SAFETY DATA SHEET

Agilent Technologies

Initial calibration verification standard part B, Part Number 190064900B

SECTION 1: Identification of the substance/mixture and of the company/ undertaking

1.1 Product identifier

Product name : Initial calibration verification standard part B, Part Number 190064900B

Part no. : 190064900B

1.2 Relevant identified uses of the substance or mixture and uses advised against

Material uses : Reagents and Standards for Analytical Chemistry Laboratory Use
500 ml

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000

e-mail address of person responsible for this SDS : pdl-msds_author@agilent.com

1.4 Emergency telephone number

Emergency telephone number (with hours of operation) : CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

H290	CORROSIVE TO METALS - Category 1
H314	SKIN CORROSION/IRRITATION - Category 1
H350	CARCINOGENICITY - Category 1A
H360D	REPRODUCTIVE TOXICITY (Unborn child) - Category 1A
H400	SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
H410	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H290 - May be corrosive to metals.
H314 - Causes severe skin burns and eye damage.
H350 - May cause cancer.
H360D - May damage the unborn child.
H410 - Very toxic to aquatic life with long lasting effects.

SECTION 2: Hazards identification

Precautionary statements

Prevention : P201 - Obtain special instructions before use.
P280 - Wear protective gloves. Wear protective clothing. Wear eye or face protection.
P234 - Keep only in original packaging.
P273 - Avoid release to the environment.

Response : P304 + P340 + P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician.
P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.
P303 + P361 + P353 + P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or physician.
P305 + P310 - IF IN EYES: Immediately call a POISON CENTER or physician.

Storage : P405 - Store locked up.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients : nitric acid
- diarsenic trioxide
- Lead

Supplemental label elements : Contains nickel powder, beryllium and cobalt. May produce an allergic reaction.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Restricted to professional users.

Special packaging requirements

Tactile warning of danger : Not applicable.

2.3 Other hazards

Other hazards which do not result in classification : Causes digestive tract burns.

SECTION 3: Composition/information on ingredients

3.2 Mixtures : Mixture

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]	Type
nitric acid	EC: 231-714-2 CAS: 7697-37-2 Index: 007-004-00-1	≥10 - ≤25	Ox. Liq. 2, H272 Skin Corr. 1A, H314 EUH071	[1] [2]
Antimony trioxide	EC: 215-175-0 CAS: 1309-64-4 Index: 051-005-00-X	≤0.3	Carc. 2, H351	[1] [2]
Diarsenic trioxide	EC: 215-481-4 CAS: 1327-53-3 Index: 033-003-00-0	≤0.15	Acute Tox. 2, H300 Skin Corr. 1B, H314 Carc. 1A, H350 Aquatic Acute 1, H400 (M=1) Aquatic Chronic 1, H410 (M=1)	[1] [2]
Lead	EC: 231-100-4 CAS: 7439-92-1 Index: 082-013-00-1	<0.3	Repr. 1A, H360FD (Fertility and Unborn child) Lact., H362	[1] [2]
Nickel	EC: 231-111-4	≤0.3	Skin Sens. 1, H317	[1] [2]

SECTION 3: Composition/information on ingredients

	CAS: 7440-02-0 Index: 028-002-01-4		Carc. 2, H351 STOT RE 1, H372 Aquatic Chronic 3, H412	
Silver	EC: 231-131-3 CAS: 7440-22-4	≤0.3	Aquatic Acute 1, H400 (M=1000) Aquatic Chronic 1, H410 (M=1000)	[1] [2]
Thallium	EC: 231-138-1 CAS: 7440-28-0 Index: 081-001-00-3	≤0.15	Acute Tox. 2, H300 Acute Tox. 2, H330 STOT RE 2, H373 Aquatic Chronic 4, H413	[1]
Beryllium	EC: 231-150-7 CAS: 7440-41-7 Index: 004-001-00-7	≤0.15	Acute Tox. 3, H301 Acute Tox. 2, H330 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Carc. 1B, H350i (inhalation) STOT SE 3, H335 STOT RE 1, H372	[1] [2]
Cadmium	EC: 231-152-8 CAS: 7440-43-9 Index: 048-002-00-0	≤0.3	Acute Tox. 2, H330 Muta. 2, H341 Carc. 1B, H350 Repr. 2, H361fd (Fertility and Unborn child) STOT RE 1, H372 Aquatic Acute 1, H400 (M=10000) Aquatic Chronic 1, H410 (M=10000)	[1] [2] [5]
Cobalt	EC: 231-158-0 CAS: 7440-48-4 Index: 027-001-00-9	≤0.3	Resp. Sens. 1, H334 Skin Sens. 1, H317 Aquatic Chronic 4, H413	[1] [2]
Copper	EC: 231-159-6 CAS: 7440-50-8	≤0.3	Aquatic Acute 1, H400 (M=1) Aquatic Chronic 3, H412	[1] [2]
Zinc	EC: 231-175-3 CAS: 7440-66-6 Index: 030-001-00-1	≤0.3	Pyr. Sol. 1, H250 Water-react. 1, H260 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)	[1]
Selenium	EC: 231-957-4 CAS: 7782-49-2 Index: 034-001-00-2	≤0.15	Acute Tox. 3, H301 Acute Tox. 3, H331 STOT RE 2, H373 Aquatic Chronic 4, H413 **See Section 16 for the full text of the H statements declared above.**	[1] [2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
[5] Substance of equivalent concern
[6] Additional disclosure due to company policy

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

Inhalation : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes severe burns.

Ingestion : Corrosive to the digestive tract. Causes burns.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

SECTION 4: First aid measures

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced foetal weight
increase in foetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced foetal weight
increase in foetal deaths
skeletal malformations

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : In a fire or if heated, a pressure increase will occur and the container may burst. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products : Decomposition products may include the following materials:
nitrogen oxides

5.3 Advice for firefighters

Special precautions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

Additional information : Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead and zinc.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

SECTION 6: Accidental release measures

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if without risk. Move containers from spill area. The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Separate from alkalis. Keep away from metals. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
E1	100	200

7.3 Specific end use(s)

Recommendations : Industrial applications, Professional applications.

Industrial sector specific solutions : Not applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
nitric acid	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** STEL: 2.6 mg/m³ 15 minutes. STEL: 1 ppm 15 minutes.
Antimony trioxide	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** TWA: 0.5 mg/m³, (as Sb) 8 hours.
Diarsenic trioxide	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** TWA: 0.1 mg/m³, (as As) 8 hours.
Lead	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** TWA: 0.15 mg/m³ 8 hours.
Nickel	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin.** TWA: 0.5 mg/m³, (as Ni) 8 hours.
Silver	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** TWA: 0.1 mg/m³ 8 hours.
Beryllium	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Notes: as Be** TWA: 0.002 mg/m³, (as Be) 8 hours.
Cadmium	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Notes: as Cd** TWA: 0.025 mg/m³, (as Cd) 8 hours.
Cobalt	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Inhalation sensitiser.** TWA: 0.1 mg/m³ 8 hours.
Copper	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** STEL: 2 mg/m³, (as Cu) 15 minutes. Form: Dusts and Mists TWA: 1 mg/m³, (as Cu) 8 hours. Form: Dusts and Mists TWA: 0.2 mg/m³, (as Cu) 8 hours. Form: Fume
Selenium	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** TWA: 0.1 mg/m³, (as Se) 8 hours.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

8.2 Exposure controls

Appropriate engineering controls : If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

SECTION 8: Exposure controls/personal protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid. [Clear.]

Colour : Light

Odour : Odourless.

Odour threshold : Not available.

pH : <2

Melting point/freezing point : 0°C

Initial boiling point and boiling range : 100°C

Flash point : Not available.

Evaporation rate : Not available.

Flammability (solid, gas) : Not applicable.

Upper/lower flammability or explosive limits : Not available.

Vapour pressure : Not available.

Vapour density : Not available.

Relative density : 1

Density : 1 g/cm³

SECTION 9: Physical and chemical properties

Solubility(ies) : Easily soluble in the following materials: cold water and hot water.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Explosive properties : Not available.

Oxidising properties : Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Flammable in the presence of the following materials or conditions: heat
Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminium, tin, lead and zinc.

10.5 Incompatible materials : Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air.
Reactive or incompatible with the following materials:
alkalis
metals

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
nitric acid	LC50 Inhalation Vapour	Rat	2500 ppm	1 hours
	LC50 Inhalation Vapour	Rat	130 mg/m³	4 hours
Antimony trioxide	LD50 Oral	Rat	>20 g/kg	-
Diarsenic trioxide	LD50 Oral	Rat	10 mg/kg	-
Nickel	LD50 Oral	Rat	>9000 mg/kg	-
Cobalt	LC50 Inhalation Dusts and mists	Rat - Male, Female	<0.05 mg/l	4 hours
	LD50 Oral	Rat	550 mg/kg	-
Copper	LC50 Inhalation Dusts and mists	Rat	>5.11 mg/l	4 hours
	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	>2500 mg/kg	-
Selenium	LD50 Oral	Rat	6700 mg/kg	-

Acute toxicity estimates

SECTION 11: Toxicological information

Route	ATE value
Oral Inhalation (dusts and mists)	3125 mg/kg 16.13 mg/l

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Antimony trioxide	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
Silver	Skin - Erythema/Eschar Eyes - Redness of the conjunctivae	Rabbit Rabbit	0.33 1	- -	24 to 48 hours 72 hours

Sensitiser

Conclusion/Summary : Not available.

Skin : May cause skin sensitisation.

Respiratory : May cause sensitisation by inhalation.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Beryllium	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Nickel	Category 1	Not determined	Not determined
Thallium	Category 2	Not determined	Not determined
Beryllium	Category 1	Not determined	Not determined
Cadmium	Category 1	Not determined	Not determined
Selenium	Category 2	Not determined	Not determined

Aspiration hazard

Not available.

Information on likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Inhalation : No known significant effects or critical hazards.

Ingestion : Corrosive to the digestive tract. Causes burns.

Skin contact : Causes severe burns.

Eye contact : Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

SECTION 11: Toxicological information

Ingestion : Adverse symptoms may include the following:
stomach pains
reduced foetal weight
increase in foetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced foetal weight
increase in foetal deaths
skeletal malformations

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General : No known significant effects or critical hazards.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : May damage the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
nitric acid	Acute LC50 180000 µg/l Marine water	Crustaceans - Carcinus maenas - Adult	48 hours
	Acute LC50 72 ppm Fresh water	Fish - Gambusia affinis - Adult	96 hours
Antimony trioxide	Acute EC50 730 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 740 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 560 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 423450 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >530 mg/l Fresh water	Fish - Lepomis macrochirus - Young of the year	96 hours
	Chronic NOEC 200 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
Diarsenic trioxide	Acute EC50 34.7 mg/l Fresh water	Algae - Scenedesmus subspicatus	72 hours
	Acute EC50 2.5 mg/l Fresh water	Daphnia - Daphnia magna -	48 hours

SECTION 12: Ecological information

		Neonate	
	Acute LC50 3380 µg/l Marine water	Fish - Terapon jarbua - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic EC10 9.4 mg/l Fresh water	Algae - Scenedesmus subspicatus	72 hours
	Chronic IC10 1.3 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	21 days
Lead	Acute EC50 105 ppb Marine water	Algae - Chaetoceros sp. - Exponential growth phase	72 hours
	Acute EC50 0.489 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 8000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 530 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 4400 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.44 ppm Fresh water	Fish - Cyprinus carpio - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 0.25 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.03 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
Nickel	Acute EC50 2 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
	Acute EC50 450 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 1000 µg/l Marine water	Daphnia - Daphnia magna	48 hours
	Acute IC50 0.31 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 47.5 ng/L Fresh water	Fish - Heteropneustes fossilis	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 3.5 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
Silver	Acute EC50 1.4 µg/l Marine water	Algae - Chroomonas sp.	4 days
	Acute EC50 0.24 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 11 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 2.13 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 5 mg/l Marine water	Algae - Glenodinium halli	72 hours
Thallium	Acute LC50 9 mg/l Marine water	Crustaceans - Homarus americanus - Larvae	48 hours
	Acute LC50 650 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 1.8 mg/l Fresh water	Fish - Pimephales promelas	96 hours
Beryllium	Acute LC50 1000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 37.9 mg/l Fresh water	Fish - Pimephales promelas	96 hours
Cadmium	Acute EC50 97 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Acute EC50 0.095 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 200 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 13.5 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 0.072 µg/l Marine water	Crustaceans - Amphipoda - Adult	48 hours
	Acute LC50 1 µg/l Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 2 µg/l Fresh water	Algae - Parachlorella kessleri - Exponential growth phase	72 hours
	Chronic NOEC 0.02 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
Cobalt	Acute LC50 4400 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 3.4 mg/l Fresh water	Fish - Pimephales promelas	96 hours
Copper	Acute EC50 1100 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 2.1 µg/l Fresh water	Daphnia - Daphnia longispina - Juvenile (Fledgling, Hatchling, Weanling)	48 hours

SECTION 12: Ecological information

	Acute IC50 13 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Acute IC50 5.4 mg/l Marine water	Aquatic plants - Plantae - Exponential growth phase	72 hours
	Acute LC50 0.072 µg/l Marine water	Crustaceans - Amphipoda - Adult	48 hours
	Acute LC50 7.56 µg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic NOEC 2.5 µg/l Marine water	Algae - Nitzschia closterium - Exponential growth phase	72 hours
	Chronic NOEC 7 mg/l Fresh water	Aquatic plants - Ceratophyllum demersum	3 days
	Chronic NOEC 0.02 mg/l Fresh water	Crustaceans - Cambarus bartonii - Mature	21 days
	Chronic NOEC 2 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 0.8 µg/l Fresh water	Fish - Oreochromis niloticus - Juvenile (Fledgling, Hatchling, Weanling)	6 weeks
Zinc	Acute EC50 106 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Acute EC50 10000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute IC50 65 µg/l Marine water	Algae - Nitzschia closterium - Exponential growth phase	4 days
	Acute LC50 65 µg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 68 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 12.21 µg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic EC10 27.3 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Chronic EC10 59.2 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 9 mg/l Fresh water	Aquatic plants - Ceratophyllum demersum	3 days
	Chronic NOEC 178 µg/l Marine water	Crustaceans - Palaemon elegans	21 days
	Chronic NOEC 2.6 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
Selenium	Acute EC50 99000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	3 days
	Acute EC50 96000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	4 days
	Acute EC50 2400 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 940 µg/l Fresh water	Crustaceans - Hyalella azteca - Adult	48 hours
	Acute LC50 430 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.93 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 85 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 0.59 mg/l Fresh water	Fish - Heteropneustes fossilis	30 days

12.2 Persistence and degradability

Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
nitric acid	-	-	Readily

SECTION 12: Ecological information

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Nitric acid	-0.21	-	low
Diarsenic trioxide	-	0.143	low
Silver	-	70	low
Cobalt	-	15600	high
Selenium	-	1.03	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	IMDG	IATA
14.1 UN number	UN3264	UN3264	UN3264
14.2 UN proper shipping name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid)	Corrosive liquid, acidic, inorganic, n.o.s. (nitric acid)
14.3 Transport hazard class(es)	8 	8 	8 
14.4 Packing group	III	III	III

SECTION 14: Transport information

14.5 Environmental hazards	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

ADR/RID : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Hazard identification number 80
Limited quantity 5 L
Special provisions 274
Tunnel code (E)

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-A, S-B
Special provisions 223, 274

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 5 L. Packaging instructions: 852. Cargo Aircraft Only: 60 L. Packaging instructions: 856. Limited Quantities - Passenger Aircraft: 1 L. Packaging instructions: Y841.
Special provisions A3, A803

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
Diarsenic trioxide	Carcinogen	Listed	8	2/17/2012

Substances of very high concern

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
Diarsenic trioxide Cadmium -	Carcinogen Carcinogen Substance of equivalent concern for human health	Candidate Candidate Candidate	ED/67/2008 ED/69/2013 ED/69/2013	12/17/2010 6/20/2013 6/20/2013

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Restricted to professional users.

Other EU regulations

Ozone depleting substances (1005/2009/EU)

SECTION 15: Regulatory information

Not listed.

Prior Informed Consent (PIC) (649/2012/EU)

Not listed.

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

Category
E1

National regulations

Product/ingredient name	List name	Name on list	Classification	Notes
diarsenic trioxide	UK Occupational Exposure Limits EH40 - WEL	arsenic compounds Except arsine	Carc.	-
lead powder [particle diameter < 1 mm]	UK Occupational Exposure Limits EH40 - WEL	lead	Carc.	-
beryllium	UK Occupational Exposure Limits EH40 - WEL	beryllium	Carc.	-
cadmium (non-pyrophoric)	UK Occupational Exposure Limits EH40 - WEL	cadmium	Carc.	-

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Ingredient name	List name	Status
Lead (Pb)	Heavy metals - Annex 1	Listed
Cadmium (Cd)	Heavy metals - Annex 1	Listed

Inventory list

Australia : All components are listed or exempted.

Canada : All components are listed or exempted.

China : All components are listed or exempted.

Europe : All components are listed or exempted.

Japan : **Japan inventory (ENCS)**: All components are listed or exempted.
Japan inventory (ISHL): All components are listed or exempted.

Malaysia : Not determined.

New Zealand : All components are listed or exempted.

Philippines : Not determined.

Republic of Korea : All components are listed or exempted.

Taiwan : All components are listed or exempted.

SECTION 15: Regulatory information

Thailand : Not determined.

Turkey : Not determined.

United States : All components are listed or exempted.

Viet Nam : Not determined.

15.2 Chemical safety assessment : This product contains substances for which Chemical Safety Assessments might still be required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Met. Corr. 1, H290	Expert judgment
Skin Corr. 1, H314	On basis of test data
Carc. 1A, H350	Calculation method
Repr. 1A, H360D (Unborn child)	Calculation method
Aquatic Acute 1, H400	Calculation method
Aquatic Chronic 1, H410	Calculation method

Full text of abbreviated H statements

H250	Catches fire spontaneously if exposed to air.
H260	In contact with water releases flammable gases which may ignite spontaneously.
H272	May intensify fire; oxidiser.
H300	Fatal if swallowed.
H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H350i (inhalation)	May cause cancer by inhalation.
H351	Suspected of causing cancer.
H360D	May damage the unborn child.
H360FD	May damage fertility. May damage the unborn child.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H362	May cause harm to breast-fed children.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
H413	May cause long lasting harmful effects to aquatic life.

SECTION 16: Other information

Full text of classifications [CLP/GHS]

Acute Tox. 2, H300	ACUTE TOXICITY (oral) - Category 2
Acute Tox. 2, H330	ACUTE TOXICITY (inhalation) - Category 2
Acute Tox. 3, H301	ACUTE TOXICITY (oral) - Category 3
Acute Tox. 3, H331	ACUTE TOXICITY (inhalation) - Category 3
Aquatic Acute 1, H400	SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
Aquatic Chronic 1, H410	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1
Aquatic Chronic 3, H412	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
Aquatic Chronic 4, H413	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 4
Carc. 1A, H350	CARCINOGENICITY - Category 1A
Carc. 1B, H350	CARCINOGENICITY - Category 1B
Carc. 1B, H350i (inhalation)	CARCINOGENICITY (inhalation) - Category 1B
Carc. 2, H351	CARCINOGENICITY - Category 2
EUH071	Corrosive to the respiratory tract.
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Lact., H362	REPRODUCTIVE TOXICITY - Effects on or via lactation
Muta. 2, H341	GERM CELL MUTAGENICITY - Category 2
Ox. Liq. 2, H272	OXIDISING LIQUIDS - Category 2
Pyr. Sol. 1, H250	PYROPHORIC SOLIDS - Category 1
Repr. 1A, H360D	REPRODUCTIVE TOXICITY (Unborn child) - Category 1A
Repr. 1A, H360FD	REPRODUCTIVE TOXICITY (Fertility and Unborn child) - Category 1A
Repr. 2, H361fd	REPRODUCTIVE TOXICITY (Fertility and Unborn child) - Category 2
Resp. Sens. 1, H334	RESPIRATORY SENSITISATION - Category 1
Skin Corr. 1, H314	SKIN CORROSION/IRRITATION - Category 1
Skin Corr. 1A, H314	SKIN CORROSION/IRRITATION - Category 1A
Skin Corr. 1B, H314	SKIN CORROSION/IRRITATION - Category 1B
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
Skin Sens. 1, H317	SKIN SENSITISATION - Category 1
STOT RE 1, H372	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 1
STOT RE 2, H373	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
STOT SE 3, H335	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3
Water-react. 1, H260	SUBSTANCES AND MIXTURES WHICH IN CONTACT WITH WATER EMIT FLAMMABLE GASES - Category 1

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