



**Safety Data Sheet dated 19/11/2021, version 3**

---

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

### 1.1. Product identifier

Mixture identification:

Trade name: Nitinol Alloys

Document number : RBSDSU080421

### 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

EC regulation criteria 1272/2008 (CLP)



Warning, Skin Sens. 1, May cause an allergic skin reaction.



Warning, Carc. 2, Suspected of causing cancer.



Danger, STOT RE 1, Causes damage to organs through prolonged or repeated exposure.

Adverse physicochemical, human health and environmental effects:

No other hazards

### 2.2. Label elements

Hazard pictograms:



Danger

Hazard statements:

## Safety Data Sheet

### Nitinol Alloys

H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H372 Causes damage to organs through prolonged or repeated exposure.

#### Precautionary statements:

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P261 Avoid breathing dust or mist.  
P280 Wear protective gloves/clothing.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P314 Get medical advice/attention if you feel unwell.

#### Special Provisions:

None

#### Contains

Nitinol

#### 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 the CLP regulation and related classification:

Qty	Name	Ident. Number	Classification
>= 90%	Nitinol	CAS: 52013-44-2 EC: 610-765-8 REACH No.: 01-2120012527-64	 3.4.2/1 Skin Sens. 1 H317  3.6/2 Carc. 2 H351  3.9/1 STOT RE 1 H372
< 5%	Chromium	CAS: 7440-47-3 EC: 231-157-5	Substance with a Union workplace exposure limit.

## 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.

# Safety Data Sheet

## Nitinol Alloys



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:

Water.

Carbon dioxide (CO<sub>2</sub>).

Extinguishing media which must not be used for safety reasons:

None in particular.

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

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.

Exercise the greatest care when handling or opening the container.

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.

See also section 8 for recommended protective equipment.

Advice on general occupational hygiene:

Contaminated clothing should be changed before entering eating areas.

Do not eat or drink while working.

## Safety Data Sheet

### Nitinol Alloys

#### 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

Chromium - CAS: 7440-47-3

EU - TWA(8h): 2 mg/m<sup>3</sup>

ACGIH - TWA(8h): 0.0002 mg/m<sup>3</sup> - STEL: 0.0005 mg/m<sup>3</sup> - Notes: Hexavalent chromium compounds, water soluble. (I), A1, Skin, DSEN, RSEN - Lung and sinonasal cancer, resp tract irr, asthma

ACGIH - TWA(8h): 0.003 mg/m<sup>3</sup> - Notes: Trivalent chromium compounds, water soluble. (I), A4, DSEN, RSEN - Resp tract irr, asthma

ACGIH - TWA(8h): 0.5 mg/m<sup>3</sup> - Notes: Metallic chromium. (I) - Resp tract irr

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:

Not needed for normal use.

Thermal Hazards:

None

Environmental exposure controls:

None

Appropriate engineering controls:

None

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes
Appearance:	N.A.	--	--
Odour:	Not Relevant	--	--
Odour threshold:	Not Relevant	--	--
pH:	Not Relevant	--	--
Melting point / freezing point:	>1000°C	--	--
Initial boiling point and boiling range:	Not Relevant	--	--

## Safety Data Sheet

### Nitinol Alloys

Flash point:	Not Relevant	--	--
Evaporation rate:	Not Relevant	--	--
Solid/gas flammability:	Not Relevant	--	--
Upper/lower flammability or explosive limits:	Not Relevant	--	--
Vapour pressure:	Not Relevant	--	--
Vapour density:	Not Relevant	--	--
Relative density:	6,4 g/cm3	--	--
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

Properties	Value	Method:	Notes
Miscibility:	Not Relevant	--	--
Fat Solubility:	Not Relevant	--	--
Conductivity:	Not Relevant	--	--
Substance Groups relevant properties	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 product:
    - N.A.
  - Toxicological information of the main substances found in the product:
    - N.A.
  - If not differently specified, the information required in Regulation (EU)2015/830 listed below must be considered as N.A.:
    - a) acute toxicity;

- b) skin corrosion/irritation;
- 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: CL100 - 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.

Clean empty containers before disposing.

Do not dispose in sewage water.

---

## **SECTION 14: Transport information**

### 14.1. UN number

DOT Special Permit:

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.

## Safety Data Sheet

### Nitinol Alloys

- 14.5. Environmental hazards  
ADR-Environmental Pollutant: No  
IMDG-Marine pollutant: No
- 14.6. Special precautions for user  
N.A.
- 14.7. Transport in bulk according to Annex II of Marpol 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. 98/24/EC (Risks related to chemical agents at work)  
Dir. 2000/39/EC (Occupational exposure limit values)  
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) 2015/830  
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)  
Regulation (EU) n. 2015/1221 (ATP 7 CLP)  
Regulation (EU) n. 2016/918 (ATP 8 CLP)  
Regulation (EU) n. 2016/1179 (ATP 9 CLP)  
Regulation (EU) n. 2017/776 (ATP 10 CLP)  
Regulation (EU) n. 2018/669 (ATP 11 CLP)  
Regulation (EU) n. 2018/1480 (ATP 13 CLP)  
Regulation (EU) n. 2019/521 (ATP 12 CLP)  
Regulation (EU) n. 2020/217 (ATP 14 CLP)  
Regulation (EU) n. 2020/1182 (ATP 15 CLP)  
Regulation (EU) n. 2021/643 (ATP 16 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 75
- Where applicable, refer to the following regulatory provisions :  
Directive 2012/18/EU (Seveso III)  
Regulation (EC) nr 648/2004 (detergents).  
Dir. 2004/42/EC (VOC directive)
- Provisions related to directive EU 2012/18 (Seveso III):  
Seveso III category according to Annex 1, part 1  
None
- 15.2. Chemical safety assessment  
No Chemical Safety Assessment has been carried out for the mixture.

---

#### SECTION 16: Other information

- Full text of phrases referred to in Section 3:  
H317 May cause an allergic skin reaction.  
H351 Suspected of causing cancer.  
H372 Causes damage to organs through prolonged or repeated exposure.



## Safety Data Sheet

### Nitinol Alloys



Hazard class and hazard category	Code	Description
Skin Sens. 1	3.4.2/1	Skin Sensitisation, Category 1
Carc. 2	3.6/2	Carcinogenicity, Category 2
STOT RE 1	3.9/1	Specific target organ toxicity - repeated exposure, Category 1

Paragraphs modified from the previous revision:

SECTION 1: Identification of the substance/mixture and of the company/undertaking  
SECTION 2: Hazards identification  
SECTION 3: Composition/information on ingredients  
SECTION 7: Handling and storage  
SECTION 8: Exposure controls/personal protection  
SECTION 9: Physical and chemical properties  
SECTION 15: Regulatory information  
SECTION 16: Other information

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
Skin Sens. 1, H317	Calculation method
Carc. 2, H351	Calculation method
STOT RE 1, H372	Calculation method

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

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.  
ATE: Acute Toxicity Estimate  
ATEmix: Acute toxicity Estimate (Mixtures)  
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).



## Safety Data Sheet

### Nitinol Alloys

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.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWA:	Time-weighted average
WGK:	German Water Hazard Class.