

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 06/11/2009

Reviewed on 06/11/2009

1 Identification of substance:**Product details:****Product name:** 5-Fluorouracil**Stock number:** L02004**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
 Johnson Matthey Catalog Company, Inc.
 30 Bond Street
 Ward Hill, MA 01835-8099
 Emergency Phone: (978) 521-6300
 CHEMTREC: (800) 424-9300
 Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:**Chemical characterization:****Description: (CAS#)**

5-Fluorouracil (CAS# 51-21-8): 100%

Identification number(s):**EINECS Number:** 200-085-6**3 Hazards identification****Hazard description:**

T Toxic

Information pertaining to particular dangers for man and environment

R 61 May cause harm to the unborn child

R 22 Also harmful if swallowed.

R 48/22 Also harmful: danger of serious damage to health by prolonged exposure if swallowed.

R 68 Possible risk of irreversible effects.

Classification system**HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	2
FIRE	1
REACTIVITY	1

Health (acute effects) = 2

Flammability = 1

Reactivity = 1

GHS label elements**Danger**

3.7/1A - May damage fertility or the unborn child.

3.5/2 - Suspected of causing genetic defects.

3.9/2 - May cause damage to organs through prolonged or repeated exposure.

**Warning**

3.1/4 - Harmful if swallowed.

Prevention:

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Use personal protective equipment as required.

Response:

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

IF exposed or concerned: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

Rinse mouth.

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Storage:

Store locked up.

Disposal:

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

4 First aid measures**General information**

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing

Do not induce vomiting; immediately call for medical help.

Seek immediate medical advice.

5 Fire fighting measures**Suitable extinguishing agents**

Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Nitrogen oxides (NOx)

Hydrogen fluoride (HF)

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Dispose contaminated material as waste according to item 13.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires: Keep ignition sources away.**Storage****Requirements to be met by storerooms and receptacles:** No special requirements.**Information about storage in one common storage facility:**

Store in the dark.

Store away from oxidizing agents.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

Protect from exposure to light.

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8 Exposure controls and personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

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

Additional information: No data

Personal protective equipment**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

Material of gloves

The selection of suitable gloves not only depends on the material, but also on quality.

Quality will vary from manufacturer to manufacturer.

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties:**General Information**

Form:	Crystalline powder
Color:	White
Odor:	Not determined

Change in condition

Melting point/Melting range:	282°C (540°F) (decomposes)
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined

Flash point: Not applicable

Ignition temperature: Not determined

Decomposition temperature: Not determined

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

Explosion limits:

Lower:	Not determined
Upper:	Not determined

Vapor pressure: Not determined

Density: Not determined

Solubility in / Miscibility with

Water at 20°C (68°F):	12 g/l
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10 Stability and reactivity**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided: Oxidizing agents

Dangerous reactions No dangerous reactions known

Dangerous products of decomposition:

Carbon monoxide and carbon dioxide

Nitrogen oxides

Hydrogen fluoride

11 Toxicological information**Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	115 mg/kg (mouse)
		230 mg/kg (rat)

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Primary irritant effect:**on the skin:** May cause irritation**on the eye:** May cause irritation**Sensitization:** No sensitizing effects known.**Other information (about experimental toxicology):**

Tumorigenic effects have been observed on tests with laboratory animals.

Reproductive effects have been observed on tests with laboratory animals.

Reproductive effects have been observed in humans.

Mutagenic effects have been observed on tests with bacteria.

Mutagenic effects have been observed on tests with insects.

Mutagenic effects have been observed on tests with human and/or animal DNA cells.

Mutagenic effects have been observed on tests with laboratory animals.

Subacute to chronic toxicity:**Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Behavioral - muscle weakness.

Behavioral - fluid intake.

Behavioral - convulsions or effect on seizure threshold.

Behavioral - ataxia.

Behavioral - antipsychotic.

Gastrointestinal - other changes.

Gastrointestinal - hypermotility, diarrhea.

Gastrointestinal - nausea or vomiting.

Blood - changes in bone marrow (not otherwise specified).

Blood - other hemolysis with or without anemia.

Blood - normocytic anemia.

Blood - changes in leukocyte (WBC) count.

Blood - changes in platelet count.

Blood - changes in erythrocyte (RBC) count.

Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol).

Blood - tumors.

Cardiac - EKG changes not diagnostic of specified effects.

Cardiac - other changes.

Cardiac - changes in coronary arteries.

Liver - changes in liver weight.

Vascular - BP elevation not characterized in autonomic section.

Skin and Appendages - dermatitis, other (after systemic exposure).

Lungs, Thorax, or Respiration - other changes.

Lungs, Thorax, or Respiration - tumors.

Peripheral Nerve and Sensation - sensory change involving peripheral nerve.

Nutritional and Gross Metabolic - weight loss or decreased weight gain.

Sense Organs and Special Senses (Eye) - ptosis.

Sense Organs and Special Senses (Eye) - effect, not otherwise specified.

Endocrine - changes in spleen weight.

Endocrine - changes in thymus weight.

Related to Chronic Data - changes in testicular weight.

Related to Chronic Data - death.

Kidney, Ureter, Bladder - changes in bladder weight.

Skin and Appendages - tumors.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases.

Reproductive - Effects on Newborn - other neonatal measures or effects.

Reproductive - Specific Developmental Abnormalities - musculoskeletal system.

Reproductive - Fertility - litter size (e.g. # fetuses per litter; measured before birth).

Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).

Reproductive - Effects on Embryo or Fetus - fetal death.

Reproductive - Fertility - post-implantation mortality (e.g. dead/or resorbed implants per total number of implants).

Reproductive - Specific Developmental Abnormalities - other developmental abnormalities.

Reproductive - Specific Developmental Abnormalities - craniofacial (including nose and tongue).

Reproductive - Specific Developmental Abnormalities - gastrointestinal system.

Reproductive - Specific Developmental Abnormalities - homeostasis.

Reproductive - Effects on Embryo or Fetus - cytological changes (including somatic cell genetic material)

Reproductive - Fertility - abortion.

Reproductive - Specific Developmental Abnormalities - eye/ear.

Reproductive - Effects on Newborn - live birth index (measured after birth)

Reproductive - Effects on Newborn - viability index (e.g., # alive at day 4 per # born live).

Reproductive - Effects on Newborn - growth statistics (e.g.%, reduced weight gain).

Reproductive - Paternal Effects - spermatogenesis (including genetic material, sperm morphology, motility, and count).

Tumorigenic - active as anti-cancer agent.

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Tumorigenic - protects against induction of experimental tumors.
 Tumorigenic - carcinogenic by RTECS criteria.

Additional toxicological information:

Product is suspected to cause birth defects.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

IARC-3: Not classifiable as to carcinogenicity to humans.

12 Ecological information:**General notes:**

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations**Product:****Recommendation** Consult state, local or national regulations to ensure proper disposal.**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**14 Transport information****DOT regulations:**

Hazard class: 6.1
Identification number: UN2811
Packing group: III
Proper shipping name (technical name): TOXIC SOLID, ORGANIC, N.O.S. (5-Fluorouracil)
Label: 6.1

Land transport ADR/RID (cross-border)

ADR/RID class: 6.1 (T2) Toxic substances
Danger code (Kemler): 60
UN-Number: 2811
Packaging group: III
Description of goods: 2811 TOXIC SOLID, ORGANIC, N.O.S. (5-Fluorouracil)

Maritime transport IMDG:

IMDG Class: 6.1
UN Number: 2811
Label: 6.1
Packaging group: III
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (5-Fluorouracil)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 6.1
UN/ID Number: 2811
Label: 6.1

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Packaging group:	III
Proper shipping name:	TOXIC SOLID, ORGANIC, N.O.S. (5-Fluorouracil)
UN "Model Regulation":	UN2811, TOXIC SOLID, ORGANIC, N.O.S., 6.1, III

15 Regulations**Product related hazard informations:****Hazard symbols:**

T Toxic

Risk phrases:

61 May cause harm to the unborn child
 22 Also harmful if swallowed.
 48/22 Also harmful: danger of serious damage to health by prolonged exposure if swallowed.
 68 Possible risk of irreversible effects.

Safety phrases:

53 Avoid exposure - obtain special instructions before use.
 45 In case of accident or if you feel unwell, seek medical advice immediately.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity.

All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).

Information about limitation of use:

For use only by technically qualified individuals.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

Other regulations, limitations and prohibitive regulations

Although this chemical may sometimes be used as a food or drug or cosmetic, our products are not approved or suitable for such use or for human consumption.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.

Contact: Zachariah Holt

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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