Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 01.07.2013 *Revision: 11.05.2010*

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Trade name ***Niobium isopropoxide, 10% w/v in isopropanol/hexane (50:50)***
Stock number: 36572
CAS Number: 18368-80-4
1.2 Relevant identified uses of the substance or mixture and uses advised against.
Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: Alfa Aesar GmbH & Co.KG
A Johnson Matthey Company
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com
Informing department: Product safety Tel + +049 (0) 7275 988687-0
1.4 Emergency telephone number: Carechem 24: +44 (o) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008


GHS02 flame

Flam. Liq. 2 H225 Highly flammable liquid and vapour.


GHS08 health hazard

Repr. 2 H361f Suspected of damaging fertility.
STOT RE 2 H373 May cause damage to the peripheral nervous system, the lung, the kidneys, the liver, the reproductive system and the brain through prolonged or repeated exposure. Route of exposure: Inhalative.
Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.


GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.


GHS07

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
STOT SE 3 H336 May cause drowsiness or dizziness.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC
Xn; Harmful
R48/20-62-65: Harmful: danger of serious damage to health by prolonged exposure through inhalation. Possible risk of impaired fertility. Harmful: may cause lung damage if swallowed.
Xi; Irritant
R36/38: Irritating to eyes and skin.
F; Highly flammable
R11: Highly flammable.
N; Dangerous for the environment
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R67: Vapours may cause drowsiness and dizziness.
Information concerning particular hazards for human and environment: Has a narcotizing effect.
Other hazards that do not result in classification No information known.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labelled according to the CLP regulation.
Hazard pictograms GHS02, GHS07, GHS08, GHS09
Signal word Danger
Hazard statements
H225 Highly flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H361f Suspected of damaging fertility.
H336 May cause drowsiness or dizziness.
H373 May cause damage to the peripheral nervous system, the lung, the kidneys, the liver, the reproductive system and the brain through prolonged or repeated exposure. Route of exposure: Inhalative.
H304 May be fatal if swallowed and enters airways.
H411 Toxic to aquatic life with long lasting effects.
Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P280 Wear protective gloves / protective clothing.
P273 Avoid release to the environment.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P315 Get immediate medical advice/attention.

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances
CAS# Designation: 18368-80-4 Niobium isopropoxide, 10% w/v in isopropanol/hexane (50:50)

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SECTION 4: First aid measures

4.1 Description of first aid measures
After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek immediate medical advice.
After skin contact Instantly 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 doctor.
After swallowing Seek medical treatment.
4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.
4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents Special powder for metal fires. Do not use water.
5.2 Special hazards arising from the substance or mixture If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Metal oxide
5.3 Advice for firefighters
Protective equipment: Wear self-contained breathing apparatus.
Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
6.2 Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.
Do not allow product to reach sewage system or water bodies.
Do not allow to enter the ground/soil.
6.3 Methods and material for containment and cleaning up: Keep away from ignition sources.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste according to item 13.
Ensure adequate ventilation.
Prevention of secondary hazards: Keep away from ignition sources.
6.4 Reference to other sections See Section 7 for information on safe handling
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling Handle under dry protective gas.
Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.
Information about protection against explosions and fires: Protect against electrostatic charges.
Fumes can combine with air to form an explosive mixture.

7.2 Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and containers: Store in cool location.
Information about storage in one common storage facility: Store away from halogens.
Store away from water.
Further information about storage conditions: Store under dry inert gas.
This product is moisture sensitive.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Protect from humidity and keep away from water.
7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/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.

8.1 Control parameters
Components with critical values that require monitoring at the workplace:

n-Hexane

	ppm
ACGIH TLV	50 (skin)
Austria MAK	50
Belgium TWA	50
Denmark TWA	25
Finland TWA	50; 150-STEL
France VME	50
Germany MAK	50
Hungary TWA	100; 200-STEL
Japan OEL	40 (skin)
Korea TLV	50 (skin)
Netherlands MAC-TGG	25
Norway TWA	25
Poland TWA	100; 400-STEL
Russia TWA	40; 300-STEL
Sweden NGV	25; 50-KTV
Switzerland MAK-W	50; 100-KZG-W
United Kingdom TWA	20
USA PEL	500

Isopropyl alcohol (2-Propanol)

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	ppm
ACGIH TLV	400; 500-STEL
Austria MAK	400
Belgium TWA	400; 500-STEL
Denmark TWA	200
France VLE	400
Germany MAK	400
Ireland TWA	400; 500-STEL (skin)
Japan TWA	400-STEL
Korea TWA	400; 500-STEL
Netherlands MAC-TGG	400 (skin)
Norway TWA	100
Poland TWA	900; 1200-STEL
Russia TWA	400-STEL
Sweden NGV	150; 250-STEL
Switzerland MAK-W	400
United Kingdom TWA	400; 500-STEL
OSHA PEL	400

Additional information: No data

8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Breathing equipment: Use breathing protection with high concentrations.
Protection of hands: Check protective gloves prior to each use for their proper condition.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Material of gloves Impervious gloves
Penetration time of glove material Not determined
Eye protection: Safety glasses
Face protection
Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance:
Form: Liquid
Colour: Colourless
Smell: Alcohol-like
Odour threshold: Not determined.

pH-value: Not determined.

Change in condition
Melting point/Melting range: Not determined
Boiling point/Boiling range: Not determined
Sublimation temperature / start: Not determined

Flash point: -23 °C (hexane)
Inflammability (solid, gaseous) Not determined.
Ignition temperature: Not determined
Decomposition temperature: Not determined
Self-inflammability: Not determined.
Critical values for explosion:
Lower: Not determined
Upper: Not determined
Steam pressure: Not determined
Density Not determined
Relative density Not determined.
Vapour density Not determined.
Evaporation rate Not determined.
Solubility in / Miscibility with
Water: Reacts
Partition coefficient (n-octanol/water): Not determined.
Viscosity:
dynamic: Not determined.
kinematic: Not determined.
9.2 Other information No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity No information known.
10.2 Chemical stability Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.
10.3 Possibility of hazardous reactions No dangerous reactions known
10.5 Incompatible materials: Oxidizing agents
Water/moisture
10.6 Hazardous decomposition products: Carbon monoxide and carbon dioxide
Metal oxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects
Acute toxicity: No effects known.
LD/LC50 values that are relevant for classification: No data
Skin irritation or corrosion: Causes skin irritation.
Eye irritation or corrosion: Causes serious eye irritation.
Sensitization: No sensitizing effect known.
Germ cell mutagenicity: No effects known.
Carcinogenicity: IARC-3: Not classifiable as to carcinogenicity to humans.
Reproductive toxicity: Suspected of damaging fertility or the unborn child.

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Specific target organ system toxicity - repeated exposure: May cause damage to the peripheral nervous system, the lung, the kidneys, the liver, the reproductive system and the brain through prolonged or repeated exposure. Route of exposure: Inhalative.

Specific target organ system toxicity - single exposure: May cause drowsiness or dizziness.
Aspiration hazard: May be fatal if swallowed and enters airways.
Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
In addition to local irritant manifestations, there is a narcotic effect when inhaling high concentrations, with the danger of central respiratory arrest.

SECTION 12: Ecological information

12.1 Toxicity
Aquatic toxicity: No further relevant information available.
12.2 Persistence and degradability No further relevant information available.
12.3 Bioaccumulative potential No further relevant information available.
12.4 Mobility in soil No further relevant information available.
Ecotoxical effects:
Remark: Toxic for fish
Additional ecological information:
General notes: Do not allow material to be released to the environment without proper governmental permits.
Toxic for aquatic organisms
Water danger class 3 (Self-assessment): extremely hazardous for water.
Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into soil.
Also poisonous for fish and plankton in water bodies.
Toxic to aquatic life.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.
12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
12.6 Other adverse effects No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Recommendation Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.
Consult state, local or national regulations for proper disposal.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

UN-Number
ADR, IMDG, IATA UN1993

14.2 UN proper shipping name
ADR 1993 FLAMMABLE LIQUID, N.O.S. , special provision 640D (Niobium isopropoxide in isopropanol/hexane)
IMDG FLAMMABLE LIQUID, N.O.S. (Niobium isopropoxide in isopropanol/hexane), MARINE POLLUTANT
IATA FLAMMABLE LIQUID, N.O.S. (Niobium isopropoxide in isopropanol/hexane)

14.3 Transport hazard class(es)
ADR

Class 3 (F1) Flammable liquids.
Label 3
IMDG

Class 3 Flammable liquids.
Label 3
IATA

Class 3 Flammable liquids.
Label 3

Packing group
ADR, IMDG, IATA II

14.5 Environmental hazards: Environmentally hazardous substance, liquid; Marine Pollutant
Marine pollutant: Yes (P)
Symbol (fish and tree)

14.6 Special precautions for user Warning: Flammable liquids.
Kemler Number: 33
EMS Number: F-E,S-E

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

Transport/Additional information:

ADR
Excepted quantities (EQ): E2
Limited quantities (LQ) 1L
Transport category 2
Tunnel restriction code D/E

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UN "Model Regulation":	UN1993, FLAMMABLE LIQUID, N.O.S. , special provision 640D (Niobium isopropoxide in isopropanol/hexane), 3, II

SECTION 15: Regulatory information

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

Australian Inventory of Chemical Substances	Substance is not listed.
Standard for the Uniform Scheduling of Drugs and Poisons	Substance is not listed.
National regulations	
Information about limitation of use:	For use only by technically qualified individuals. Employment restrictions concerning young persons must be observed. Employment restrictions concerning women of child-bearing age must be observed.
Water hazard class:	Water danger class 3 (Self-assessment): extremely hazardous for water.
Other regulations, limitations and prohibitive regulations	
ELINCS (European List of Notified Chemical Substances)	Substance is not listed.
Substances of very high concern (SVHC) according to REACH, Article 57	Substance is not listed.
REACH - Pre-registered substances	Substance is not listed.
15.2 Chemical safety assessment:	A Chemical Safety Assessment has not been carried out.

SECTION 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 data specification sheet: Health, Safety and Environmental Department.

Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
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)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
P: Marine Pollutant
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent