

Revision: 000

Date: 08-12-2003

1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY UNDERTAKING

General Chemical Name Neodymium(III)-fluoride

Intended or recommended uses of substance: Research

Supplier (Distributor) New Metals & Chemicals Ltd
Newmet House, Rue de St. Lawrence
Waltham Abbey, Essex, EN9 1PF
Telephone: +44(0) 1992 711111

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient name	Concentration /range	*Classification	CAS No	EINECS No
Neodymium(III)-fluoride	100%	Xn: R 20/21/22 R 36/37/38	13709-42-7	237-253-3

*see 16. OTHER INFORMATION for full text of R-phrases

3. HAZARD IDENTIFICATION

Harmful if inhaled, swallowed or absorbed through the skin. Effects of contact may be delayed.

It is irritating to eyes, skin and respiratory system. It may cause burns.

4. FIRST AID MEASURES

Inhalation Move the patient to fresh air and administer 100 percent humidified supplemental oxygen with assisted ventilation as

required. If breathing has ceased DO NOT use mouth-to-mouth respiration apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask. Seek immediate medical attention.

Skin Contact	Flush skin with copious quantities of water. Remove and destroy all contaminated clothing and shoes. Seek immediate medical attention. If possible, rub in calcium gluconate gel or solution immediately.
Eye Contact	DO NOT allow patient to rub or keep eyes closed. Irrigate with copious quantities of water for at least 15 minutes. Flush under eyelids by lifting lid. DO NOT use a static eye bath. Seek immediate medical attention.
Ingestion	DO NOT induce vomiting. If patient is conscious and alert, wash out mouth with water. Give nothing by mouth if patient is unconscious. Seek immediate medical attention.

Note: Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. Ensure that medical personnel are aware of the materials involved, and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

Precautions against fire and explosion

Non-flammable material

Suitable extinguishing media

Use agents suitable for type of surrounding fire. Use water, alcohol foam, dry chemical or carbon dioxide.

Extinguishing media which must not be used for safety reasons

None known

Special exposure hazards arising from the substance itself and its combustion products - including any gaseous by-products

Fire may produce irritating, and corrosive hydrogen fluoride and neodymium oxide vapour.

Special protective equipment for fire fighters

Wear self-contained breathing apparatus and full chemical protective clothing.
Decontamination must follow before removal of gear.
Show documents to the emergency services.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Remove or extinguish ALL ignition sources. Turn off hot air heating system. Evacuate all but essential authorised control personnel. Wear self-contained breathing apparatus and gloves to avoid inhalation, skin and eye contact. Provide sufficient ventilation.

Structural firefighters` protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations.

Environmental Precautions

Prevent entry into drains, surface and ground water, soil and confined areas.

Methods for Cleaning Up

Only trained, authorised personnel should be involved. Fully encapsulating protective clothing and self contained breathing apparatus should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Keep combustibles (wood, paper, oil etc) away from spilled material. Cover spills with dry sand, dry diatomaceous earth or dry salt followed with plastic sheet to minimise spreading or contact with water. To avoid dust formation do not dry sweep. Do not vacuum. Collect material and place it into covered plastic containers.

Place residues in a closed plastic container, suitably marked, and dispose of through a licensed waste disposal contractor.

Wash spill site with water and detergent after pick up is complete.

Prevent washings from entering drains, water courses and soil.

7. HANDLING AND STORAGE

Precautions for safe handling

To be handled by qualified and trained staff only.

Handle in a fume cupboard or dedicated LEV room.

Avoid breathing dusts and direct or contact with skin and eyes.

Do not get in eyes, on skin or on clothing. Do not ingest or inhale.
Wash or decontaminate after handling. Wash hands before eating. Discard contaminated shoes.
Keep container tightly closed. Handle under dry inert gas.
Exposure to airborne particulates must be kept within permissible limits.
See section 8 for personal protective equipment.

Precautions for safe storage

Store in a tightly closed container, under dry inert gas. Store in a cool, dry, well-ventilated area away from incompatible substances (see section 10). Do not store in metal containers without plastic lining.
Store away from water, oxidising agents, halogens and acids.

Specific use

Research.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Use only in properly operating fume cupboard designed for hazardous chemicals having an average face velocity of at least 100 feet per minute. Large handlings must be conducted in a properly constructed LEV room with decontamination facilities.

Exposure limit values

Ingredient name	OES LTEL	OES STEL	MEL (LT)	MEL (ST)
Fluoride (inorganic, as F)	2.5mg.m ⁻³			

Occupational exposure controls

Eye protection	Wear appropriate protective eyeglasses, chemical safety goggles or full-face shield to European Standard EN 166.
Hand protection	Wear appropriate gloves. Gloves of nitrile or PVC may be used as single splash disposable gloves and must be discarded immediately after use. Gloves should comply with European Standard EN 374-3 class 3.
Skin protection	Use one or more of the following personal protection equipment as necessary. Full chemical protective suit to EN 465 standard, PVC apron, helmet and boots.

Respiratory protection	If product is not used in a fume cupboard wear full face or hood compressed airline breathing apparatus to EN 139 or EN 270/271 alternatively use self contained breathing apparatus to EN 137. This equipment should always be available on standby.
Ingestion	Do not eat, drink or smoke when using this product. Do not ingest. Exhibit the strictest hygiene control.

Environmental exposure controls

Fluorides are toxic environmental pollutants and in accordance with best practice only use in a fume cupboard or with local exhaust ventilation with scrubbing facility. In case of fire, spillage or leakage, prevent material from entering watercourses, sewers, soil or atmosphere.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance	Violet lump
Odour	Odourless

Important health, safety and environmental information

pH	N/A
Boiling point/boiling range	2300 ⁰ C
Melting point/melting range	1410 ⁰ C
Flash point	N/A
Flammability (solid, gas)	Not flammable
Autoignition temperature	N/A
Explosive properties	Product is not explosive
Oxidising properties	Not oxidising
Vapour pressure	N/A

Relative density 6.5g/cm³ at 20⁰C

Solubility
-water solubility Insoluble

10. STABILITY AND REACTIVITY

Conditions to avoid Stable under normal temperatures and pressures.

Materials to avoid Acids, water/moisture.

Hazardous decomposition products Hydrogen fluoride, neodymium oxide vapour.

11. TOXICOLOGICAL INFORMATION

Neodymium fluoride is toxic. It is mainly absorbed through the gastrointestinal tract but may be absorbed through contact with skin or after inhalation. It is known to cause severe irritation of the GI tract, prostration, paralysis and convulsions. Symptoms include excessive salivation, vomiting, severe abdominal pain and violent purging with watery and bloody stools, slow and often irregular pulse with transient elevation in arterial blood pressure, muscle twitching progressing to convulsions, collapse and death from respiratory failure or cardiac arrest.

Effects from eye contact. May cause local irritation of the eyes.

Effects from skin contact May cause skin irritation with inflammation.

Effects from inhalation Irritating to respiratory system. Material in the form of dust may cause lung damage and disorders such as bronchitis, emphysema, interstitial fibrosis, asthma, pneumoconiosis and pulmonary oedema. Symptoms include difficulty in breathing, tightness in chest, dyspnoea, wheezing, chest pain and cough.

Effects from ingestion Ingestion may cause nausea, congestive failure, abdominal pain, vomiting, convulsions and diarrhoea which can progress to muscular paralysis, weak rapid pulse, cardiac dysrhythmias, hypertension, coma and death.

(a) Acute toxicity (oral, inhalation, dermal) not tested/no data

- (b) Corrosivity/irritation (eye, skin, respiratory tract) not tested/no data
- (c) Sensitisation (skin, respiratory)
No sensitising effects known
- (d) Repeated-dose toxicity not tested/no data
- (e) Mutagenicity
Not suspected as being a mutagen
- (f) Carcinogenicity
There is no evidence that this product is carcinogenic
- (g) Reproductive toxicity (fertility, developmental) not tested/no data

12. ECOLOGICAL INFORMATION

(1) Ecotoxicity

(a) Aquatic toxicity

- (i) acute and chronic for fish see below
- (ii) “ “ “ “ daphnia see below
- (iii) “ “ “ “ algae see below
- (iv) “ “ “ “ other aquatic plants see below

(b) Soil toxicity

- (i) macro organisms see below
- (ii) micro organisms see below
- (iii) birds see below
- (iv) bees see below
- (v) plants see below
- (vi) fauna see below

Fluorides are toxic to fresh water and salt water fish and crustaceans and to most plants. They are hazardous toxic aquatic and air pollutants and must be kept out of soil, water courses and the atmosphere.

(2) Mobility

Not tested

(3) Persistence and degradability

Not tested

(4) Bioaccumulation potential

Not tested

(5) Other adverse effects

None known.

13. DISPOSAL CONSIDERATIONS

All waste material to be contained in a plastic sealed bin, duly marked, and disposed of as special waste through a licensed waste contractor in accordance with "The Special Waste Regulations 1996". See sections 6 and 7.

14. TRANSPORT INFORMATION

<u>Airfreight (IATA)</u>	<u>Seafreight (IMDG)</u>	<u>Road (ADR)</u>	<u>Rail (RID)</u>
(a) UN number		3288	
(b) Class		6.1	
(c) Proper shipping name		Toxic solid, inorganic, n.o.s. (neodymium(III)-fluoride)	
(d) Packing group		III	
(e) Marine pollutant (if applicable)		N/A	
(f) Other applicable information		N/A	

15. REGULATORY INFORMATION

Xn Harmful

Risk Phrases:

R20/21/22: Harmful by inhalation, in contact with skin and if swallowed.

R36/37/38: Irritating to eyes, respiratory system and skin

Safety Phrases:

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S28: After contact with skin, wash immediately with plenty of water.

This material is subject to the COSHH regulations 2002. See COSHH Essentials for

further information.

16. OTHER INFORMATION

R Phrases Full Text:

R20/21/22: Harmful by inhalation, in contact with skin and if swallowed

R36/37/38: Irritating to eyes, respiratory system and skin.

This material should only be handled by qualified, trained persons, fully familiar with its dangerous properties. During use or handling, a minimum of two persons should always be available.

Chemicals (Hazard Information and Packaging for Supply) Regulations 2002

Approved classification and labelling guide. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 Guidance on Regulations L131

Approved Supply List. Information Approved for the Classification and labelling of Substances and Preparations Dangerous for Supply. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. Approved List L129

Control of Substances Hazardous to Health Regulations 2002

Health and Safety at Work Act 1974

COSHH Essentials: Easy Steps to Control Chemicals. Control of Substances Hazardous to Health Regulations

Occupational Exposure Limits 2001/2002 EH40

European Inventory of Existing Commercial Substances (EINECS) available on the European Chemicals Bureau website at www.ecb.jrc.it/existing-chemicals

First Aid at Work. The Health and Safety (First Aid) Regulations 1981. Approved Code of Practice and Guidance L74

Personal Protective Equipment (EC Directive) Regulations 1992

The Selection, Use and Maintenance of Respiratory Protective Equipment: A Practical Guide HSG53

Cost and Effectiveness of Chemical Protective Gloves for the Workplace.

Guidance for Employers and Health and Safety Specialists. HSG206

Environmental Protection Act 1990 c43

Environmental Act 1995 c25

The Special Waste Regulations 1996

The Dangerous Substances and Explosive Atmospheres Regulations 2002