

## Material Safety Data Sheet

Date Printed: 19/MAY/2005

Date Updated: 12/MAR/2004

Version 1.1

According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

## 1 - Product and Company Information

Product Name	SODIUM FLUORIDE, 99.99%
Product Number	215309
Company	Sigma-Aldrich Pty, Ltd Unit 2, 14 Anella Avenue Castle Hill NSW 1765 Australia
Technical Phone #	+61 2 9841 0555
Fax	+61 2 9841 0500
Emergency Phone #	+61 2 9841 0566

## 2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
SODIUM FLUORIDE	7681-49-4	231-667-8	009-004-00-7

Formula	NaF
Molecular Weight	41.99 AMU
Synonyms	Alcoa sodium fluoride * Antibulit * Cavi-trol * Chemifluor * Credo * Disodium difluoride * FDA 0101 * F1-Tabs * Floridine * Florocid * Flozenges * Fluoral * Fluorident * Fluoride, sodium * Fluorid sodny (Czech) * Fluorigard * Fluorineed * Fluorinse * Fluoritab * Fluorocid * Fluor-O-kote * Fluorol * Fluorure de sodium (French) * Flura * Flura drops * Flura-gel * Flura-loz * Flurcare * Flursol * Fungol B * GEL II * Gelution * Gleem * Iradicav * Karidium * Karigel * Kari-rinse * Lea-Cov * Lemoflur * Luride * Luride lozi-tabs * Luride-SF * Nafeen * NaFpak * Na frinse * Natrium fluoride * NCI-C55221 * Nufluor * Ossalin * Ossin * Pediaflor * Pedident * Pennwhite * Pergantene * Phos-Flur * Point two * Predent * Rafluor * Rescue squad * Roach salt * Sodium fluoride cyclic dimer * Sodium fluorure (French) * Sodium hydrofluoride * Sodium monofluoride * SO-Flo * Stay-Flo * Studafluor * Super-dent * T-Fluoride * Thera-flur * Thera-flur-N * Trisodium trifluoride

## 3 - Hazards Identification

## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Toxic if swallowed. Contact with acids liberates very toxic gas.  
Irritating to eyes and skin.

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## 4 - First Aid Measures

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### AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

### AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

### AFTER EYE CONTACT

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

### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

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## 5 - Fire Fighting Measures

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### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

### SPECIAL RISKS

Specific Hazard(s): Emits toxic fumes under fire conditions.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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## 6 - Accidental Release Measures

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### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

### METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

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## 7 - Handling and Storage

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### HANDLING

Directions for Safe Handling: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

### STORAGE

Conditions of Storage: Keep tightly closed.

SPECIAL REQUIREMENTS: Moisture sensitive.

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## 8 - Exposure Controls / Personal Protection

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### ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

#### GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

#### EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	TWA	2.5MG (F) /M3

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

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### 9 - Physical and Chemical Properties

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Appearance	Physical State: Solid Color: White Form: Crystalline	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	993 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	1.4 mmHg	
SG/Density	2.78 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	N/A	
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

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### 10 - Stability and Reactivity

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#### STABILITY

Stable: Stable.

Conditions to Avoid: Moisture.

Materials to Avoid: Strong acids.

#### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Hydrogen fluoride, Sodium oxides.

#### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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### 11 - Toxicological Information

ACUTE TOXICITY

LDLO  
Oral  
Woman  
90 mg/kg  
Remarks: Behavioral:Fluid intake. Behavioral:Muscle weakness.  
Gastrointestinal:Nausea or vomiting.

LDLO  
Oral  
Woman  
360 mg/kg  
Remarks: Lungs, Thorax, or Respiration:Cyanosis.  
Gastrointestinal:Hypermotility, diarrhea.  
Gastrointestinal:Nausea or vomiting.

LDLO  
Oral  
Human  
71 mg/kg  
Remarks: Behavioral:Tremor. Musculoskeletal:Changes in teeth and supporting structures. Other changes

LDLO  
Oral  
Human  
75 mg/kg

LD50  
Oral  
Rat  
52 mg/kg

LD50  
Intraperitoneal  
Rat  
22 MG/KG

LD50  
Subcutaneous  
Rat  
175 MG/KG

LD50  
Intravenous  
Rat  
26 MG/KG  
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Olfaction:Tumors. Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Other. Nutritional and Gross Metabolic:Weight loss or decreased weight gain.

LD50  
Oral  
Mouse  
57 mg/kg

LD50

Intraperitoneal

Mouse

38 MG/KG

Remarks: Gastrointestinal:Other changes. Liver:Other changes.  
Kidney, Ureter, Bladder:Other changes.

LD50

Subcutaneous

Mouse

115 UG/KG

LD50

Intravenous

Mouse

50830 UG/KG

Remarks: Gastrointestinal:Other changes. Liver:Other changes.  
Kidney, Ureter, Bladder:Other changes.

LD50

Intravenous

Monkey

26600 UG/KG

LD50

Oral

Rabbit

200 mg/kg

LD50

Oral

Domestic Animals

100 mg/kg

Remarks: Behavioral:Somnolence (general depressed activity).  
Gastrointestinal:Hypermotility, diarrhea. Nutritional and Gross  
Metabolic:Weight loss or decreased weight gain.

LD50

Oral

Bird (wild)

110 mg/kg

#### IRRITATION DATA

Eyes

Rabbit

20 mg

24H

Remarks: Moderate irritation effect

#### SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Symptoms of fluoride overexposure may include salivation, nausea, vomiting, abdominal pain, fever, and labored breathing. Fluoride ion can reduce serum calcium levels possibly causing fatal hypocalcemia. Prolonged exposure to fluoride dusts, vapors, or mists results in perforation of the nasal septum. Chronic effects include excessive calcification of the bones, ligaments, and tendons. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Exposure can cause: Stomach pains, vomiting, diarrhea. Prolonged exposure can cause: Damage

to the lungs.

#### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Toxic if swallowed.

#### TARGET ORGAN INFORMATION

Heart. Kidneys. Bones. Nerves. G.I. System. Teeth. Damage to the lungs.

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Rat

Route of Application: Oral

Exposure Time: 2Y

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Endocrine:Thyroid tumors. Musculoskeletal:Tumors.

Mouse

Route of Application: Oral

Exposure Time: 43W

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral

Exposure Time: 43W

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral

Exposure Time: 30W

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral

Exposure Time: 2Y

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral

Exposure Time: 30W

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral

Exposure Time: 30W

Result: Tumorigenic:Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral  
Exposure Time: 30W  
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS  
criteria. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral  
Exposure Time: 97W  
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS  
criteria. Skin and Appendages: Other: Tumors.

#### IARC CARCINOGEN LIST

Rating: Group 3

#### CHRONIC EXPOSURE - MUTAGEN

Human

100 MG/L  
Cell Type: fibroblast  
Unscheduled DNA synthesis

Hamster

200 MG/L  
Cell Type: Other cell types  
Unscheduled DNA synthesis

Human

100 MG/L  
Cell Type: fibroblast  
DNA inhibition

Human

20 MG/L  
Cell Type: fibroblast  
Cytogenetic analysis

Human

20 MG/L  
Cell Type: lymphocyte  
Cytogenetic analysis

Human

952 UMOL/L  
Cell Type: Other cell types  
Cytogenetic analysis

Human

440 MG/L  
Cell Type: lymphocyte  
Mutation in mammalian somatic cells.

Rat

1 MMOL/L  
Cell Type: liver  
DNA damage

Rat

36 MG/L  
Cell Type: liver  
Unscheduled DNA synthesis

Rat  
200 MMOL/L  
Subcutaneous  
Other mutation test systems

Rat  
100 NMOL/L  
Cell Type: Bone marrow  
Cytogenetic analysis

Rat  
500 UMOL/L  
Cell Type: Other cell types  
Cytogenetic analysis

Mouse  
40 MG/KG  
Oral  
Micronucleus test

Mouse  
10 MG/KG  
Intraperitoneal  
Micronucleus test

Mouse  
300 UG/L (+S9)  
Cell Type: lymphocyte  
Mutation in microorganisms

Mouse  
10 MG/KG  
Intraperitoneal  
Cytogenetic analysis

Mouse  
1 PPM  
Oral  
3W  
Cytogenetic analysis

Mouse  
200 MG/L  
Cell Type: Other cell types  
Cytogenetic analysis

Mouse  
40 MG/KG  
Subcutaneous  
Cytogenetic analysis

Mouse  
40 MG/KG  
Intraperitoneal  
Sister chromatid exchange

Mouse  
20 MG/L  
16H  
Cell Type: lymphocyte  
Mutation in mammalian somatic cells.



Mouse  
10 MG/KG  
Intraperitoneal  
5D  
sperm

Hamster  
1 MMOL/L  
Cell Type: ovary  
Micronucleus test

Hamster  
25 MG/L  
Cell Type: Embryo  
Morphological transformation.

Hamster  
10 MG/L  
Cell Type: Embryo  
Unscheduled DNA synthesis

Human  
100 MG/L  
Cell Type: lung  
DNA inhibition

Hamster  
100 MG/L  
Cell Type: lung  
Other mutation test systems

Hamster  
50 MG/L  
Cell Type: Embryo  
Cytogenetic analysis

Hamster  
25 MG/L  
Cell Type: lung  
Cytogenetic analysis

Hamster  
50 MG/L  
Cell Type: ovary  
Cytogenetic analysis

Hamster  
80 MG/L  
Cell Type: Embryo  
Sister chromatid exchange

Hamster  
66700 UG/L  
Cell Type: ovary  
Sister chromatid exchange

Domestic Animals  
25 MG/L  
Cell Type: Other cell types  
Cytogenetic analysis

Mammal

300 UMOL/L  
Cell Type: lung  
Cytogenetic analysis

Cattle, Horse  
10 MG/L  
Cell Type: Other cell types  
Cytogenetic analysis

Mammal  
4 MMOL/L  
Cell Type: lymphocyte  
Cytogenetic analysis

Mammal  
3 MMOL/L  
Cell Type: lung  
Sister chromatid exchange

#### CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 240 MG/KG  
Route of Application: Oral  
Exposure Time: (11-14D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat  
Dose: 255 MG/KG  
Route of Application: Oral  
Exposure Time: (85D PRE)  
Result: Specific Developmental Abnormalities: Central nervous system.

Species: Rat  
Dose: 9 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (10-18D PREG)  
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetal death.

Species: Rat  
Dose: 90 MG/KG  
Route of Application: Subcutaneous  
Exposure Time: (10-18D PREG)  
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetal death.

Species: Mouse  
Dose: 5600 UG/KG  
Route of Application: Oral  
Exposure Time: (14D POST)  
Result: Specific Developmental Abnormalities: Skin and skin appendages.

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat  
Dose: 150 MG/KG

Route of Application: Oral  
Exposure Time: (30D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct. Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rat  
Dose: 221 MG/KG  
Route of Application: Oral  
Exposure Time: (1-20D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat  
Dose: 128 MG/KG  
Route of Application: Oral  
Exposure Time: (85D PRE)  
Result: Effects on Newborn: Behavioral.

Species: Rat  
Dose: 400 UG/KG  
Route of Application: Intratesticular  
Exposure Time: (1D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse  
Dose: 1240 MG/KG  
Route of Application: Oral  
Exposure Time: (8W MALE/8W PRE-5D POST)  
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated ). Effects on Newborn: Stillbirth.

Species: Mouse  
Dose: 620 MG/KG  
Route of Application: Oral  
Exposure Time: (MULTIGENERATIONS)  
Result: Effects on Fertility: Other measures of fertility

Species: Mouse  
Dose: 300 NG/KG  
Route of Application: Oral  
Exposure Time: (30D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rabbit  
Dose: 8800 MG/KG  
Route of Application: Oral  
Exposure Time: (2.4Y MALE)  
Result: Paternal Effects: Testes, epididymis, sperm duct.

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## 12 - Ecological Information

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No data available.

## ECOTOXICOLOGICAL EFFECTS

Test Type: LC50 Fish

Species: Onchorhynchus mykiss (Rainbow trout)

Time: 96 h

Value: 200 mg/l

Test Type: EC50 Daphnia

Species: Daphnia magna

Time: 48 h

Value: 98 mg/l

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## 13 - Disposal Considerations

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### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. 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

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### RID/ADR

UN#: 1690

Class: 6.1

PG: III

Proper Shipping Name: Sodium fluoride

### IMDG

UN#: 1690

Class: 6.1

PG: III

Proper Shipping Name: SODIUM FLUORIDE, SOLID

Marine Pollutant: No

Severe Marine Pollutant: No

### IATA

UN#: 1690

Class: 6.1

PG: III

Proper Shipping Name: Sodium fluoride

Inhalation Packing Group I: No

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## 15 - Regulatory Information

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### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 009-004-00-7

INDICATION OF DANGER: T

Toxic.

R-PHRASES: 25 32 36/38

Toxic if swallowed. Contact with acids liberates very toxic gas. Irritating to eyes and skin.

S-PHRASES: 22 36 45

Do not breathe dust. Wear suitable protective clothing. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

### COUNTRY SPECIFIC INFORMATION

Germany

WGK: 1

16 - Other Information

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WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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