Material Safety Data Sheet
Antimony Trisulfide "P2, P3, P4"

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Name of chemical substance:	Antimony Trisulfide Sb_2S_3
1.2 Company name:	NIHON SEIKO CO., LTD
1.3 Address:	3-2 SHIMOMIYABI-CHO SHINJUKU-KU TOKYO 162-0822 JAPAN
1.4 Division in charge:	NIHON SEIKO CO., LTD Sales Department
1.5 Contact information:	NIHON SEIKO CO., LTD TEL +81-3-3235-0031 FAX +81-3-3235-0034
1.6 Emergency contact:	NIHON SEIKO CO., LTD Nakase Refinery Quality Assurance Section TEL +81-79-667-2121
1.7 e-mail:	mail@nihonseiko.co.jp
1.8 Recommended use and restriction on use:	Friction materials, Fireworks, Toy fireworks, Inert bombs, etc.

2. HAZARDS IDENTIFICATION

2.1 Most important sign and symptom:	Not hazardous under normal handling.
2.2 GHS Classification:	
Physical hazard;	Not applicable (Not classified)
Health Hazard;	
Acute toxicity (Oral)	Classification not possible
Acute toxicity (Dermal)	Classification not possible
Acute toxicity (Inhalation: vapour)	Not applicable
Skin corrosion/irritation	Classification not possible
Serious eye damage/eye irritation	Classification not possible
Germ cell mutagenicity	Classification not possible
Carcinogenicity	Classification not possible
Respiratory Sensitization	Classification not possible
Skin Sensitization	Classification not possible
Reproductive toxicity	Classification not possible
Specific target organ systemic toxicity (Single exposure)	Classification not possible
Specific target organ systemic toxicity (Repeated exposure)	Classification not possible
Aspiration hazard	Classification not possible
Environmental hazard;	
Acute aquatic toxicity	Classification not possible
Chronic aquatic toxicity	Classification not possible

2.3 Label elements:

Pictogram or symbol;	None
Signal word: Dangerous;	None
Hazard statements;	None

*This substance is not subject to “Substances whose name should be notified” under Industrial Safety and Health Law. And it is under the transition period of preparing GHS compliant document and appearance is different from MSDS, packaging or labels.

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 appropriate protective equipment, gloves, dust mask and face protection. Wash well the area contacted with dust after handling.
Response	If on skin: Remove the product from contaminated clothing and shoes then wash contaminated area with soap and water and rinse with plenty of water. If inhaled: Remove to fresh air, blow nose, gargle.

3. COMPOSITION / INFORMATION ON INGREDIENTS [3], [4]

3.1 Chemical substance/mixture:	Substance
3.2 Chemical name:	Antimony trisulfide
3.3 Other names:	Antimony sulfide
3.4 English name:	Antimony trisulfide
3.5 Chemical formula or structural formula:	Sb_2S_3
3.6 Component and contents:	Sb_2S_3 98.6%
3.7 Hazardous impurities:	As; 0.06%, Pb; 0.12%, SiO_2 ;0.61%
3.8 Reference Number in Gazetted List in Japan:	Existing chemical substance No. 1-567
3.9 CAS No.:	1345-04-6
3.10 EINECS No.:	215-713-4

4. FIRST AID MEASURES (Response method until getting medical attention)

4.1 Skin Contact:	Remove contamination clothing and shoes immediately. Wash affected area with soap and water and copious amount of water.
4.2 Inhalation of dust:	Remove to fresh air, blow nose, and gargle.
4.3 Eye Contact:	Flush eyes with plenty of water for at least 15 minutes.
4.4 Ingestion:	Get medical attention immediately.

5. FIRE FIGHTING MEASURES

5.1 Suitable Extinguishing Media:	Do not use halogen extinguishing agent because it may explode by the heat generated by mixing with antimony trisulfide. Extinguish the fire by using other extinguisher of water, powder or carbon dioxide gas.
5.2 Specific hazards arising from the fire:	This product may generate sulfur dioxide gas and smoke of antimony oxide at high temperature. Remove the product to safe place promptly at the fire at surrounding area.
5.3 Protective Equipment for Fire-Fighters:	Wear protective equipment. Do not work at leeward.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions:	Wear protective equipment to prevent exposure when handle. Do not work at leeward.
6.2 Environmental Precautions:	Be careful for leakage not to flow into river, etc.
6.3 Methods of Cleaning Up:	In case of small leakage, sweep gather by broom and recover into container, treat it as industrial waste. In case of large leakage, recover scattered material into empty container as much as possible, gather remainings carefully and completely, and treat it as industrial waste.
6.4 Prevention of secondary disaster:	Prohibit scattered place from entering and leaving of people by stretching the rope.

7. HANDLING AND STORAGE

7.1 Precautions during Handling:

Engineering measures;	Wear protective equipment when handling and prevent the contact with eyes, mouth and skin.
	Handle in well ventilated area.
	Install facility of hand wash and face wash in resting area and wash well hands and face after handling.
	Do not bring contaminated protective equipment such as protective gloves into resting area.
	Do not eat, drink or smoke except the specified area.
Measures for safe handling;	Do not inhale flying dust.
	Do not put into mouth.
	Avoid contact with eye and skin.
	Wash hands and face, change contaminated clothing after handling
	Do not dispose of into river etc.

7.2 Storage:

Storage conditions;	Store tightly closed in well ventilated low humidity area to prevent moisture absorption.
Container packaging material;	Confirm the container is compliant to test standard for container by yourself.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control concentration:	None
8.2 Acceptable concentration limit:	Japan Society for Occupational Health (2004 – 2005); 0.1mg/m^3 (as Sb for antimony and antimony compound)
	ACGIH (2005); 0.5mg/m^3 (as TLV-TWA of Sb for the handling and usage of antimony and antimony compound)
8.3 Facility measures:	When in house, keep well ventilated and install exhaust equipment.
	When out of doors, work at windward.
	Install face wash, eye wash and shower facility near work place.

8.4 Protective equipment:

Respiratory protection;	Dust mask
Hand protection;	Made of rubber or plastic
Eye protection;	Normal type protective glasses or face shield
Skin and body protection;	Long sleeve work wear

9. PHYSICAL AND CHEMICAL PROPERTIES (1), (2), (3)

9.1 Appearance:	Black Powder
9.2 Boiling point:	1,180 degree C
9.3 Vapour pressure:	1.17mmHg (500degree C)
9.4 Melting Point:	550 degree C
9.5 Specific Gravity:	4.6 (13 degree C)
9.6 Solubility:	
Water;	1.75 mg / l (18 degree C)
Others;	Soluble in conc. hydrochloric acid

10. STABILITY AND REACTIVITY [2], [3]

10.1 Stability/reactivity:	When heated in the air, it will ignite and burns with blue frame before melt. Sulfur dioxide gas and Antimony trioxide is generated by incineration. Mixture with potassium chlorate is exploded by electric spark. Mixture with potassium nitrate (oxidizing agent) is ignited by red heat.

11. TOXICOLOGICAL INFORMATION (Include case on human and epidemiological information) [2], [3], [4], [6]

11.1 Acute toxicity [4], [6], [8], [9]	LD_{50} (interperitoneal, mouse); 209 mg/Kg LDL_0 (interperitoneal, rat); 1,390 mg/Kg
11.2 Skin corrosion/irritation:	There is a description that it is irritant as antimony compound
11.3 Serious eye damage/eye irritation:	There is a description that it is irritant as antimony compound
11.4 Germ cell mutagenicity:	No information and classification is not possible.
11.5 Carcinogenicity:	
Japan Society for Occupational Health;	Not classified as carcinogen
ACGIH;(American Conference of Industrial Hygienists)	Not classified as carcinogen
EPA; (Environmental Protection Agency)	Not classified as carcinogen
NTP; (National Toxicology Program)	Not classified as carcinogen
EU; (European Union)	Not classified as carcinogen
IARC; (National Toxicology Program)	Group 3
11.6 Reproductive toxicity:	No information and classification not possible.
11.7 Specific target organ toxicity: (Single exposure) (Repeated exposure)	No information and classification not possible.
11.8 Aspiratory hazard:	No information and classification not possible.

12. ECOLOGICAL INFORMATION [3]

12.1 Persistance/degradability:	Not applicable as solid inorganic oxide
12.2 Accumulation:	No information and classification not possible.
12.3 Ecotoxicity:	No information and classification not possible.
12.4 Acute aquatic toxicity:	No information and classification not possible.
12.5 Environmental Effect	No information and classification not possible.

13. DISPOSAL CONSIDERATIONS [2], [3]

13.1 Residual waste:	Treat as industrial waste
13.2 Contaminated container/package:	Treat as industrial waste

* Pay attention to local regulation of disposal and comply with that.

14. TRANSPORT INFORMATION [3]

14.1 UN No.:	Hazardous impurity As is less than 0.5% and the product is not applicable.
14.2 UN class:	Not applicable
14.3 Packing label:	Not applicable

Un regulation: the special provision SP45 is applicable to the UN number 1549(Hazard class 6.1 and packaging groupIII). 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 [2], [3] [7]

15.1 Follow regulation and law of each country or region.

16. OTHER INFORMATION

16.1 Treatment of the contents:	The contents herein is prepared based on the document, information and data available at this point and may be revised by new knowledge. The precautions are covers normal usage and take appropriate safety measures for application and usage in case use for special treatment.

16.2 References:

(1) Series of Inorganic Chemicals IV-4 (MARUZEN)
(2) Kanagawa Environmental Research Center, Individual substance items
(3) Showa Chemical Co., Ltd. Antimony(III)sulfide MSDS
(4) Industrial poisoning handbook (Ishiyaku shuppan) 1
(5) Statements of reasons for Acceptable concentration limits, Japan Society of Occupational Health, Japan Industrial Safety and Health Association
(6) STN International RTECS file results
(7) Transportation by ship and storage of dangerous goods ordinance, edited by Seizandou, Transport Ministry Maritime Technology and Safety Bureau

16.4 Revision

Revision No.	Date of issue	Comment
No.01	98.07.01	New issue
No.02	06.08.01	Addition of UN regulation to section 14
No.03	10.07.20	Total revision to comply with GHS