinical use, adverse effects may include bone marrow and gastrointestinal toxicity. Adverse effects on bone marrow include leucopenia, thrombocytopenia, and anemia. Adverse gastrointestinal effects may include nausea, vomiting, stomatitis, gastrointestinal ulceration and bleeding, diarrhea, or hemorrhage. Rashes and alopecia are also common. Ocular irritation, central neurotoxicity (cerebellar ataxia), and myocardial ischemia have also occurred. Topical application of solutions or creams with 1-5% fluorouracil caused skin irritation and allergic skin reactions. These solutions or creams can also cause eye irritation. Dermatitis and, rarely, erythema multiforme have been reported.

Information on toxicological effects

Acute toxicity Harmful if swallowed.

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

Skin corrosion/irritation May cause skin irritation.

Irritation Corrosion - Skin

5-FLUOROURACIL (CAS 51-21-8)
Irritancy test
Result: Irritant
Species: Rabbit
Organ: Skin
Severity: Mild

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Eye Contact

5-FLUOROURACIL (CAS 51-21-8)
Irritancy test
Result: Irritant
Species: Rabbit
Organ: Eye
Severity: Mild

Respiratory or skin sensitization

Respiratory sensitization Not available.

Skin sensitization May cause skin sensitization in hypersensitive individuals.

Germ cell mutagenicity May cause genetic defects.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

5-FLUOROURACIL (CAS 51-21-8) 3 Not classifiable as to carcinogenicity to humans.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity May cause harm to breastfed babies. May damage fertility or the unborn child.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not available.

Chronic effects Repeat-dose studies in animals have shown a potential to cause adverse effects on blood and blood forming organs.

Further information There are scientific studies that suggest that personnel (e.g. nurses, pharmacists, etc.) who prepare and administer parenteral antineoplastics (e.g. in hospitals) may be at some risk due to potential mutagenicity, teratogenicity, and/or carcinogenicity of these materials if workplace exposures are not properly controlled. The actual risk in the workplace is not known.

Adverse effects associated with therapeutic use include gastrointestinal disturbances such as nausea, dyspepsia, and vomiting and gastrointestinal irritation. Effects on blood and bloodforming organs have also occurred.

12. Ecological information

Ecotoxicity Toxic to aquatic life.

Components		Species	Test Results
5-FLUOROURACIL (CAS 51-21-8)			
Other	EC50	Vibrio fisheri	0.12 mg/l, 24 hours
Aquatic			
Algae	EC50	Pseudokirchneriella subcapitata	0.11 mg/l, 96 hours
Crustacea	EC50	Daphnia magna	36 mg/l, 48 hours
Fish	LOEC	Pimephales promelas	400 mg/l, 120 hours
Other			
Bacteria	EC50	Pseudmonas putida	0.027 mg/l, 16 hours
Sodium hydroxide (CAS 1310-73-2)			
Aquatic			
Crustacea	EC50	Water flea (Ceriodaphnia dubia)	34.59 - 47.13 mg/l, 48 hours
Acute			
Fish	LC50	Bluegill (Lepomis macrochirus)	99 mg/l, 48 hours
		Mosquitofish (Gambusia affinis affinis)	125 mg/l, 96 hours

Persistence and degradability

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

5-FLUOROURACIL (CAS 51-21-8) < 3, (EC)
< 4, (GHS)

Bioconcentration factor (BCF)

5-FLUOROURACIL (CAS 51-21-8) 3, (Estimated)

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

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

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.
This product is exempt from SARA 311/312 reporting requirements when used as a food, food additive, color additive, drug or cosmetic under 40CFR370.13(a).

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2) LISTED

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 (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
5-FLUOROURACIL	51-21-8	500		500	10000

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
5-FLUOROURACIL	51-21-8	Proprietary

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

5-FLUOROURACIL (CAS 51-21-8)
Sodium hydroxide (CAS 1310-73-2)

US. New Jersey Worker and Community Right-to-Know Act

5-FLUOROURACIL (CAS 51-21-8)
Sodium hydroxide (CAS 1310-73-2)

US. Pennsylvania Worker and Community Right-to-Know Law

5-FLUOROURACIL (CAS 51-21-8)
Sodium hydroxide (CAS 1310-73-2)

US. Rhode Island RTK

5-FLUOROURACIL (CAS 51-21-8)
Sodium hydroxide (CAS 1310-73-2)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

5-FLUOROURACIL (CAS 51-21-8)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 11-September-2015

Revision date -

Version # 01

NFPA ratings

Disclaimer Accord Healthcare, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.