

**MATERIAL SAFETY DATA SHEET**Product **FTORAFUR****MSDS – F3/5**

Creation Date 12-09-2000

Revision Date 06-04-2011

Page 1 of 6

Version 5

**1. IDENTIFICATION OF SUBSTANCE AND COMPANY**

Product	Ftorafur
Product use	Active Pharmaceutical Ingredient
Manufacturer/ Supplier	JSC "GRINDEKS"
	53 Krustpils St., Riga, LV-1057
	Latvia
Telephone number	+ 371-67083205
Fax number	+ 371-67083505
Emergency telephone number	contact person: Mr. Janis Jaunbergs
	at work: + 371-67083479
	mob: + 371-29389367

**2. HAZARDS IDENTIFICATION****DSD classification**

Product classification/ labeling Toxic

**GHS classification**

Safety hazards, classification	Acute Tox. 3 (inhalation) Acute Tox. 3 (on skin) Acute Tox. 3 (swallowed) Repr. 1A, 1B
Signal word	Danger
Human health hazards:	
Eye	May cause eye irritation, redness and pain
Skin	Toxic if absorbed through the skin. May cause skin irritation
Ingestion	Toxic if swallowed. May cause irritation to mucous membranes, nausea and vomiting
Inhalation	Toxic if inhaled. May cause upper respiratory tract irritation
Effect on the environment	Prevent substances from falling into financial drains, waterways, soil
Other information	Possible risk of impaired fertility and central nervous system (CNS)

**3. COMPOSITION/ INFORMATION ON INGREDIENTS**

Substance chemical name	5-Fluoro-1-(tetrahydro-2-furanyl)-2,4(1H,3H)-pyrimidinedione
Composition	Not less than 98 %
Chemical family name	Pyrazine derivatives
Common name	Ftorafur
Synonyms	Tegafur, 5-Fluoro-1-(tetrahydro-2-furyl)uracil
Trademarks	Citofur (Lusofarmaco); Coparogin (Nippon Chemiphar); Exonal (Toyama); Fental (Kanebo); Franrose (Hishiyama); Ftorafur (Grünenthal); Fulaid (Takeda); Fulfeel (Kyorin); Furafluor (Green Cross); Furofutran (Taiyo); Futraful (Taiho); Lamar (Tokyo Tanabe); Lifrit (Kissei); Neberk (Morishita); Nitobanil (Kyowa Yakuhin); Riol (Toa Eiyo); Sinoflurol (Kaken); Sunfural (Asahi Kasei); Tefsiel C (Towa Yakuhin)
Molecular formula	C <sub>8</sub> H <sub>6</sub> FN <sub>2</sub> O <sub>3</sub>
Molar mass	200.17 g/mol

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Product **FTORAFUR****MSDS – F3/5**

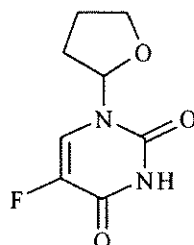
Creation Date 12-09-2000

Revision Date 06-04-2011

Page 2 of 6

Version 5

Structure

**DSD classification**

Hazard symbol



T – Toxic

Risk phrases

R23/24/25, R60

**GHS classification**

GHS pictogram

GHS06



Hazard statement

H301, H311, H331, H360

CAS number

17902-23-7

EC number

241-846-2

**4. FIRST AID MEASURES**

Emergency medical assistance

Emergency medical assistance may be required

Potential health effects

Toxic if absorbed through the skin, if swallowed, or if inhaled. May cause skin and eye irritation. Possible risk of impaired fertility, the unborn child and CNS. Used as an anti-cancer agent

Inhalation

If inhaled, remove to fresh air. If breathing becomes difficult give oxygen. If respiratory arrest: mouth to mouth resuscitation. Call a physician

Skin contact

In case of skin contact, wash immediately with plenty of water at least 15 minutes. Remove contaminated clothing and shoes. Call a physician

Eye contact

In case of contact with eyes, flush with a mild water flow for at least 15 minutes, assure adequate flushing by separating the eyelids with fingers. Call a physician

Ingestion

If swallowed, wash out mouth with water. Never give anything by mouth to an unconscious person. Call a physician

In any case seek medical advice

**In all cases where there is suspicion of exposure or poisoning, seek medical help!**

Note to physicians

Cytostatic. Symptomatic treatment. Target organ – Bone marrow

**MATERIAL SAFETY DATA SHEET**Product **FTORAFUR****MSDS – F3/5**

Creation Date 12-09-2000

Revision Date 06-04-2011

Page 3 of 6

Version 5

**5. FIRE FIGHTING MEASURES**

Specific hazards	Combustible. Dust-air mixture can make explosion hazard. Sensitive to static discharge
Extinguishing media	Water spray, carbon dioxide, dry chemical powder, or alcohol-resistant foam
Unsuitable extinguishing media	Not available
Protective equipment	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes
Other information	During combustion may release toxic gases or fumes, see section 10

**6. ACCIDENTAL RELEASE MEASURES**

Personal protection	Wear appropriate NIOSH/MSHA-approved respirator with an antidust filter, chemical safety goggles, rubber boots and heavy rubber gloves and working overall of rubber/dense cotton cloth. Avoid raising dust. Ventilate area
Clean-up methods	Sweep up with a moist absorbent in tightly sealed containers. Bring to hazardous waste in a dedicated location. Contaminated area treat with detergents and rinse with large amount of water, flushed into sewage production
Environmental precautions	Prevent substances from falling into financial drains, waterways, soil
Other information	Report to direct manager and act according to his instructions

**7. HANDLING AND STORAGE**

Handling	Use Personal Protective Equipment (PPE)! Beware of contact with skin and eyes, do not breathe or swallow. Pre-package act according to the safety requirements. Empty containers may contain material residue. Leaving the job during breaks or after work, always wash hands thoroughly with soap and water. See section 8
Storage	Keep containers tightly closed in a dry well ventilated area, away from heat sources, sunlight, and incompatible substances. See section 10
Other information	Not available

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Airborne Exposure Limits and / or Biological Limit values	0.3 mg/m <sup>3</sup> *
Work area control measures	A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Maintain eye wash and shower. Take precautionary measures against static discharge.

## MATERIAL SAFETY DATA SHEET

Product **FTORAFUR**

**MSDS – F3/5**

Creation Date 12-09-2000

Revision Date 06-04-2011

Page 4 of 6

Version 5

### Personal Protective Equipment:

#### Respiratory protection

If the exposure limit is exceeded and engineering controls are not feasible, a half-face organic vapor respirator may be worn for up to ten times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres

#### Skin protection

Wear impervious protective clothing, including boots, gloves, lab coat as appropriate, to prevent skin contact

#### Eye protection

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area

#### Hygiene measures

Leaving the job during breaks or after work, always wash hands thoroughly with soap and water. Take off dirty protective clothing

#### Other information

Not available

## 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Physical state

Solid, crystalline powder

#### Colour

White

#### Odor

Odorless

#### Boiling point

Not available

#### Melting point

166 – 171 °C

#### Flash point

198 °C

#### Auto-ignition temperature

358 °C

#### Flammable limits in air % by volume:

Not available

#### Density

1.45 g/cm<sup>3</sup>

#### Solubility:

- in water

Sparingly soluble

- in organic solvents

Sparingly soluble in ethanol (95%). Soluble in methanol, diluted sodium hydroxide solution, chloroform, dimethyl sulfoxide (DMSO). Slightly soluble in diethylether

#### Wiccosity

Not available

#### pH

Not available

#### Other information:

- logP

-0.02

- pKa

7.62

**MATERIAL SAFETY DATA SHEET**Product **FTORAFUR****MSDS – F3/5**

Creation Date 12-09-2000

Revision Date 06-04-2011

Page 5 of 6

Version 5

**10. STABILITY AND REACTIVITY**

Conditions to avoid	Stable under ordinary conditions of use and storage. Keep away from heat sources, sunlight, and incompatible substances
Hazardous combustions or decomposition products	CO, CO <sub>2</sub> , N <sub>x</sub> O <sub>y</sub> , HF
Materials to avoid	Strong oxidizing agents
Hazardous reactions	Not available
Other information	Not available

**11. TOXICOLOGICAL INFORMATION**

Acute toxicity	LD <sub>LO</sub> = 640 mg/kg (human) LD <sub>50</sub> = 775 mg/kg (mouses) LD <sub>50</sub> = 930 mg/kg (rats)
Mutagenicity / Carcinogenicity	Not classified as a carcinogen (used as an anti-cancer agent)
Teratogenicity / developmental toxicity	Toxic to reproduction (Repr. 1A, 1B)
Other information	May cause CNS problems

**12. ECOLOGICAL INFORMATION**

Environmental Fate	Low bioaccumulation
Environmental Toxicity	Not available
Other information	Prevent substances from falling into financial drains, waterways, soil

**13. DISPOSAL CONSIDERATIONS**

Product/ waste disposal	Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber Observe all federal state and local environmental regulations
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**14. TRANSPORT INFORMATION**

UN number	2811
Proper shipping name	TOXIC SOLID, ORGANIC, N.O.S.
Class (ADR/RID; ICAO-TI/IATA-DGR; IMDG)	6.1
Packing group	III
Packing labels	6.1

**15. REGULATORY INFORMATION****DSD classification**

Product classification/ labeling



T – Toxic

**MATERIAL SAFETY DATA SHEET**Product **FTORAFUR****MSDS – F3/5**

Creation Date 12-09-2000

Revision Date 06-04-2011

Page 6 of 6

Version 5

Risk phrases	R23/24/25	Toxic by inhalation, in contact with skin and if swallowed
	R60	May impair fertility
Safety phrases	S22	Do not breathe dust
	S24/25	Avoid contact with skin and eyes
	S36/37/39	Wear suitable protective clothing, gloves and eye/face protection
	S45	In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

**GHS classification**

GHS pictogram

GHS06



Signal word

Danger

Hazard class, classification

Acute Tox. 3 (inhalation)

Acute Tox. 3 (on skin)

Acute Tox. 3 (swallowed)

Repr. 1A, 1B

Hazard statement

H301 Toxic if swallowed

H311 Toxic in contact with skin

H331 Toxic if inhaled

H360 May damage fertility or the unborn child

Additional labeling provision

Not available

Precautionary statement

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

P261 Avoid breathing dust, fume and vapours

P281 Use personal protective equipment as required

P312 Call a POISON CENTER or doctor/physician if you feel unwell

P403+P233 Store in a well-ventilated place. Keep container tightly closed

Other information

Not available

**16. OTHER INFORMATION**

Product use

Active Pharmaceutical Ingredient

\* Joint Stock Company "Grindeks" reviewed data

Uses and restrictions

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide JSC GRINDEKS shall not be held liable for any damage resulting from handling of, or from contact with the above product.