

SAFETY DATA SHEET -SDS-

1. Chemical product and company identification

Product name : Stainless Steel
 Company name : NISSHO ASTEC CO.,LTD.
 Address : 8-16 Senba-higashi 1-chome, Minoh-city, Osaka, Japan
 Telephone number : +81-72-730-8581
 Facsimile number : +81-72-730-8562
 Division in charge : Sales Department
 Emergency address and telephone number : Same as above

2. Hazards identification

GHS classification :

< Health hazard >

Hazard class	Category	Hazard statements
Serious eye damage /eye irritation	Category 2B	H320 Causes eye irritation
Respiratory sensitization	Category 1	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
Skin sensitization	Category 1	H317 May cause an allergic skin reaction
Germ cell mutagenicity	Category 2	H341 May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
Carcinogenicity	Category 2	H351 Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
Reproductive toxicity	Category 1B	H360 May damage fertility or the unborn child (state specific effect if known)(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
Specific target organ toxicity <Single exposure>	Category 1	H370 Causes damage to organs (or state all organs affected, if known) (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
	Category 2	H371 May cause damage to organs (or state all organs affected, if known)(state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
	Category 3	H335 May cause respiratory irritation (respiratory tract irritation)
Specific target organ toxicity <Repeated exposure>	Category 1	H372 Causes damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)
	Category 2	H373 May cause damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

< Environmental hazard >

Hazard class	Category	Hazard statements
Hazardous to the aquatic environment	Category 4	H413 May cause long lasting harmful effects to aquatic life

GHS label elements :

< Pictograms >



< Signal word >

Danger



< Precautionary statements >

(Prevention)

- Do not handle until all safety precautions have been read and understood. (P202)
- Do not breathe dust/fume/gas/mist/vapor/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 respirational protection.(P284)

(Response)

- 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)
- Call a poison center or doctor/physician if you feel unwell. (P312)
- 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)

- Dispose contents/container to in accordance with local/regional/national/international regulation.(P501)

3. Composition/Information on ingredients

Substance or Mixture : Mixtures (Alloy)

Main ingredients :

Chemical Name	Weight %	CAS-No
Silicon [Si]	0-5	7440-21-3
Manganese [Mn]	0-10	7439-96-5
Nickel [Ni]	0-30	7440-02-0
Chromium [Cr]	10-30	7440-47-3
Molybdenum [Mo]	0-10	7439-98-7
Copper [Cu]	0-5	7440-50-8
Niobium [Nb]	0-1	7440-03-1
Titanium [Ti]	0-1	7440-32-6
Aluminum [Al]	0-5	7429-90-5
Tungsten [W]	0-1	7440-33-7
Cobalt [Co]	0-1	7440-48-4
Tin [Sn]	0-1	7440-31-5
Iron [Fe]	Balance	7439-89-6



4. 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.

- Ingestion : Move victim to fresh air and get medical attention.
- 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.

5. Fire-fighting measures

Steel materials are nonflammable (solid), however, consideration must be given to the potential fire/explosion hazards from the base material being processed. An ordinary fire extinguishers and/or water can be used to put out any fire. Note that fine powder may lead to combustion or explosion.

- Fire extinguishing agents : Use fire extinguishing agent appropriate for fire situation.
- Unsuitable extinguishing media : None.

6. Accidental release measures

As product is solid, it is not leaked under general conditions. However, take measures below to prevent hazards by dust or fumes generated during steel material processing:

- Personal precautions : Wear appropriate protective equipment to avoid inhalation or eye contact with dust or fumes.
- Protective equipment and emergency procedure : Refer to section 8 (exposure controls/personal protection).
- Environmental precautions : Collect promptly any dust generated during cutting or grinding.
- Methods for containment and cleaning up : Collect generated dust in appropriate manner and place in a container for disposal.

7. Handling and storage

Handling :

< Technical measures >

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.

< Precautions for safe handling >

Heavy weights call for great 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 from cutting may cause irritation of the mucous membranes of respiratory and other organs, and eyes. Arcing may cause burns.

Storage :

< Safety storage conditions >

Avoid environment with high temperature and high humidity.

Avoid contact with water leakage, acid, alkali, or substances containing them.

Use sheets or covers to prevent products from rain water infiltration, or pack products, if needed.



8. Exposure controls/personal protection

No limits to exposure prevention and protective measures for steel materials in ordinary circumstances due to solid. However processing such as welding, weld cutting, grinding, and cutting can generate fumes or fine particles, thus take preventive and protective measures below.

Guideline:

Chemical Name	CAS No	ACGIH*1
		TLVs-TWA [mg/m ³]
Manganese [Mn]	7439-96-5	0.2
Nickel [Ni]	7440-02-0	1.5
Chromium [Cr]	7440-47-3	0.5
Molybdenum [Mo]	7439-98-7	10(I)/3(R)*2
Copper [Cu]	7440-50-8	1 *3/0.2 *4
Aluminum [Al]	7429-90-5	1(R)*2
Tungsten [W]	7440-33-7	5
Cobalt [Co]	7440-48-4	0.02
Tin [Sn]	7440-31-5	2

*1 American Conference of Governmental Industrial Hygienists

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

*3 Dust and mists, as Cu

*4 Fume

Preventive measure : Provide appropriate ventilation to secure safe work environment in case of generating dust or fumes.

Protective measures : Wear appropriate respiratory protective equipment, protective gloves, safety goggles or face shield over safety glasses, and protective clothing as needed to prevent contamination of personal clothing. Protective shoes may be required.

9. Physical and chemical properties

Appearance : A silver-white solid under general conditions
Odor : Metal smell
Melting point : 1370°C and over
Relative Density : 7~9 g/cm³
Solubility(water) : Insoluble

10. Stability and reactivity

Chemical stability : Stable under ordinary circumstances.

Possibility of hazardous reactions

: May cause oxygen deficiency or harmful gases in contact with certain chemical substances such as water and acid.

Conditions to avoid : Avoid high humidity and contacting with incompatible materials.

Incompatible materials : Oxidizing substances, etc.

Hazardous decomposition products

: Fumes generated during welding and weld cutting may contain metal compounds.



11. Toxicological information

Hazard class	[Mn]	[Ni]	[Cr]	[Mo]	[Cu]	[Al]	[W]	[Co]	[Sn]
Acute toxicity	-	-	-	-	-	-	-	-	-
Skin corrosion/Irritation	-	-	-	-	-	-	-	-	-
Serious eye damage/Eye irritation	Category 2B	-	Category 2B	-	-	-	Category 2B	-	-
Respiratory/Skin sensitization	-	Category 1	Category 1	-	-	-	-	Category 1	-
Germ cell mutagenicity	-	-	Category 2	-	-	-	-	-	-
Carcinogenicity	-	Category 2	-	-	-	-	-	Category 2	-
Reproductive toxicity	Category 1B	-	-	-	-	-	-	Category 2	-
Specific target organ toxicity (single exposure)	Category 1	Category 1	Category 2,3	Category 3	Category 3	-	-	Category 3	-
Specific target organ toxicity (repeated exposure)	Category 1	Category 1	-	-	Category 1	Category 1	-	Category 1	Category 1
Aspiration hazard	-	-	-	-	-	-	-	-	-

Note : The hyphen (-) in the table indicates that the element in question is out of classification or cannot be classified.

12. Ecological Information

Hazard class	[Mn]	[Ni]	[Cr]	[Mo]	[Cu]	[Al]	[W]	[Co]	[Sn]
Hazardous to the aquatic environment(acute)	-	-	-	-	-	-	-	-	-
Hazardous to the aquatic environment(long-term)	Category 4	Category 4	-	-	Category 4	Category 4	-	Category 4	-

Note : The hyphen (-) in the table indicates that the element in question is out of classification or cannot be classified.

13. Disposal attention

- Waste disposal method : Dispose in accordance environmentally friendly manner in compliance with all applicable local, state/province and federal regulations.
- Container and package disposal : In case of container or package with adherent contamination, dispose them in the same way described above.

14. Transport Information

Not classified as internationally controlled substances regarding transport.

15. Regulatory Information

Not applicable

16. Other Information

References

- ISO 11014-1 "Safety Data Sheet for Chemical Products", Part 1 "Content and Order of Sections"
- Globally Harmonized System of Classification and Labeling of Chemicals (GHS) (Rev.4)

This data sheet has been drawn up in accordance with ISO 11014-1 "Safety Data Sheet for Chemical Products", Part 1 "Content and Order of Sections" (hereinafter referred to as "ISO"). The definitions of terms conform to ISO.

This SDS information is, to the best of the company's knowledge, accurate and reliable as of the date indicated. However, the users should take appropriate safety measures on their own responsibility depending on the actual state of handling. There is a possibility of hazards which are not described in this data sheet and for which our company does not have any specific information.

We will update our SDS as new information is obtained.

End of Safety Data Sheet