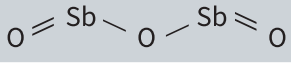
Substance Safety Summary

SUBSTANCE: Antimony Trioxide

GENERAL STATEMENT

Antimony trioxide is a naturally occurring mineral found in the earth's crust. Synthetically, antimony trioxide is made by roasting antimony metal in a furnace with oxygen present. The antimony vapors react with the oxygen and form a fine, white dust that is collected in a special filtration system Antimony trioxide is often used in plastic formulations in conjunction with a halogen-based chemical to reduce a product's flammability. Antimony trioxide has the unique ability to make halogen-based plastic additives more effective in reducing the flammability of the finished plastics. Antimony trioxide, commonly referred to as ATO, is typically a white, solid powder that can form dust in air. ATO is only used as an industrial intermediate in manufacturing locations designed for the handling of plastics and chemicals. Since the products made from ATO that are covered by this summary are industrial chemicals, the consumer is unlikely to come into contact with these products.

CHEMICAL IDENTITY

CATEGORY	DETAIL
EC Number	215-175-0
CAS Number	1309-64-4
Name Subclass 1	Antimony Trioxide (ATO)
Structural Formula	

USES AND APPLICATIONS

Antimony trioxide is predominantly used in plastics where resistance to ignition and flammability are required. Antimony trioxide functions as a synergist, reducing the amount of halogen-based product required to achieve desired levels of flammability resistance performance. ATO has also been found to be useful as a catalyst for PET manufacture, as a frictional additive in automotive brake linings, as a clarifier for glass, as an opacifier for enamels, as a coating for titanium dioxide applications, and as a stabilizer for certain pigments.

PHYSICAL/ CHEMICAL PROPERTIES

PROPERTY	DETAIL
Physical State	Solid
Form	Powder
Color	White
Odor	Odorless
Melting Point	656°C
Boiling Point	1425°C
Bulk Density	5.20 g/cm^3
Water Solubility	Slightly Soluble

HEALTH EFFECTS

	HUMAN HEALTH SAFETY ASSESSMENT
Consumer	It is very unlikely that consumers would be exposed to ATO in its concentrated form because it is only sold for industrial use to make polymers and other products and is not sold directly to consumers. There is no known data indicating that ATO can readily leach out of the products where it is used in a manner that represents significant risk for consumers.
Worker	Antimony trioxide is safe to use in industrial settings that utilize proper handling protocols and when recommended exposure guidelines are followed. Because antimony trioxide is a fine powder, the most likely exposure scenario is due to dust that could form when the bags are being discharged in an industrial setting. If poor ventilation is employed or appropriate personal protective equipment is not worn, dust that is formed during handling could be inhaled and effect the respiratory system.

ENVIRONMENTAL EFFECTS

Given its negligible vapor pressure and limited water solubility, antimony trioxide that is released into the environment will tend to remain in soil rather than migrate into other environmental media, such as air or water. However, because antimony trioxide has some solubility in water, it will eventually come into contact with moisture and dissolve in water to generate antimony ions. Antimony, being a natural element, cannot by definition be degraded. However, it can react with other materials in the soil and water to form other compounds.

Antimony trioxide that enters the soil will likely react with any iron, aluminum and manganese compounds that might be present in the soil to form other antimony compounds.

Antimony from industrial sources that is unintentionally discharged into the environment can easily make its way into streams and waterways where it is likely to be carried to and settle in areas of active sedimentation, such as where a river empties into a lake or a bay.

EFFECT ASSESSMENT	RESULT
Aquatic Toxicity	Not expected to be harmful to aquatic species.

EXPOSURE

	HUMAN HEALTH SAFETY ASSESSMENT
Human Health	Consumers are not likely to be exposed to because it is not sold directly to consumers nor are sales to consumer markets endorsed.
Environment	When used in an industrial setting, ATO is typically handled using engineered systems designed to control releases from the facility. ATO that is released will collect on hard surfaces and could potentially mix with soil or other porous surfaces. Contained releases of ATO should be collected and disposed of per established protocols. Soils contaminated by spills should be remediated and disposed of in an appropriate manner.

RISK MANAGEMENT RECOMMENDATION

ATO is a chemical with a unique and highly specialized ability to improve the safety of plastics and other organic materials by reducing flammability in a manner that maintains end-product performance characteristics. It is a chemical that has been highly scrutinized by a number of regulatory bodies globally and found to be safe when used in its intended applications. Though there are potential hazards associated with ATO, it is only handled by highly trained people in manufacturing environments utilizing specialty equipment, safety controls, and personal protective equipment.

SIGNAL WORD (IN ACCORDANCE WITH 29 CFR 1910.1200)

Warning

CONCLUSION

The assessment has revealed that the substance is considered to be safe for the above described uses and applications.

COMPANY CONTACT INFORMATION

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