

SPIRAX SARCO PHOSPHONATE TITRANT

Hazard Alert Code:
MODERATE

Chemwatch Material Safety Data Sheet

Revision No: 3

Chemwatch 7600-56

Issue Date: 29-Jan-2010

CD 2010/1

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

Spirax Sarco Phosphonate Titrant

SYNONYMS

"laboratory reagent"

PRODUCT USE

Reagent.

SUPPLIER

Company: Spirax Sarco Pty Ltd

Address:

72 Mica Street

Carole Park

QLD, 4300

AUS

Telephone: +61 7 3879 4944

Telephone: +61 414 355 619 A/H






Fax: +61 7 3271 4589

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to NOHSC Criteria, and ADG Code.

HAZARD RATINGS

	Min	Max	
Flammability:	0		
Toxicity:	2		
Body Contact:	2		
Reactivity:	0		
Chronic:	0		
			Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

POISONS SCHEDULE

None

RISK

- Skin contact may produce health damage*.

* (limited evidence).

SAFETY

None under normal operating conditions.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
thorium nitrate	13823-29-5	0-0.2
water	7732-18-5	>90

Section 4 - FIRST AID MEASURES

SWALLOWED

-
- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

EYE

- If this product comes in contact with eyes:
- Wash out immediately with water.
- If irritation continues, seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin or hair contact occurs:
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED

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-
- If fumes or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

NOTES TO PHYSICIAN

- Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

-
- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

FIRE FIGHTING

-
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves for fire only.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

-
- Non combustible.
- Not considered to be a significant fire risk.
- Expansion or decomposition on heating may lead to violent rupture of containers.
- Decomposes on heating and may produce toxic/ irritating fumes.
- May emit acrid smoke.

Decomposition may produce toxic fumes of:
nitrogen oxides (NOx).

FIRE INCOMPATIBILITY

- None known.

HAZCHEM

None

PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

When handling larger quantities:

Respirator:

Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

-
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS

- Minor hazard.
- Clear area of personnel.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact by using protective equipment as required.
- Prevent spillage from entering drains or water ways.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite and place in appropriate containers for disposal.
- Wash area and prevent runoff into drains or waterways.
- If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

■

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- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

-
- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

- Avoid contamination of water, foodstuffs, feed or seed None known.

STORAGE REQUIREMENTS

-
- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X: Must not be stored together

O: May be stored together with specific preventions

+: May be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- thorium nitrate: CAS:13823-29-5 CAS:14767-04-5 CAS:13470-07-0
- water: CAS:7732-18-5

MATERIAL DATA

SPIRAX SARCO PHOSPHONATE TITRANT:

Not available

THORIUM NITRATE:

■ OCCUPATIONAL and PUBLIC DOSE LIMITS

Application	Dose Limit	Public
Occupational	20 mSv per year averaged over a period of five consecutive calendar years *	1 mSv in a year
Effective Dose	150 mSv 500 mSv 500 mSv	15 mSv 50 mSv

Annual equivalent dose to - the lens of the eye -

the skin - the hands and feet

* The effective dose shall not exceed 50 mSv in a single year. In addition, when a pregnancy is declared, the embryo or foetus, shall be afforded the same level of protection as required for members of the public.

Exposure Limits for radioactive materials are based upon their pulmonary clearance times. To describe the clearance of inhaled radioactive materials from the lungs, materials are classified as D, W, or Y which refers to their retention time in the pulmonary region. The classification is applied to a range of half lives for:

D = less than 10 days; W = 10 - 100 days and Y = greater than 100 days.

For natural uranium (NAT U):

Annual Limits of Intake (ALI) (Inhalation): Class W 180 Bq

Class Y 4700 Bq

(Ingestion): No classes 59,200 Bq

[ICRP Pub. 6]

Derived Air Concentration Limit: 0.074 Bq/m³.

Radiation: Annual Limits on Intake (ALI) of radionuclides:

Radiation Workers - 20 milliSieverts (mSv) per year averaged over 5 years with a maximum of 50 mSV in any one year.

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Chemwatch Material Safety Data Sheet

Revision No: 3

Chemwatch 7600-56

Issue Date: 29-Jan-2010

CD 2010/1

Members of Public - 1 mSv [ICRP Publication 60, 1990]
(10 mSv = 1 rem)

Recent debate(1) suggests that levels below 1 mSv a year can be harmful to humans as a result of cell damage that can only be detected after several divisions (radiation-induced genomic instability). Progeny of cells irradiated, in vitro, with extremely low levels of alpha-radiation (equivalent to a single alpha-particle passing through a single cell) contained three and a half times as many chromosomal aberrations, after 10-13 divisions, as descendants of cells that were not irradiated. Further evidence is suggestive that some individuals may carry genes that protect them from radiation-induced damage of this type.

(1) New Scientist Oct. 1997 No. 2103.

Most individuals receive about 2.5 mSv every year from exposure to natural sources, including cosmic rays and the uranium in granite bedrock. In general individuals who are subject to 1000 mSv or more develop radiation sickness requiring immediate medical attention. Half of all individuals exposed to 4500 mSv will die within 60 days. Even small doses can increase the risk of cancer. On average, if 2,500 people are exposed to a single rem of radiation, one will die of induced cancer. The US EPA recommends that a contaminated area be abandoned if decontamination efforts cannot reduce the extra risk of cancer death to about one in 10,000.

As the principal hazard of exposure to thorium compounds is radiological, concentration limits set for Th(232) and Th(228) should be observed. Exposure limits for radioactive materials are based upon their pulmonary clearance times. To describe the clearance of inhaled radioactive materials from the lungs, materials are classified as D, W or Y which refers to their retention time in the pulmonary region. The classification applied to a range of half-lives for;

D: less than 10 days; W: 10-100 days and for Y: greater than 100 days.

For natural thorium : Th(232); Annual Limits of Intake (ALI) Inhalation:

Class W: 90 Bq

Class Y: 90 Bq Annual Limits of Intake (ALI) Oral (classes do not apply): 50,000 Bq Derived Air Concentration Limits: 0.0375 Bq/m3.

WATER:

- No exposure limits set by NOHSC or ACGIH.

PERSONAL PROTECTION



EYE

- Safety glasses with side shields
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59]

HANDS/FEET

- Wear general protective gloves, eg. light weight rubber gloves.

OTHER

- No special equipment needed when handling small quantities.

OTHERWISE:

- Overalls.
- Barrier cream.
- Eyewash unit.

RESPIRATOR

- Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half-face Respirator	Full-Face Respirator
1000	10	-AUS P	-
1000	50	-	-AUS P
5000	50	Airline *	-
5000	100	-	-2 P
10000	100	-	-3 P
	100+		Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

- General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25-0.5 m/s (50-100 f/min)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min)

SPIRAX SARCO PHOSPHONATE TITRANT

Hazard Alert Code:
MODERATE

Chemwatch Material Safety Data Sheet

Revision No: 3

Chemwatch 7600-56

Issue Date: 29-Jan-2010

CD 2010/1

grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).

2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

- 1: Room air currents minimal or favourable to capture
- 2: Contaminants of low toxicity or of nuisance value only
- 3: Intermittent, low production.
- 4: Large hood or large air mass in motion

Upper end of the range

- 1: Disturbing room air currents
- 2: Contaminants of high toxicity
- 3: High production, heavy use
- 4: Small hood - local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Liquid; mixes with water.

PHYSICAL PROPERTIES

Liquid.

Mixes with water.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	Not Available	Viscosity	Not available
Boiling Range (°C)	Not Available	Solubility in water (g/L)	Miscible
Flash Point (°C)	Not Applicable	pH (1% solution)	Not Available
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not Available
Autoignition Temp (°C)	Not Applicable	Vapour Pressure (kPa)	Not Available
Upper Explosive Limit (%)	Not Applicable	Specific Gravity (water=1)	Not Available
Lower Explosive Limit (%)	Not Applicable	Relative Vapour Density (air=1)	Not Available
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

-
- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-

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Chemwatch Material Safety Data Sheet

Revision No: 3

Chemwatch 7600-56

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CD 2010/1

existing organ (eg. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

EYE

■ Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).

SKIN

■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

INHALED

■ Not normally a hazard due to non-volatile nature of product.

The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

A whole body dose of 2-10 Gray may cause loss of appetite, tiredness, nausea and vomiting, most severe after 6-12 hours. After this subsides a gross disturbance in blood cell distribution occurs with loss of white blood cells and platelets over weeks. The activity of bone marrow may become so depressed that overwhelming infections can occur and cause death. A dose of 4 Gray can lead to damage of the bowel lining, causing untreatable nausea, vomiting and diarrhoea, which may result in severe dehydration, collapse and death. Although repair of the damage may occur, failure of blood cell production can ensue. At 6 Gray, damage to the blood cell production and digestive systems can be fatal. Whole body doses of 30 Gray can cause nausea, vomiting, listlessness, drowsiness, weakness, tremors, convulsions, inco-ordination and death within hours. The reproductive organs are particularly sensitive to radiation. A dose of 0.3 Gray can cause temporary loss of fertility in men; there may be cessation of periods in women.

CHRONIC HEALTH EFFECTS

■ Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

TOXICITY AND IRRITATION

■ Not available. Refer to individual constituents.

THORIUM NITRATE:

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

■ Thorium and its compounds are mainly alpha particle emitters although beta and gamma radiation is also encountered

The radiological danger is considerably more serious than the chemical danger in view of the long time that all thorium compounds remain in the organs where they are deposited (mainly in bones, lungs, lymphatic glands etc.) leading to long-term alpha-irradiation of the tissues.

No significant acute toxicological data identified in literature search.

WATER:

■ No significant acute toxicological data identified in literature search.

CARCINOGEN

Nitrate or nitrite (ingested) under conditions that result in endogenous nitrosation

International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs

Group 2A

Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:
SPIRAX SARCO PHOSPHONATE TITRANT:

THORIUM NITRATE:

■ DO NOT discharge into sewer or waterways.

WATER:

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
water	LOW		LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

-
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: burial in a land-fill specifically licenced to accept chemical and / or pharmaceutical wastes or incineration in a licenced apparatus (after admixture with suitable combustible material).
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:

None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

SPIRAX SARCO PHOSPHONATE TITRANT

Hazard Alert Code:
MODERATE

Chemwatch Material Safety Data Sheet

Revision No: 3

Chemwatch 7600-56

Issue Date: 29-Jan-2010

CD 2010/1

None

REGULATIONS

Regulations for ingredients

thorium nitrate (CAS: 13823-29-5,14767-04-5,13470-07-0) is found on the following regulatory lists;

"Australia Inventory of Chemical Substances (AICS)"

water (CAS: 7732-18-5) is found on the following regulatory lists;

"Australia Inventory of Chemical Substances (AICS)", "IMO IBC Code Chapter 18: List of products to which the Code does not apply", "OECD Representative List of High Production Volume (HPV) Chemicals"

No data for Spirax Sarco Phosphonate Titrant (CW: 7600-56)

Section 16 - OTHER INFORMATION

Ingredients with multiple CAS Nos

Ingredient Name	CAS
thorium nitrate	13823-29-5, 14767-04-5, 13470-07-0

EXPOSURE STANDARD FOR MIXTURES

■ "Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration: ■ Composite Exposure Standard for Mixture (TWA) :100 mg/m³.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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Issue Date: 29-Jan-2010

Print Date:1-Jun-2010