

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name: Stainless steel and Heat-resistant steel

Product shape: strip, sheet, plate, foil, strip, processed product (profile rolled steel, pipe, bar, channel)

Product form: Mixture (Alloy)

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Solid Product, Various Forms and Uses.

Uses advised against: Not applicable.

1.3 Details of the supplier of the safety data sheet

Company name: NIPPON KINZOKU CO., LTD.

Address: 10-1, 4-Chome, Funado, Itabashi-ku, Tokyo 174-8560

Responsible Dept.: Quality Assurance Section, Itabashi Plant

Tel: +81-3-3968-6323 (only available during office hours)

Fax: +81-3-5994-1587

Web Page: <https://www.nipponkinzoku.co.jp/en/>

1.4 Emergency Telephone Number

Contact: Same as the above

2. Hazards identification

2.1 Classification of the substance or mixture (GHS classification)

<Physical hazards>

Hazard class	Classification	Hazard statement
Substances and mixtures which, in contact with water, emit flammable gases	Category 2	H261 : In contact with water releases flammable gas
Flammable solids	Category 2	H228 : Flammable solids

<Health hazards>

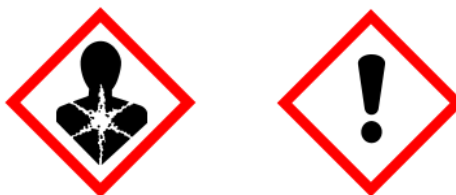
Hazard class	Classification	Hazard statement
Skin corrosion/irritation	Category 2	H315 : Causes skin irritation.
	Category 3	H316 : Causes mild skin irritation.
Serious eye damage/eye irritation	Category 2	H319 : Causes serious eye irritation.
	Category 2B	H320 : Causes eye irritation.
Respiratory sensitization	Category 1, 1A	H334 : May cause allergy or asthma symptoms or breathing difficulties if inhaled
Skin sensitization	Category 1, 1A	H317 : May cause an allergic skin reaction.
Carcinogenicity	Category 2	H351 : Suspected of causing cancer
Reproductive toxicity	Category 1B	H360 : May damage fertility or the unborn child.
Specific target organ toxicity - Single exposure	Category 1	H370 : Causes damage to organs (respiratory system, kidney, digestive system)
	Category 2	H371 : May cause damage to organs
	Category 3	H335 : May cause respiratory irritation (respiratory tract irritation)
Specific target organ toxicity - Repeated exposure	Category 1	H372 : Causes damage to organs through prolonged or repeated exposure (respiratory organs, cardiovascular system, thyroid, haemal system, nervous system, lung)

<Environmental hazards>

Hazardous to the aquatic environment (Long-term)	Category 4	H413 : May cause long lasting harmful effects to aquatic life.
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2.2 Label elements (GHS Labeling)

<Pictograms>



<Signal word>

Danger, warning

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<Precautionary statements>

(Prevention precautionary statement)

- Obtain special instructions before use. (P201)
- Do not handle until all safety precautions have been read and understood. (P202)
- Do not breathe dust/fume/gas/mist/vapors/spray. (P260)
- Wash ...thoroughly after handling. (P264)
- Do not eat, drink or smoke when using this product. (P270)
- Use only outdoors or in a well-ventilated area. (P271)
- Contaminated work clothing should not be allowed out of the workplace. (P272)
- Avoid release to the environment. (P273)
- Wear protective gloves. (P280)
- [In case of inadequate ventilation] wear respiratory protection. (P284)

(Response precautionary statement)

- IF ON SKIN: Wash with plenty of soap and water. (P302+P352)
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. (P304+P340)
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)
- If exposed or concerned: Get medical advice/attention. (P308+P313)
- Get medical advice/attention if you feel unwell. (P314)
- If skin irritation or rash occurs: Get medical advice/attention. (P333+P313)
- If eye irritation persists: Get medical advice/attention. (P337+P313)
- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. (P342+P311)
- Take off contaminated clothing and wash it before reuse. (P362+P364)

(Disposal precautionary statement)

- Dispose of contents/container to ... [... in accordance with local/regional/national/international regulation (to be specified)]. (P501)

2.3 Other hazards

These steel products in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling dusts and/or fumes which may be generated during certain manufacturing procedures such as burning, melting, welding, sawing, brazing, grinding and machining may irritate the mucous membranes of the respiratory organs, eyes, etc. Dusts may have combustion / explosion.

Regarding the elemental components contained in steel materials, there is the following hazard information.

3. Composition/ information on ingredients

3.1 Substances

3.2 Mixtures This mixture is an alloy with the following components:

Chemical Name	Weight %	CAS Number	EC Number	EU: CLP Harmonised Classification
Silicon [Si]	0 - 1	7440-21-3	231-130-8	-
Manganese [Mn]	0 - 2	7439-96-5	231-105-1	-
Nickel [Ni]	0 - 22	7440-02-0	231-111-4	Carc. 2 / STOT RE 1 / Skin Sens. 1
Chromium [Cr]	10 - 26	7440-47-3	231-157-5	-
Molybdenum [Mo]	0 - 5	7439-98-7	231-107-2	-
Cobalt [Co]	0 - 1	7440-48-4	231-158-0	Carc. 1B / Muta. 2 / Repr. 1B / Resp. Sens. 1 / Skin Sens. 1 / Aquatic Chronic 4
Copper [Cu]	0 - 4	7440-50-8	231-159-6	-
Tungsten [W]	0 - 3	7440-33-7	231-143-9	-
Aluminum [Al]	0 - 2	7429-90-5	231-072-3	-
Titanium [Ti]	0 - 1	7440-32-6	231-142-3	-
Niobium [Nb]	0 - 1	7440-03-1	231-113-5	-
Tin [Sn]	0 - 1	7440-31-5	231-141-8	-
Boron [B]	0 - 1	7440-42-8	231-151-2	-
Iron [Fe]	bal	7439-89-6	231-096-4	-

Note 1) The component values differ depending on the steel grade standard within the range shown in the above table.

Note 2) In addition to the main components in the above table, trace elements such as carbon [C], phosphorus [P], sulfur [S], and nitrogen [N] are included.

Note 3) See section 15.1 for Japanese law

4. First-aid measures

4.1 Description of first aid measures

In case of inhalation of, ingestion of, or skin contact with the dust or fumes generated during processing of steel materials, immediately give first aid described below, and then seek medical attention or treatment if necessary.

Inhalation: Move victim to fresh air and keep at rest in position comfortable for breathing.

Skin contact: Wash skin immediately with plenty of water and soap.

Eye contact: Rinse carefully with water for several minutes. In case of using contact lenses, remove them if easy to do so. Continue rinsing.

Ingestion: Rinse mouth out thoroughly with water.

Others: In case of skin wound such as a cut from edge or chips of steel material, keep wound clean. If skin becomes burned by arcs, etc., cool with water.

4.2 Most important symptoms and effects, both acute and delayed

These steel products in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling dusts and/or fumes which may be generated during certain manufacturing procedures such as burning, melting, welding, sawing, brazing, grinding and machining may irritate the mucous membranes of the respiratory organs, eyes, etc.

(See section 2 and/or section 11).

4.3 Indication of any immediate medical attention and special treatment needed

Rescuers should wear appropriate eye and skin protective equipment as appropriate.

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media: Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media: Do not use halogenated extinguishing agents on small chips or fines. Do not use water when molten material is involved, contact of hot product with water will result in a violent expansion as the water turns to steam causing explosion with massive force.

5.2 Special hazards arising from the substance or mixture:

Fire hazards: Not considered flammable but will burn at high temperatures. Small chips, dust and fines from processing may be readily ignitable. May be liberated: toxic fumes.

Explosion hazards: Product is not explosive. Dust generated from processing may present a dust explosion hazard.

5.3 Advice for Firefighters

Keep breathing equipment ready.

6. Accidental release measures

6.1 Personal precautions, protective equipment, and emergency procedures

Provide adequate ventilation. Wear appropriate protective equipment to prevent inhalation of or eye contact with dust or fumes.

6.2 Environmental precautions

Not applicable to steel in solid state.

6.3 Methods and materials for containment and cleaning up

Contaminated packages must be disposed of as waste according to section 13.

7. Handling and Storage

7.1 Precautions for safe handling

Wear appropriate protective equipment in case of generating dust or fumes during welding, weld cutting or grinding. Moreover, be sure to provide local or general ventilation system.

For heavy weights, call for precautions in handling, against toppling, rolling and package-collapsing. Cut-ends and cutting chips with burr may be injurious. Fumes from welding and fine particles may cause fire injury. When cutting bundling and packaging hoops (bands), be careful about bouncing hoops and hoop-tips. Particularly with coils, be careful about their leading ends which, when unbundled, might spring up ward.

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7.2 Conditions for safe storage, including any compatibilities

Avoid contact with water leakage, acid, alkali or substances containing them. Avoid environment with high temperature and high humidity. Pack them with sheets or covers to prevent products from getting rusty or rain water infiltrations, if needed.

7.3 Specific end use(s): solid product, various forms and uses.

8. Exposure Controls/ Personal Protection

8.1 Control parameters

No available data to exposure prevention and protective measures for steel in solid state. However, it is known that high temperature processes including production and welding of chromium and chromium-containing alloys can lead to generation of fumes containing chromium(VI). Although the precise identify of the chromium(VI) substances present has not been identified, it is important to recognize that several substances containing chromium(VI) have been classified as carcinogenic, mutagenic, toxic for reproduction and dangerous for the environment. It is therefore essential that workplaces and releases to the environment associated with these activities will be monitored to ensure compliance with national and/or Community legislative limits.

	Mn	Ni	Cr	Mo	Co	Cu	W	Al	Sn	B
AGCIH ¹	0.2	1.5(I) ^{*2}	0.5 (metal)	10(I) ^{*2}	0.02	1 ^{*3}	5	1(R) ^{*2}	2	10(I) ^{*2}
TLVs·TWA [mg/m ³]				3(R) ^{*2}		0.2 ^{*4}				3(R) ^{*2}

*1. American Conference of Governmental Industrial Hygienists (by https://anzeninfo.mhlw.go.jp/anzen_pg/GHS_MSD_FND.aspx)

*2. (I); Inhalable fraction (R); Respirable fraction

*3. Dust and mists, as Cu

*4. Fume

8.2 Exposure controls

8.2.1 Exposure controls at the workspace

Personal Protection: The personal protection is depended on concentration and amount of the hazardous material.

Eye/Face Protection: Wear safety goggles in case of the presence of dusts and fumes according to national regulation.

Hand Protection: Select the type of hand protection according to the kind of work to be done in order to make sure that any mechanical injury be avoided.

Respiratory Protection: Fumes and dust: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

Skin/Body Protection: wear suitable protective clothing.

8.2.2 Environmental exposure controls: Avoid the formation of dust.

9. Physical and chemical properties

appearance;	Silver-gray metallic solid form	upper/lower flammability or explosive limits;	Not Applicable
odor;	Odorless	vapor Pressure;	Negligible
odor threshold;	Not Applicable	vapor density;	Not Applicable
pH;	Not applicable	relative Density;	7 – 9 (g/cm ³ at 20°C)
melting Point;	1370°C and over	solubility (water);	Insoluble
boiling range;	Unknown	n-octanol/water partition coefficient;	Not Applicable
flash point;	Non-flammable	auto-ignition temperature;	Not Applicable
		decomposition temperature.	Not Applicable

10. Stability and reactivity

10.1 Reactivity/Chemical stability: Stable and non-reactive under normal ambient atmospheric conditions.

10.2 Possibility of hazardous reactions: Contact with certain acids may result in the release of gaseous acid decomposition products (e.g. hydrogen) and chromium may be released in the form of chromium III. In contact with strong oxidizers at high pH (e.g. alkaline cleaners at pH 10-14), Chromium(VI) compounds may form at ambient temperatures.

10.3 Conditions to be avoided: Not applicable

10.4 Incompatible materials: Oxidizing agents.

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10.5 Hazardous decomposition products: No dangerous decomposition products are known. Welding fumes, gases and dusts may occur through treatment of the metal.

11. Toxicological information

There is no useful epidemiological information about environmental impacts of steel materials as of now. And as for elemental component contained in steel materials, there is information of noxious as follows.

Hazard class	[Si]	[Mn]	[Ni]	[Cr]	[Mo]	[Co]	[Cu]	[W]	[Al]	[Sn]	[B]
Acute toxicity	—	—	—	—	—	—	—	—	—	—	—
Skin corrosion/irritation	—	Category 3	—	—	—	—	—	—	—	—	—
Serious eye damage/eye irritation	Category 2B	Category 2B	—	Category 2	Category 2	—	—	Category 2B	—	Category 2	—
Respiratory sensitization	—	—	Category 1	Category 1A	—	Category 1	—	—	—	—	—
Skin sensitization	—	—	Category 1	Category 1A	—	Category 1	Category 1A	—	—	—	—
Carcinogenicity	—	—	Category 2	—	—	Category 2	—	—	—	—	—
Reproductive toxicity	—	Category 1B	—	—	—	—	—	—	—	—	—
Specific target organ toxicity - Single exposure	—	Category 1 (r.s.)	Category 1 (r.s., kid)	Category 3 (r.t.i.)	Category 3 (r.t.i.)	Category 3 (r.t.i.)	Category 1 (d.s.), Category 3 (r.t.i.)	Category 3 (r.t.i.)	Category 1 (r.s.)	Category 3 (r.t.i.)	Category 2 (r.o.)
Specific target organ toxicity - Repeated exposure	—	Category 1 (r.s., n.s.)	Category 1 (r.s.)	—	—	Category 1 (r.o., c.s., th., h.s.)	—	—	Category 1 (r.s.)	Category 3 (r.t.i.)	—

note 1 NITE-CHRIP / NITE integrated version GHS classification result by the government

note 2 r.s.: respiratory system n.s.: nervous system r.t.i.: Respiratory tract irritation kid.: kidney
r.o.: respiratory organs c.s.: cardiovascular system th.: thyroid h.s.: haemal system
d.s.: digestive system h.s.:haemal system

note 3 The hyphen (-) in the table indicates that the element in question is out of classification or can not classified.

note 4 See Section 2 (Hazard summary) for each category information

12. Ecological information

There is no useful epidemiological information about environmental impacts of steel materials as of now. And as for elemental component contained in steel materials, there is information of noxious as follows.

Hazard class	[Si]	[Mn]	[Ni]	[Cr]	[Mo]	[Co]	[Cu]	[W]	[Al]	[Sn]	[B]
Hazardous to the aquatic environment (Acute)	—	—	—	—	—	—	—	—	—	—	—
Hazardous to the aquatic environment (Long-term)	—	Category 4	—	—	—	—	—	—	—	—	—
Hazardous to the ozone layer	—	—	—	—	—	—	—	—	—	—	—

note 1 NITE-CHRIP / NITE integrated version GHS classification result by the government

note 2 "-" in the table indicates that the elements in question are out of classification or can not be classified.
" " indicates that no classification has been carried out.

note 3 See Section 2 (Hazard Summary) for each category information.

13. Disposal considerations

Waste treatment methods

Waste disposal recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Additional information: Recycle where possible and/or dispose of spent material such as metals and metal-bearing waste and submerged arc welding (SAW) flux/slug appropriately.

14. Transport information

Non-dangerous good according to transport regulations (e.g. ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road)

14.1 UN-number: Not applicable.

14.2 Proper shipment label: Not applicable.

14.3 Transport hazard class: Not applicable.

14.4 Packing group: Not applicable.

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14.5 **Environmental hazards:** Not applicable.

14.6 **Special precautions for user:** Not applicable.

14.7 **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:** Not applicable.

15. Regulatory information

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

Regulation by law of Japan

Chemical Name	CAS Number	Law for PRTR and Promotion of Chemical Management *1	Industrial Safety and Health Act	
		type-government order number	government order number	second-class specific chemicals
Silicon [Si]	7440-21-3	-	-	
Manganese [Mn]	7439-96-5	class 1 - 412	550	○
Nickel [Ni]	7440-02-0	class 1 - 308	418	○ (limited to powder)
Chromium [Cr]	7440-47-3	class 1 - 87	142	○ (chromic acid and its salts)
Molybdenum [Mo]	7439-98-7	class 1 - 453	603	
Cobalt [Co]	7440-48-4	class 1 - 132	172	○
Copper [Cu]	7440-50-8	-	379	
Tungsten [W]	7440-33-7	-	337	
Aluminum [Al]	7429-90-5	-	37	
Titanium [Ti]	7440-32-6	-	-	
Niobium [Nb]	7440-03-1	-	-	
Tin [Sn]	7440-31-5	-	322	
Boron [B]	7440-42-8	-	-	
Iron [Fe]	7439-89-6	-	-	
-	-	-	-	○ (fumes)

*1 As the exact legal name, Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

16. Other information

References

- ISO 11014 "Safety data sheet for chemical products - Content and order of sections"
- Globally Harmonized System of Classification and Labeling of Chemicals (GHS)
- NITE-CHRIP / NITE integrated version GHS classification result by the government
 (https://www.nite.go.jp/en/chem/chrip/chrip_search/systemTop)

The information herein is given to the best of our knowledge concerning the substance indicated in the date in which it was updated. Information is provided in good faith. NIPPON KINZOKU CO., LTD. does not give any assurance with the view of completeness and validity. This safety data sheet serves only as guideline for adequate handling of the material by an educated person. Accordingly, NIPPON KINZOKU CO., LTD. is not responsible for damages which may occur through application or faith of the data listed.

End of Safety Data Sheet