





Safety Data Sheet dated 5/5/2015, version 2

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

- 1.1. Product identifier
Mixture identification:
Trade name: Nitinol Alloys
Document number : RBSDSE080421
- 1.2. Relevant identified uses of the substance or mixture and uses advised against
Recommended use:
shape memory alloy
Uses advised against:
All uses not listed as recommended
- 1.3. Details of the supplier of the safety data sheet
Company:
SAES Smart Materials, Inc.
4355 Middle Settlement Road
New Hartford - 13413 - NY – USA
Tel +1 315 2662026 Fax +1 315 2662027
Competent person responsible for the safety data sheet:
sds@saes-group.com
- 1.4. Emergency telephone number
CHEMTREC PHONE
+1 (800) 424-9300 (US emergencies)
+1 703 527 3887 (international emergencies)

SECTION 2: Hazards identification

- 2.1. Classification of the substance or mixture
Directive criteria, 67/548/CE, 99/45/EC and following amendments thereof:
Properties / Symbols:
Carcinogenic category 3
Xn Harmful
- R Phrases:
R40 Limited evidence of a carcinogenic effect.
R42/43 May cause sensitization by inhalation and skin contact.
- EC regulation criteria 1272/2008 (CLP)
 Warning, Skin Sens. 1, May cause an allergic skin reaction.
 Warning, Carc. 2, Suspected of causing cancer.

Adverse physicochemical, human health and environmental effects:
No other hazards

- 2.2. Label elements
Symbols:



Warning
Hazard statements:

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H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

Precautionary statements:

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P314 Get medical advice/attention if you feel unwell.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P363 Wash contaminated clothing before reuse.

P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

None

Special provisions according to Annex XVII of REACH and subsequent amendments:

None

2.3. Other hazards

vPvB Substances: None - PBT Substances: None

Other Hazards:

No other hazards

This product may not require a label according to Article 17 of CLP (see section 1.3 of Annex I) (Table 3.1).

SECTION 3: Composition/information on ingredients

3.1. Substances

N.A.


3.2. Mixtures

Hazardous components within the meaning of EEC directive 67/548 and CLP regulation and related classification:

>= 50% - < 60% nickel

Index number: 028-002-00-7, CAS: 7440-02-0, EC: 231-111-4

Carc. Cat. 3,T,Xi; R40-43-48/23

 3.6/2 Carc. 2 H351

 3.9/1 STOT RE 1 H372

 3.4.2/1-1A-1B Skin Sens. 1,1A,1B H317

< 5% Chromium

CAS: 7440-47-3, EC: 231-157-5

substance with a Community workplace exposure limit

< 3% cobalt

Index number: 027-001-00-9, CAS: 7440-48-4, EC: 231-158-0

Xn; R42/43-53

 3.4.1/1-1A-1B Resp. Sens. 1,1A,1B H334

 3.4.2/1-1A-1B Skin Sens. 1,1A,1B H317

4.1/C4 Aquatic Chronic 4 H413

SECTION 4: First aid measures

4.1. Description of first aid measures

In case of skin contact:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.

Wash thoroughly the body (shower or bath).

Remove contaminated clothing immediately and dispose off safely.

In case of eyes contact:

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

In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

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

None

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

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment:

None

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Type "D" extinguishing media.

CO2 or Dry chemical fire extinguisher.

Extinguishing media which must not be used for safety reasons:

None

5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

5.3. Advice for firefighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protection equipment.

Remove persons to safety.

See protective measures under point 7 and 8.

6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

6.3. Methods and material for containment and cleaning up

Clean up contaminate area and avoid creating dust.

Properly package all spill residue in an UN approved container

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- 6.4. Reference to other sections
See also section 8 and 13

SECTION 7: Handling and storage

- 7.1. Precautions for safe handling
Avoid contact with skin and eyes, inhalation of vapours and mists.
Don't use empty container before they have been cleaned.
Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contaminated clothing should be changed before entering eating areas.
Do not eat or drink while working.
See also section 8 for recommended protective equipment.
- 7.2. Conditions for safe storage, including any incompatibilities
Keep away from food, drink and feed.
Incompatible materials:
None in particular.
Instructions as regards storage premises:
Adequately ventilated premises.
- 7.3. Specific end use(s)
None in particular

SECTION 8: Exposure controls/personal protection

- 8.1. Control parameters
nickel - CAS: 7440-02-0
OSHA - STE: 1 mg/m³
ACGIH - LTE(8h): 1,5 mg/m³ - Notes: A5, (I) - Dermatitis, pneumoconiosis
Chromium - CAS: 7440-47-3
EU - LTE(8h): 2 mg/m³ - Notes: Bold-type: Indicative Occupational Exposure Limit Values [2,3] and Limit Values for Occupational Exposure [4] (for references see bibliography)
cobalt - CAS: 7440-48-4
ACGIH - LTE(8h): 0,02 mg/m³ - Notes: A3, BEI - Asthma, pulm func, myocardial eff
- DNEL Exposure Limit Values
N.A.
- PNEC Exposure Limit Values
N.A.
- 8.2. Exposure controls
Eye protection:
Use close fitting safety goggles, don't use eye lens.
- Protection for skin:
Use clothing that provides comprehensive protection to the skin, e.g. cotton, rubber, PVC or viton.
- Protection for hands:
Use protective gloves that provides comprehensive protection, e.g. P.V.C., neoprene or rubber.
- Respiratory protection:
Use adequate protective respiratory equipment.
- Thermal Hazards:
None
- Environmental exposure controls:
None

SECTION 9: Physical and chemical properties

- 9.1. Information on basic physical and chemical properties

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Odour:	Not Relevant
Odour threshold:	Not Relevant
pH:	Not Relevant
Melting point / freezing point:	>1000°C
Initial boiling point and boiling range:	Not Relevant
Solid/gas flammability:	Not Relevant
Upper/lower flammability or explosive limits:	Not Relevant
Vapour density:	Not Relevant
Flash point:	Not Relevant
Evaporation rate:	Not Relevant
Vapour pressure:	Not Relevant
Relative density:	6,4 g/cm ³
Solubility in water:	Not Relevant
Solubility in oil:	Not Relevant
Partition coefficient (n-octanol/water):	Not Relevant
Auto-ignition temperature:	Not Relevant
Decomposition temperature:	Not Relevant
Viscosity:	Not Relevant
Explosive properties:	Not Relevant
Oxidizing properties:	Not Relevant
9.2. Other information	
Miscibility:	Not Relevant
Fat Solubility:	Not Relevant
Conductivity:	Not Relevant

SECTION 10: Stability and reactivity

- 10.1. Reactivity
 - Stable under normal conditions
- 10.2. Chemical stability
 - Stable under normal conditions
- 10.3. Possibility of hazardous reactions
 - It may generate flammable gases, on contact with mineral acids.
 - It may catch fire on contact with mineral acids, azo, diazo and hydrazine compounds, halogenated organic substances, and powerful oxidising agents.
- 10.4. Conditions to avoid
 - Stable under normal conditions.
- 10.5. Incompatible materials
 - None in particular.
- 10.6. Hazardous decomposition products
 - None.

SECTION 11: Toxicological information

- 11.1. Information on toxicological effects
 - Toxicological information of the mixture:
 - N.A.
 - Toxicological information of the main substances found in the mixture:
 - N.A.
 - Carcinogenic category 3
 - If not differently specified, the information required in Regulation 453/2010/EC listed below must be considered as N.A.:
 - a) acute toxicity;
 - b) skin corrosion/irritation;

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- c) serious eye damage/irritation;
- d) respiratory or skin sensitisation;
- e) germ cell mutagenicity;
- f) carcinogenicity;
- g) reproductive toxicity;
- h) STOT-single exposure;
- i) STOT-repeated exposure;
- j) aspiration hazard.

SECTION 12: Ecological information

12.1. Toxicity

Adopt good working practices, so that the product is not released into the environment.

Chromium - CAS: 7440-47-3

a) Aquatic acute toxicity:

Endpoint: LC50 - Species: Fish 14.3 mg/l - Duration h: 96 - Notes: Cyprinus carpio

Endpoint: saes1 - Species: Fish 2.4 mg/l - Duration h: 168 - Notes: Pimephales promelas

Endpoint: NOEC - Species: Fish 12 mg/l - Duration h: 168 - Notes: Pimephales promelas

Endpoint: EC50 - Species: Daphnia 0.07 mg/l - Duration h: 48 - Notes: Daphnia magna

12.2. Persistence and degradability

N.A.

12.3. Bioaccumulative potential

N.A.

12.4. Mobility in soil

N.A.

12.5. Results of PBT and vPvB assessment

vPvB Substances: None - PBT Substances: None

12.6. Other adverse effects

None

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Recover, if possible. Send to authorised Treatment, Storage, and Disposal Facility or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

SECTION 14: Transport information

14.1. UN number

Not classified as dangerous in the meaning of transport regulations.

14.2. UN proper shipping name

N.A.

14.3. Transport hazard class(es)

N.A.

14.4. Packing group

N.A.

14.5. Environmental hazards

ADR-Environmental Pollutant: No

IMDG-Marine pollutant: No

14.6. Special precautions for user

N.A.

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14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
N.A.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Dir. 67/548/EEC (Classification, packaging and labelling of dangerous substances)
Dir. 99/45/EC (Classification, packaging and labelling of dangerous preparations)
Dir. 98/24/EC (Risks related to chemical agents at work)
Dir. 2000/39/EC (Occupational exposure limit values)
Dir. 2006/8/EC
Regulation (EC) n. 1907/2006 (REACH)
Regulation (EC) n. 1272/2008 (CLP)
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013
Regulation (EU) n. 453/2010 (Annex I)
Regulation (EU) n. 286/2011 (ATP 2 CLP)
Regulation (EU) n. 618/2012 (ATP 3 CLP)
Regulation (EU) n. 487/2013 (ATP 4 CLP)
Regulation (EU) n. 944/2013 (ATP 5 CLP)
Regulation (EU) n. 605/2014 (ATP 6 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:

No restriction.

Restrictions related to the substances contained:

Restriction 27

Where applicable, refer to the following regulatory provisions :

Directive 2003/105/CE ('Activities linked to risks of serious accidents') and subsequent amendments.

Regulation (EC) nr 648/2004 (detergents).

1999/13/EC (VOC directive)

Provisions related to directives 82/501/EC(Seveso), 96/82/EC(Seveso II):

N.A.

15.2. Chemical safety assessment

No

SECTION 16: Other information

Full text of phrases referred to in Section 3:

R40 Limited evidence of a carcinogenic effect.

R42/43 May cause sensitization by inhalation and skin contact.

R43 May cause sensitization by skin contact.

R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.

R53 May cause long-term adverse effects in the aquatic environment.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

H317 May cause an allergic skin reaction.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H413 May cause long lasting harmful effects to aquatic life.

This safety data sheet has been completely updated in compliance to Regulation 453/2010/EU.

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre,
Commission of the European Communities

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SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
CCNL - Appendix 1

Insert further consulted bibliography

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS:	Chemical Abstracts Service (division of the American Chemical Society).
CLP:	Classification, Labeling, Packaging.
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GefStoffVO:	Ordinance on Hazardous Substances, Germany.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.
IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
INCI:	International Nomenclature of Cosmetic Ingredients.
KSt:	Explosion coefficient.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
LTE:	Long-term exposure.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STE:	Short-term exposure.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWATLV:	Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).
WGK:	German Water Hazard Class.