

Material Safety Data Sheet

Antimony Trioxide

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Identification of Substance:	Antimony Trioxide Sb ₂ O ₃
1.2 Company Identification:	
Company name;	NIHON SEIKO CO., LTD.
Address;	3-2 SHIMOMIYABI-CHO SHINJUKU-KU TOKYO 162-0822 JAPAN
Charge section;	NIHON SEIKO CO., LTD. SALES SECTION
Phone number;	TEL +81-3-3235-0031 FAX +81-3-5261-7335
Emergency phone number;	NIHON SEIKO CO., LTD. NAKASE REFINERY QUALITY ASSURANCE SECTION TEL +81-79-667-2121
E-mail;	mail@nihonseiko.co.jp
1.3 Recommended use;	Flame retardant additives, Pigments, Polyester polymerization catalysts, decolorizing and finding agent of optical lenses, Variable resistors.

2. HAZARDS IDENTIFICATION ^{①,⑤}

2.1 The most important hazard and effect:	Suspected of causing cancer.
2.2 GHS Classification:	
Physical Hazard;	Not classified (Out of category)
Health Hazards	
Acute Toxicity (Oral);	Not classified
Acute Toxicity (Dermal);	Not classified
Acute Toxicity (Inhalation : steam);	Not classified
Skin Corrosion/Irritation;	Category 3
Serous Eyes Damage/Eye Irritation;	Not classified
Respiratory Sensitization;	Not classified
Skin Sensitization;	Not classified
Germ Cell Mutagenicity;	Not classified
Carcinogenicity;	Category 2
Reproductive Toxicology;	Not classified
Target Organ Toxicity (Single Exposure);	Not classified
Target Organ Toxicity (Repeated Exposure);	Not classified
Aspiration Toxicity;	Not classified
Environmental Hazards	
Acute aquatic toxicity;	Not classified
Chronic aquatic toxicity;	Not classified

2.3 GHS Label:

Pictogram or Symbols;

(Based on GHS classification standard assigned
by Japanese government as of this moment.)



Signal words;	Warning
Hazard statements;	Causes mild skin irritation. Suspected of causing cancer.
Precautionary statements Prevention;	Do not handle until all safety precautions have been read and understood. Do not inhale dust. Do not eat, drink or smoke when using this product. Wear suitable protective clothing, gloves, respiratory and eye/face protection. Wash affected areas with soap and plenty of water after handling.
Response;	Immediately remove contaminated clothing and wash skin thoroughly with soap and water. IF INHALED: Remove victim to fresh air and let him blow nose and gargle. IF IN EYES: Flush eyes with plenty of water. IF SWALLOWED: Drink plenty of water and induce vomiting. Take to a physician.

3. COMPOSITION / INFORMATION ON INGREDIENTS ^{④,⑤}

3.1 Distinction of single substance or mixture:	Single substance
3.2 Chemical Composition:	Antimony Trioxide
3.3 Chemical formula:	Sb ₂ O ₃
3.4 Component and its content:	Each Sb ₂ O ₃ grades of purity and impurity content. (last page)
3.5 Impurity and its content:	Each Sb ₂ O ₃ grades of purity and impurity content. (last page)
3.6 CAS number:	1309-64-4
3.7 EINECS number:	215-175-0

4. FIRST-AID MEASURES ^{②,③,④,⑤}

4.1 Skin Contact:	Remove contamination clothing immediately. Wash affected area with soap and copious amount of water. Get medical attention.
4.2 Eye Contact:	Flush eyes with plenty of water. Get medical attention.
4.3 Inhalation of dust:	Move affected person to fresh air. Get medical attention.
4.4 Ingestion:	Drink plenty of water and induce vomiting. Take to a physician.

5. FIRE-FIGHTING MEASURES ②,③,④,⑤

- 5.1 Suitable Extinguishing Media: Especially no restriction about the extinguishing media.
Prevent spreading fire by using water, the powder, and the carbon dioxide fire extinguisher.
- 5.2 Specific hazards arising from the chemical: This product doesn't ignite.
- 5.3 Special protective actions for Fire-Fighters: Move the product to safe place promptly when it is a fire in the surrounding.
Use self-contained breathing apparatus.
Do not work in leeward.

6. ACCIDENTAL RELEASE MEASURES ②,③,⑤

- 6.1 Personal Precautions: Do not inhale dust.
Avoid contact with skin, eyes and clothing.
Wear dust mask and goggles.
- 6.2 Environmental Precautions: Dispose of material in accordance with all federal, State and Local regulations.
Burial an approved waste landfill is recommended.
- 6.3 Methods of Cleaning Up: Vacuum or sweep all spilled material without creating dust and place in closed plastic bags for disposal.

7. HANDLING AND STORAGE ②,③,④,⑤

- 7.1 Precautions during Handling: Avoid contact with eyes and skin.
Handling in well-ventilated dry area.
Do not eat, drink or smoke at the work place.
Do not inhale vapors or mists.
Do not eat.
Do not get in eyes, on skin or on clothing.
Wash thoroughly after handling and take a shower at end of work.
Shift wear clean clothing daily.
Do not dispose to rivers.
- 7.2 Storage: Store in well-ventilated dry area.
Do not store in bear conditions avoid inadequate and mislabeled packing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION ③,⑤

- 8.1 Control concentration: NA
- 8.2 Exposure control limits /
Effect of over exposure: TLV-TWA Sb_2O_3 (handling and use)
Expressed as Sb : $0.5\text{mg}/\text{m}^3$,
Antimony and Compound Handling and Use.
Inhalation can cause irritation to the respiratory tract and mucous membrane.
- 8.3 Special Protective Measures:
- Respiratory; Good local exhaust ventilation.
Wear suitable particle filter mask.
- Hands; Wear gloves.
- Eyes; Wear goggles.
- Skin; Wear overalls.

9. PHYSICAL AND CHEMICAL PROPERTIES ^{④,⑤}

9.1 Appearance (Physical state):

Color; White Powder
Odour; None

9.2 Boiling Point: 1,425°C

9.3 Melting Point: 656°C

9.4 Flash Point: NA

9.5 Vapor pressure: 5mmHg (625°C)

9.6 Volatility: NA

9.7 Combustibility: NA

9.8 Reaction/Explosion: NA

9.9 Specific gravity 5.2 (20°C)

9.10 Solubility in water^⑦: 1.86mg/l (20~25°C)

9.11 Others (Soluble): Hydrochloric acid, Tartaric acid, Acetic acid.

10. STABILITY AND REACTIVITY ^⑤

10.1 Chemical stability: Sublimes at 656°C

10.2 Possibility of hazardous reaction: Reaction with Hydrogen release antimony hydride (Stibine).
Strong acids and basis.

11. TOXICOLOGICAL INFORMATION

11.1 Acute toxicity^{⑧,⑨,⑩,⑪}: LD₅₀ (Rat-oral) 34,600mg/kg

11.2 Skin corrosion/irritation^{⑤,⑥}: Causes mild skin irritation.
Can cause dermatitis or similar skin irritation during prolonged contact.
This can increase in hot or humid weather.

11.3 Serious eye damage/irritation^⑫: No eye irritation to rabbit according to OECD guideline.

11.4 Respiratory or skin sensitization^⑬: No eye irritation according to OECD guideline test on guinea pig.

11.5 Germ cell mutagenicity^⑭: No germ cell mutagenicity at micronucleus test and chromosomal aberration test after 21 days repeated exposure on rat marrow.
Suspected of causing cancer.

11.6 Carcinogenicity^{⑯,⑰,⑱}:
IARC; Group 2B
It can be carcinogenic for the human body.
EU; Category 3
Carcinogenicity is suspected and effect to human is concerned but the information is not sufficient to make appropriate assessment.

ACGIH;	Manufacturing process A2: There may be cause for concern as a carcinogen for the human body.
EPA;	Not classified as carcinogen
NTP;	Not classified as carcinogen
Japan Association on Industrial Health;	Category 2B: Probably has carcinogenicity on human but evidence is not sufficient.
Reproductive Toxicology ^⑦ ;	No fetal toxicity or teratogen by Antimony Trioxide at the in vivo test of rat inhalation development test.
Target Organ Toxicity(Single Exposure) ^{⑨,⑩,⑬} ;	No toxicity has been observed at recent oral and inhalation test during exposure or after exposure.
Target Organ Toxicity(Repeated Exposure);	Respiratory problem is suspected by repeated exposure to extremely high concentration. No toxicity exists under modern work place where condition is controlled with latest dust eliminator or protector.
Aspiration Toxicity;	Not applicable

12. ECOLOGICAL INFORMATION ^⑧

12.1 Remain/Dissolve:	Not applicable
12.2 Accumulation:	Not classifiable
12.3 Ecology Toxicity (Fish toxicity):	Not applicable
12.4 Mobility in the soil:	Not classifiable
12.5 Acute aquatic toxicity: Chronic aquatic toxicity:	Technical committee of classification and labelling of ECB concluded this substance doesn't need to be classified as toxic after consideration of all the toxicity and solubility data.

※ Superior figures in toxicological information and ecological information refers to reference document No.

13. DISPOSAL CONSIDERATIONS ^{③,④,⑤}

13.1 Waste disposal:	Landfill subject to local regulation
13.2 Disposal of Packaging:	Landfill or incineration.

14. TRANSPORT INFORMATION ^{④,⑤}

14.1 No special precautions are required.	
14.2 UN number:	Not applicable

UN regulation : The special provision SP45 is applicable to the UN number 1549 (Hazard class 6.1 and packaging group III). It means that antimony sulfides and oxides, which contain not more than 0.5% of arsenic calculated on the total weight, are not subject to these regulations.

15. REGULATORY INFORMATION ④.⑤

15.1 Follow regulation and law of each country or region.

16. OTHER INFORMATION

16.1 Treatment of stated contents:

The contents of this information sheet are based on the data, information available at moments, and may be revised by additional data coming up in future.

The precautions mentioned in this sheet are intended for normal use of this material, when use in unusual manner, the proper safety method is required.

Read this MSDS before use the ingredients. Keep this MSDS in your file for your timely reference. The contents of this information sheet are not warranted and the company can accept no liability to any customer or any other person.

16.2 References:

- ① Comment of International Antimony Oxide Industry Association (January 11,2007)
- ② Kaitei zohonban dokugeki kijyun kankei tuutisyu (yakumukouhousya, kouseisyou yakumukyoku anzenka hen)
- ③ Saishin dokugekibutsutoriatsukainotebiki (jijitsuushinnsya, kouseisyou yakumukyoku anzenka hen)
- ④ 14705 no kagakusyouhin (kagakukougyounippousya)
- ⑤ Kagakubusshitukanrisokushinhou taisyoubushitsuzendeta (kagakukougyounippousya)
- ⑥ Kyoyounoudoteianriyuusyu (nihonsangyoueiseigakkai hen tyuouroudousaigaiboushikyokai)
- ⑦ Screening and acute transformation/dissolution test with Sb₂O₃ in ecotox media LISEC study No WE-14-018
- ⑧ Industrial Bio-Test Laboratories, Inc., IBT No.A2297 Dec.(1972)
- ⑨ LPT Laboratory of Pharmacology and Toxicology KG
LPT Report No.19226/05.January 24,2005 「Acute inhalation toxicity study of antimony trioxide in rats」
- ⑩ de Bie et al., 2005 TNO Chemistry, unpublished report
「Biodistribution study of ATO in the rats」
- ⑪ Journal of Applied Toxicology 19:205-209,1999 Hext,P.M.,P.J.Pinto and B.A.Rimmel
「Subchronic feeding study of antimony trioxide in rats」
- ⑫ LPT Laboratory of Pharmacology and Toxicology KG
LPT Report No.19227/05.October 12,2005 「Acute eye irritation/corrosion test of antimony trioxide in rabbits」
- ⑬ LPT Laboratory of Pharmacology and Toxicology KG
LPT Report No.19228/05.October 14,2005 「Examination of antimony trioxide in a skin sensitization test in guineapigs」
- ⑭ Mutation Research 627(2007)119-128
David Kirkland, James Whitwell, James Deyo, Tessa Serex
「Failure of antimony trioxide to induce micronuclei or chromosomal aberrations in rat bone-marrow after sub-chronic dosing」
- ⑮ Newton et al., Fundamental and Applied Toxicology 22: 561-576(1994)
「Subchronic and chronic inhalation toxicity of antimony trioxide in the rats」

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 **NIHON SEIKO CO., LTD.**

16.3 Revision:

Revision No.	Issue date	Comment
No.01	July. 1996	New issue.
No.02	Oct. 2003	Register in the quality standard.
No.03	Apr. 2006	Addition of the special provision of UN regulation.
No.04	Nov. 2008	Revision to comply with GHS.
No.05	May. 2009	Revision to words and phrases.

Each Sb₂O₃ grades of purity and impurity content. (unit : %)

Item	PATOX-												ATOX-	
	C CZ	CE	M MF MZ MK	K KF	KS	U	H	HS HSS	P L	CF	GS	UF UFX SUF	B	G
Sb ₂ O ₃	99.8	99.7	99.6	99.6	99.6	99.8	99.9	99.8	99.7	99.9	99.9	99.99	99.6	99.6
As	0.03	0.04	0.05	0.05	0.05	0.01	0.01	0.02	0.03	0.01	6ppm	10ppm	0.03	0.03
Pb	0.003	0.03	0.05	0.06	0.03	0.01	0.002	0.001	0.04	0.009	1ppm	10ppm	0.06	0.08