

# Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

## 1.1. Product identifier

Product Name Fludarabine Phosphate Injection

Product Code(s) PZ01778
Trade Name: Not applicable
Chemical Family: Mixture

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Pharmaceutical product used as Antineoplastic

## 1.3. Details of the supplier of the safety data sheet

Pfizer Inc
66 Hudson Boulevard East
New York, New York 10001
1-800-879-3477
Pfizer Ltd
Ramsgate Road
Sandwich, Kent
CT13 9NJ
United Kingdom

+00 44 (0)1304 616161

E-mail address pfizer-MSDS@pfizer.com

## 1.4. Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300 International Chemtrec (24 hours):+1-703-527-3887

## Section 2: HAZARDS IDENTIFICATION

# 2.1. Classification of the substance or mixture

GHS - Classification: Regulated according to Regulation (EC) 1272/2008 and/or other applicable regulations.

**Germ cell mutagenicity Reproductive toxicity**Category 1B - (H340)

Category 1B - (H360FD)

#### **OSHA Classification**

Hazards not otherwise classified (HNOC)

Not applicable

Hazards classified under paragraph (d)(1)(ii) of 1910.1200

Not applicable

2.2. Label elements



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Signal word Danger

Hazard statements H340 - May cause genetic defects

H360FD - May damage fertility. May damage the unborn child

Precautionary Statements - EU (§28, P201 - Obtain special instructions before use

1272/2008)

P202 - Do not handle until all safety precautions have been read and understood

P280 - Wear protective gloves and protective clothing

P308 + P313 - IF exposed or concerned: Get medical advice/attention

P405 - Store locked up

P501 - Dispose of contents/container in accordance with local, regional, national, and

international regulations as applicable

2.3. Other hazards

Other hazards An Occupational Exposure Value has been established for one or more of the ingredients

(see Section 8).

PBT & vPvB The product does not contain any substance(s) classified as PBT or vPvB.

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors.

Note: This document has been prepared in accordance with standards for workplace safety, which

require the inclusion of all known hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warnings included may not apply in all cases. Your needs may vary depending upon the potential for exposure in your workplace.

## Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

**Substances** Not applicable

3.2 Mixtures

Hazardous

lazaruous							
Chemical name	Weight-%	REACH	EC No (EU	Classification	Specific	M-Factor	M-Factor
		registration	Index No)	according to	concentration		(long-term)
		number		Regulation	limit (SCL)		
				(EC) No.			
				1272/2008			
				[CLP]			
Fludarabine	5		Not Listed	Muta. 1B	Not classified	No data	No data
phosphate				(H340)		available	available
(CAS #:				Repr. 1B			
75607-67-9)				(H360FD)			
Sodium hydroxide	##	-	215-185-5	Skin Corr.1A	Eye Irrit. 2 ::	No data	No data
(CAS #: 1310-73-2)			(011-002-00-6)	(H314)	0.5%<=C<2%	available	available
					Skin Corr. 1A ::		
					C>=5%		
					Skin Corr. 1B ::		
					2%<=C<5%		
					Skin Irrit. 2 ::		
					0.5%<=C<2%		
NonHazardous		•					
Chemical name	\Maight_%	DEVCH	EC No (ELL	Classification	Specific	M-Factor	M-Factor

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		registration number	Index No)	according to Regulation (EC) No. 1272/2008 [CLP]	concentration limit (SCL)		(long-term)
Mannitol (CAS #: 69-65-8)	*	-	200-711-8	Not classified	Not classified	No data available	No data available
Water (CAS #: 7732-18-5)	*	-	231-791-2	Not classified	Not classified	No data available	No data available

## Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate No information available

Chemical name	Oral LD50 mg/kg		Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapor - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Mannitol 69-65-8	13500	No data available	No data available	No data available	No data available
Fludarabine phosphate 75607-67-9	>2000	No data available	No data available	No data available	No data available
Water 7732-18-5	89838.9	No data available	No data available	No data available	No data available
Sodium hydroxide 1310-73-2	325	1350	No data available	No data available	No data available

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59).

## **Additional information**

Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety. In accordance with 29 CFR 1910.1200, the exact percentage composition of this mixture has been withheld as a trade secret. Non-hazardous ingredients provided for completeness.

## Section 4: FIRST AID MEASURES

#### 4.1. Description of first aid measures

**Inhalation** Remove to fresh air. Seek immediate medical attention/advice.

**Eye contact** Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids.

Consult a physician.

**Skin contact** Remove contaminated clothing. Flush area with large amounts of water. Use soap. Seek

medical attention.

**Ingestion** Never give anything by mouth to an unconscious person. Wash out mouth with water. Do

not induce vomiting unless directed by medical personnel. Seek medical attention

immediately.

## 4.2. Most important symptoms and effects, both acute and delayed

**Most important symptoms and** For information on potential signs and symptoms of exposure, See Section 2 - Hazards

<sup>\*</sup> Proprietary

<sup>\*\*</sup> to adjust pH

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effects Identification and/or Section 11 - Toxicological Information.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians None.

## Section 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

**Suitable Extinguishing Media** Dry chemical, CO2, alcohol-resistant foam or water spray.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the

Fine particles (such as dust and mists) may fuel fires/explosions.

chemical **Hazardous combustion products** 

Formation of toxic gases is possible during heating or fire.

**Explosion data** 

Sensitivity to mechanical impact No information available. Sensitivity to static discharge No information available.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Use personal protection equipment.

## Section 6: ACCIDENTAL RELEASE MEASURES

## 6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Personnel involved in clean-up should wear appropriate personal protective equipment (see

Section 8). Minimize exposure.

Use personal protection recommended in Section 8. For emergency responders

6.2. Environmental precautions

Place waste in an appropriately labeled, sealed container for disposal. Care should be **Environmental precautions** 

taken to avoid environmental release.

#### 6.3. Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

Contain the source of spill if it is safe to do so. Collect spill with absorbent material. Clean Methods for cleaning up

spill area thoroughly.

Clean contaminated objects and areas thoroughly observing environmental regulations. Prevention of secondary hazards

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

## Section 7: HANDLING AND STORAGE

#### 7.1. Precautions for safe handling

Advice on safe handling

Minimize generating airborne mists and vapors. Avoid breathing mist or aerosols. Avoid contact with skin, eyes or clothing. When handling, use appropriate personal protective

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equipment (see Section 8). Wash thoroughly after handling. Releases to the environment should be avoided. Review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure or environmental releases. Potential points of process emissions of this material to the atmosphere should be controlled with dust collectors, HEPA filtration systems or other equivalent controls.

**General hygiene considerations** 

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

**Storage Conditions** Store as directed by product packaging.

7.3. Specific end use(s)

Specific use(s) Pharmaceutical drug product.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1. Control parameters

#### **Exposure Limits**

Refer to available public information for specific member state Occupational Exposure Limits.

Mannitol

Russia MAC: 10 mg/m<sup>3</sup>

Sodium hydroxide

ACGIH OEL (Ceiling) 2 mg/m<sup>3</sup>

ACGIH TLV Ceiling: 2 mg/m<sup>3</sup>

Austria TWA-TMW: 2 mg/m³; inhalable fraction

STEL-KZGW: 4 mg/m³ (8 X 5 min); inhalable fraction

Bulgaria TWA: 2.0 mg/m³; alkaline aerosols

Czech Republic 1 mg/m³

Ceiling: 2 mg/m³

Denmark
Ceiling: 2 mg/m³;
Estonia
TWA: 1 mg/m³;
STEL: 2 mg/m³;

Finland STEL: 2 mg/m³;
Ceiling: 2 mg/m³;

France 2 mg/m<sup>3</sup>

Hungary TWA-AK: 1 mg/m³;

STEL-CK: 2 mg/m³; Ireland STEL: 2 mg/m³; Ceiling Limit Value 2 mg/m³

Latvia TWA: 0.5 mg/m³;
Poland TWA-NDS: 0.5 mg/m³;
STEL-NDSCh: 1 mg/m³;

Romania TWA: 1 mg/m³;

STEL: 3 mg/m³; Slovakia TWA: 2 mg/m³;

Spain STEL (VLA-EC): 2 mg/m<sup>3</sup>;

Switzerland TWA-MAK: 2 mg/m³; inhalable dust

STEL-KZGW: 2 mg/m³; inhalable dust

OSHA PEL TWA: 2 mg/m<sup>3</sup>

(vacated) Ceiling: 2 mg/m<sup>3</sup>

United Kingdom STEL: 2 mg/m<sup>3</sup>;

#### **Pfizer Occupational Exposure Band**

(OEB) Statement: The purpose of the Occupational Exposure Band (OEB) classification system is to separate

substances into different Hazard categories when the available data are sufficient to do so, but inadequate to establish an Occupational Exposure Limit (OEL). The OEB given is based

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upon an analysis of all currently available data; as such, this value may be subject to revision when new information becomes available.

Fludarabine phosphate

Pfizer Occupational Exposure Band (OEB):

OEB 4 (control exposure to the range of 1ug/m<sup>3</sup> to <10ug/m<sup>3</sup>)

8.2. Exposure controls

Engineering controls General room ventilation is adequate unless the process generates dust, mist or fumes.

Engineering controls should be used as the primary means to control exposures. Keep airborne contamination levels below the exposure limits listed above in this section.

**Personal protective equipment**Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE). Contact your safety and health professional or safety equipment supplier for assistance in selecting the correct protective clothing/equipment

based on an assessment of the workplace conditions, other chemicals used or present in the workplace and specific operational processes.

Eye/face protection Wear safety glasses or goggles if eye contact is possible. (Eye protection must meet the

standards in accordance with EN166, ANSI Z87.1 or international equivalent.).

Hand protection Impervious disposable gloves (e.g. Nitrile, etc.) (double recommended) if skin contact with

drug product is possible and for bulk processing operations. (Protective gloves must meet the standards in accordance with EN374, ASTM F1001 or international equivalent.).

**Skin and body protection** Impervious disposable protective clothing is recommended if skin contact with drug product

is possible and for bulk processing operations. (Protective clothing must meet the standards in accordance with EN13982, ANSI 103 or international equivalent.).

Respiratory protection Under normal conditions of use, if the applicable Occupational Exposure Limit (OEL) is

exceeded, wear an appropriate respirator with a protection factor sufficient to control exposures to below the OEL (e.g. particulate respirator with a full mask, P3 filter).

(Respirators must meet the standards in accordance with EN136, EN143, ASTM F2704-10

or international equivalent.).

Thermal hazards No information available.

**Environmental exposure controls** No information available.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state Liquid

ColorNo information availableOdorNo information available.Odor thresholdNo information available

<u>Property</u> <u>Values</u>

Melting point / freezing point

No data available

Boiling point or initial boiling point and boiling range

No data available

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Flammability (solid, gas) No data available

Lower and upper explosion limit/flammability limit

Lower explosion limit No data available No data available **Upper explosion limit** Flash point No data available **Autoignition temperature** No data available

**Decomposition temperature** 

No data available SADT (°C) No data available pH (as aqueous solution) No data available Kinematic viscosity No data available Dynamic viscosity No data available Solubility No data available No data available Vapor pressure Density and/or relative density No data available **Bulk density** No data available

**Liquid Density** No data available Vapor density No data available

**Particle characteristics** 

**Particle Size** No information available **Particle Size Distribution** No information available

9.2. Other information

Mixture Molecular formula Molecular weight Mixture

#### 9.2.1. Information with regard to physical hazard classes

No information available

#### 9.2.2. Other safety characteristics

No information available

## Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stable under normal conditions. Stability

**Explosion data** 

Sensitivity to mechanical impact No information available. Sensitivity to static discharge No information available.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions No information available.

10.4. Conditions to avoid

Conditions to avoid Fine particles (such as dust and mists) may fuel fires/explosions.

10.5. Incompatible materials

Incompatible materials As a precautionary measure, keep away from strong oxidizers.

10.6. Hazardous decomposition products

Hazardous decomposition products No data available.

## Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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**General Information:** The information included in this section describes the potential hazards of the individual

ingredients

**Short term** May cause eye and skin irritation (based on components)

Long Term: Repeat-dose studies in animals have shown a potential to cause adverse effects on male

reproductive system, fetus.

Bone marrow suppression is the most serious adverse effect seen during clinical use. **Known Clinical Effects:** 

Adverse effects most commonly reported in clinical use include fever, chills, infection,

nausea, vomiting, malaise, tiredness, loss of appetite (anorexia), weakness.

**Acute toxicity** Based on available data, the classification criteria are not met. Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Skin corrosion/irritation Respiratory or skin sensitization STOT - single exposure

STOT - repeated exposure Reproductive toxicity Germ cell mutagenicity

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

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

Classification is based on mixture calculation methods based on component data. Classification is based on mixture calculation methods based on component data.

Based on available data, the classification criteria are not met. Carcinogenicity **Aspiration hazard** Based on available data, the classification criteria are not met.

## Acute Toxicity: (Species, Route, End Point, Dose)

Mannitol

Rat Oral LD 50 13500 mg/kg Mouse Oral LD 50 22 g/kg

#### Fludarabine phosphate

Rat Oral LD50 > 2000 mg/kg

Sodium hydroxide

Mouse IP LD50 mg/kg

Chemical name Oral LD50		Dermal LD50	Inhalation LC50	
Mannitol = 13500 mg/kg (Rat)		-	-	
Water	> 90 mL/kg (Rat)	-	-	
Sodium hydroxide	= 325 mg/kg (Rat)	= 1350 mg/kg ( Rabbit )	-	

A greater than symbol (>) indicates that the toxicity endpoint being tested was not **Acute Toxicity Comments:** 

achievable at the highest dose used in the test.

Irritation / Sensitization: (Study Type, Species, Severity)

Sodium hydroxide

Eye Irritation Rabbit Severe Skin Irritation Rabbit Severe

## Reproduction & Development Toxicity: (Duration, Species, Route, Dose, End Point, Effect(s))

Fludarabine phosphate

Embryo / Fetal Development Rat Intravenous 10 mg/kg/day LOAEL Teratogenic, Embryotoxicity, Fetotoxicity Embryo / Fetal Development Rabbit Intravenous 5 mg/kg/day LOAEL Teratogenic, Embryotoxicity, Fetotoxicity

## Genetic Toxicity: (Study Type, Cell Type/Organism, Result)

Fludarabine phosphate

Dominant Lethal Assay Mouse Negative

In Vitro HGPRT Forward Gene Mutation Assay Chinese Hamster Ovary (CHO) cells Negative

In Vitro Chromosome Aberration Chinese Hamster Ovary (CHO) cells Positive

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Sister Chromatid Exchange Positive In Vivo Micronucleus Mouse Positive

None of the components of this formulation are listed as a carcinogen by IARC, NTP or Carcinogenicity

OSHA. See below

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Based on available data, the classification criteria are not met. **Endocrine disrupting properties** 

11.2.2. Other information

Other adverse effects No information available.

Section 12: ECOLOGICAL INFORMATION

**Environmental Overview:** Environmental properties have not been thoroughly investigated. Releases to the

environment should be avoided.

12.1. Toxicity

12.2. Persistence and degradability

No information available. Persistence and degradability

12.3. Bioaccumulative potential

**Bioaccumulation** No information available.

12.4. Mobility in soil

No information available. Mobility in soil

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment

Chemical name	PBT and vPvB assessment	
Sodium hydroxide	Not PBT/vPvB PBT assessment does not apply	

## 12.6. Endocrine disrupting properties

**Endocrine disrupting properties** Based on available data, the classification criteria are not met.

12.7. Other adverse effects

No information available. Other adverse effects

PMT or vPvM properties Based on available data, the classification criteria are not met.

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## Section 13: DISPOSAL CONSIDERATIONS

#### 13.1. Waste treatment methods

## Waste from residues/unused products

Dispose of waste in accordance with all applicable laws and regulations. Member State specific and Community specific provisions must be considered. Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural wastewater and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater.

## Section 14: TRANSPORT INFORMATION

The following refers to all modes of transportation unless specified below.

Not regulated for transport under USDOT, EUADR, IATA, or IMDG regulations.

UN number:
UN proper shipping name:
Transport hazard class(es):
Packing group:
Environmental Hazard(s):
Not applicable
Not applicable
Not applicable

## Section 15: REGULATORY INFORMATION

## 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

CERCLA/SARA Section 313 de minimus % Not Listed
California Proposition 65 Not Listed
TSCA Present
EINECS 200-711-8
AICS Present

Fludarabine phosphate

CERCLA/SARA Section 313 de minimus % Not Listed
California Proposition 65 Not Listed
EINECS Not Listed

Water

CERCLA/SARA Section 313 de minimus % Not Listed
California Proposition 65 Not Listed
TSCA Present
EINECS 231-791-2
AICS Present

Sodium hydroxide

CERCLA/SARA Section 313 de minimus % Not Listed Hazardous Substances RQs 1000 lb California Proposition 65 Not Listed TSCA Present EINECS 215-185-5 AICS

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Standard for Uniform Scheduling of Medicines and Poisons (SUSMP)

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## National regulations

#### Germany

Chemical Prohibition Ordinance (ChemVerbotsV)

Not applicable

**TRGS 905** Not applicable

#### Switzerland

Ordinance on the Incentive Tax on Volatile Organic Compounds (OVOC) SR 814.018 Not applicable Storage of Hazardous Material Not applicable Not applicable WPO (GSchV) SR 814.201; WPA (GSchG) SR 814.20 **Major Accidents Ordinance SR 814.012** Not applicable

#### **European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

#### Authorizations and/or restrictions on use:

This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Chemical name	Restricted substance per REACH	Substance subject to authorization per	
	Annex XVII	REACH Annex XIV	
Sodium hydroxide	75	-	
1310-73-2			

#### **Persistent Organic Pollutants**

Not applicable

## Ozone-depleting substances (ODS) Regulation (EU) 2024/590

Not applicable.

## **Explosives Precursors Marketing and Use (2019/1148)**

Not applicable

#### Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

**ENCS** - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

**KECL** - Korean Existing Chemicals Inventory

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

TCSI - Taiwan Chemical Substance Inventory

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#### 15.2. Chemical safety assessment

Chemical Safety Report No information available

# Section 16: OTHER INFORMATION

# Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of any hazard and/or precautionary statements referred to under Sections 2-15

H360FD - May damage fertility. May damage the unborn child H340 - May cause genetic defects H314 - Causes severe skin burns and eye damage

**Data Sources:** Publicly available toxicity information.

Reason for revision Updated Section 2 - Hazard Identification. Updated Section 3 - Composition / Information on

Ingredients. Updated Section 7 - Handling and Storage. Updated Section 8 - Exposure Controls / Personal Protection. Updated Section 11 - Toxicology Information. Updated

Section 12 - Ecological Information.

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Prepared By Pfizer Global Environment, Health, and Safety

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