



SAFETY DATA SHEET

MATERION

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

1.1. Product identifier

Trade name or designation of the mixture Ge-As-Se 50-5-45 at%

Synonyms None.

Document number 1SU

Materion Code 1SU

Issue date 18-April-2016

Version number 02

Revision date 12-January-2018

Supersedes date 18-April-2016

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

Identified uses Not available.

Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name Materion Advanced Chemicals Inc.

Address 407 N. 13th Street
1316 W. St. Paul Avenue
Milwaukee, WI 53233
United States

Division Milwaukee

Telephone 414.212.0257

e-mail advancedmaterials@materion.com

Contact person Noreen Atkinson

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

Health hazards

| | |
|----------------------------------------------------|-------------|
| Acute toxicity, oral | Category 3 |
| Acute toxicity, inhalation | Category 3 |
| Carcinogenicity | Category 1A |
| Specific target organ toxicity - repeated exposure | Category 2 |

Environmental hazards

| | | |
|----------------------------------------------------------------|------------|---------------------------------------------------------|
| Hazardous to the aquatic environment, long-term aquatic hazard | Category 2 | H411 - Toxic to aquatic life with long lasting effects. |
|----------------------------------------------------------------|------------|---------------------------------------------------------|

Hazard summary DANGER

Very toxic. Toxic by inhalation and if swallowed. Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects. Cancer hazard. Irritating to eyes and skin. Danger of cumulative effects. Prolonged exposure may cause chronic effects. Dangerous for the environment if discharged into watercourses. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Arsenic, Selenium

Hazard pictograms



Signal word

None.

Hazard statements

H401

The mixture does not meet the criteria for classification.

H411

Toxic to aquatic life.

Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P273

Observe good industrial hygiene practices.
Avoid release to the environment.

Response

Wash hands after handling.

Storage

Store away from incompatible materials.

Disposal

Dispose of waste and residues in accordance with local authority requirements.

Supplemental label information

For further information, please contact the Product Stewardship Department at +1.800.862.4118.

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

| Chemical name | % | CAS-No. / EC No. | REACH Registration No. | INDEX No. | Notes |
|------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------|------------------------|--------------|-------|
| Selenium | 40 - 60 | 7782-49-2 231-957-4 | - | 034-001-00-2 | |
| Classification: | Acute Tox. 3;H301, Acute Tox. 3;H331, STOT RE 2;H373 | | | | |
| Arsenic | 2 - 10 | 7440-38-2 231-148-6 | - | 033-001-00-X | |
| Classification: | Acute Tox. 3;H301, Acute Tox. 3;H331, Carc. 1A;H350, Aquatic Acute 1;H400, Aquatic Chronic 1;H410 | | | | |
| Other components below reportable levels | 30 - 50 | | | | |

List of abbreviations and symbols that may be used above

M: M-factor

vPvB: very persistent and very bioaccumulative substance.

PBT: persistent, bioaccumulative and toxic substance.

#: This substance has been assigned Community workplace exposure limit(s).

Composition comments

The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact

Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact

Rinse with water. Get medical attention if irritation develops and persists.

Ingestion

Rinse mouth. Get medical attention if symptoms occur.

4.2. Most important symptoms and effects, both acute and delayed

Headache.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards

No unusual fire or explosion hazards noted.

5.1. Extinguishing media

Suitable extinguishing media Powder. Foam. Carbon dioxide (CO₂).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Special protective equipment for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special firefighting procedures Move containers from fire area if you can do so without risk.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Keep unnecessary personnel away. For personal protection, see section 8 of the SDS.

For emergency responders Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Stop the flow of material, if this is without risk. Following product recovery, flush area with water.

6.4. Reference to other sections

For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid prolonged exposure. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

| Components | Type | Value | Form |
|--------------------------|------|-----------------------|---------------------|
| Selenium (CAS 7782-49-2) | MAK | 0,1 mg/m ³ | Inhalable fraction. |
| | STEL | 0,3 mg/m ³ | Inhalable fraction. |

Belgium. Exposure Limit Values.

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,2 mg/m ³ |

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,05 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,2 mg/m ³ |

Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

| Components | Type | Value |
|--------------------------|------|-----------------------|
| Arsenic (CAS 7440-38-2) | MAC | 0,1 mg/m ³ |
| Selenium (CAS 7782-49-2) | MAC | 0,1 mg/m ³ |

Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended.

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,2 mg/m ³ |

Czech Republic. OELs. Government Decree 361

| Components | Type | Value |
|--------------------------|---------|-----------------------|
| Arsenic (CAS 7440-38-2) | Ceiling | 0,4 mg/m ³ |
| | TWA | 0,1 mg/m ³ |
| Selenium (CAS 7782-49-2) | Ceiling | 0,2 mg/m ³ |
| | TWA | 0,1 mg/m ³ |

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,03 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m ³ |

Finland. Workplace Exposure Limits

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m ³ |
| Selenium (CAS 7782-49-2) | STEL | 0,3 mg/m ³ |
| | TWA | 0,1 mg/m ³ |

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

| Components | Type | Value | Form |
|--------------------------|------|------------------------|---------------------|
| Selenium (CAS 7782-49-2) | TWA | 0,02 mg/m ³ | Inhalable fraction. |

Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace

| Components | Type | Value | Form |
|--------------------------|------|------------------------|---------------------|
| Selenium (CAS 7782-49-2) | AGW | 0,05 mg/m ³ | Inhalable fraction. |

Greece. OELs (Decree No. 90/1999, as amended)

| Components | Type | Value |
|--------------------------|------|-----------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,1 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,2 mg/m ³ |

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

| Components | Type | Value |
|--------------------------|---------|------------------------|
| Arsenic (CAS 7440-38-2) | Ceiling | 0,01 mg/m ³ |
| Selenium (CAS 7782-49-2) | STEL | 0,4 mg/m ³ |
| | TWA | 0,1 mg/m ³ |

Iceland. OELs. Regulation 154/1999 on occupational exposure limits

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m ³ |

Ireland. Occupational Exposure Limits

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m ³ |

Italy. Occupational Exposure Limits

| Components | Type | Value |
|--------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,2 mg/m ³ |

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

| Components | Type | Value |
|---------------------------|------|------------------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,03 mg/m ³ |
| Germanium (CAS 7440-56-4) | TWA | 2 mg/m ³ |
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m ³ |

Netherlands. OELs (binding)

| Components | Type | Value |
|-------------------------|------|--------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,0028 mg/m3 |

Norway. Administrative Norms for Contaminants in the Workplace

| Components | Type | Value |
|--------------------------|------|------------|
| Arsenic (CAS 7440-38-2) | TLV | 0,01 mg/m3 |
| Selenium (CAS 7782-49-2) | TLV | 0,05 mg/m3 |

Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1

| Components | Type | Value |
|--------------------------|------|------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m3 |
| Selenium (CAS 7782-49-2) | STEL | 0,3 mg/m3 |
| | TWA | 0,1 mg/m3 |

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

| Components | Type | Value |
|--------------------------|------|------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m3 |
| Selenium (CAS 7782-49-2) | TWA | 0,2 mg/m3 |

Romania. OELs. Protection of workers from exposure to chemical agents at the workplace

| Components | Type | Value |
|---------------------------|------|------------|
| Arsenic (CAS 7440-38-2) | STEL | 0,1 mg/m3 |
| | TWA | 0,01 mg/m3 |
| Germanium (CAS 7440-56-4) | STEL | 5 mg/m3 |
| | TWA | 2 mg/m3 |
| Selenium (CAS 7782-49-2) | STEL | 0,2 mg/m3 |
| | TWA | 0,1 mg/m3 |

Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents

| Components | Type | Value |
|--------------------------|------|-----------|
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m3 |

Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)

| Components | Type | Value | Form |
|--------------------------|------|-----------|---------------------|
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m3 | Inhalable fraction. |

Spain. Occupational Exposure Limits

| Components | Type | Value |
|--------------------------|------|------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m3 |
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m3 |

Sweden. OELs. Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2015:7)

| Components | Type | Value | Form |
|--------------------------|------|------------|-------------|
| Arsenic (CAS 7440-38-2) | TWA | 0,01 mg/m3 | Total dust. |
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m3 | Total dust. |

Switzerland. SUVA Grenzwerte am Arbeitsplatz

| Components | Type | Value | Form |
|--------------------------|------|------------|-----------------|
| Selenium (CAS 7782-49-2) | STEL | 0,16 mg/m3 | Inhalable dust. |
| | TWA | 0,02 mg/m3 | Inhalable dust. |

UK. EH40 Workplace Exposure Limits (WELs)

| Components | Type | Value |
|--------------------------|------|-----------|
| Arsenic (CAS 7440-38-2) | TWA | 0,1 mg/m3 |
| Selenium (CAS 7782-49-2) | TWA | 0,1 mg/m3 |

Biological limit values**Croatia. BLV. Dangerous Substance Exposure Limit Values at Workplace, Annexes 4 (as amended)**

| Components | Value | Determinant | Specimen | Sampling time |
|-------------------------|-------------|-------------|----------|---------------|
| Arsenic (CAS 7440-38-2) | 70 µg/l | Arsenic | Urine | * |
| | 0,93 umol/l | Arsenic | Urine | * |

* - For sampling details, please see the source document.

Czech Republic. Limit Values for Indicators of Biological Exposure Tests in Urine and Blood, Annex 2, Tables 1 and 2, Government Decree 432/2003 Sb.

| Components | Value | Determinant | Specimen | Sampling time |
|-------------------------|-----------------|-------------|---------------------|---------------|
| Arsenic (CAS 7440-38-2) | 0,075 µmol/mmol | Arsenic | Creatinine in urine | * |
| | 0,05 mg/g | Arsenic | Creatinine in urine | * |

* - For sampling details, please see the source document.

Finland. HTP-arvot, App 2., Biological Limit Values, (BRA/BGV), Social Affairs and Ministry of Health

| Components | Value | Determinant | Specimen | Sampling time |
|-------------------------|-----------|-------------------|----------|---------------|
| Arsenic (CAS 7440-38-2) | 70 nmol/l | Inorganic arsenic | Urine | * |

* - For sampling details, please see the source document.

France. Biological indicators of exposure (IBE) (National Institute for Research and Security (INRS, ND 2065))

| Components | Value | Determinant | Specimen | Sampling time |
|-------------------------|-----------|--------------------------------------|---------------------|---------------|
| Arsenic (CAS 7440-38-2) | 0,05 mg/g | Métabolites de l'arsenic inorganique | Creatinine in urine | * |

* - For sampling details, please see the source document.

Hungary. Chemical Safety at Workplace Ordinance Joint Decree No. 25/2000 (Annex 2): Permissible limit values of biological exposure (effect) indices

| Components | Value | Determinant | Specimen | Sampling time |
|--------------------------|----------------|-------------|---------------------|---------------|
| Arsenic (CAS 7440-38-2) | 0,13 mg/g | Arsenic | Creatinine in urine | * |
| | 0,2 µmol/mmol | Arsenic | Creatinine in urine | * |
| Selenium (CAS 7782-49-2) | 0,075 mg/g | Selenium | Creatinine in urine | * |
| | 0,11 µmol/mmol | Selenium | Creatinine in urine | * |

* - For sampling details, please see the source document.

Spain. Biological Limit Values (VLBs), Occupational Exposure Limits for Chemical Agents, Table 4

| Components | Value | Determinant | Specimen | Sampling time |
|-------------------------|---------|-------------------------------------------------------|----------|---------------|
| Arsenic (CAS 7440-38-2) | 35 µg/l | Arsénico inorgánico más metabolitos metilados como As | Urine | * |

* - For sampling details, please see the source document.

Switzerland. BAT-Werte (Biological Limit Values in the Workplace as per SUVA)

| Components | Value | Determinant | Specimen | Sampling time |
|-------------------------|---------|-------------------------------------------------|----------|---------------|
| Arsenic (CAS 7440-38-2) | 50 µg/l | Anorganisches Arsen und methylierte Metaboliten | Urine | * |

* - For sampling details, please see the source document.

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs) Not available.

Predicted no effect concentrations (PNECs) Not available.

8.2. Exposure controls

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

| | |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eye/face protection | Wear safety glasses with side shields (or goggles). |
| Skin protection | |
| - Hand protection | Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. |
| - Other | Wear suitable protective clothing. |
| Respiratory protection | In case of insufficient ventilation, wear suitable respiratory equipment. |
| Thermal hazards | Wear appropriate thermal protective clothing, when necessary. |
| Hygiene measures | Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. |
| Environmental exposure controls | Environmental manager must be informed of all major releases. |

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

| | |
|------------------------------------------------|----------------------------|
| Physical state | Solid. |
| Form | Solid. |
| Colour | Not available. |
| Odour | Not available. |
| Odour threshold | Not available. |
| pH | Not available. |
| Melting point/freezing point | 180 °C (356 °F) estimated |
| Initial boiling point and boiling range | 685 °C (1265 °F) estimated |
| Flash point | Not available. |
| Evaporation rate | Not available. |
| Flammability (solid, gas) | Not available. |

Upper/lower flammability or explosive limits

| | |
|------------------------------------------------|----------------------|
| Flammability limit - lower (%) | Not available. |
| Flammability limit - upper (%) | Not available. |
| Vapour pressure | 753,86 hPa estimated |
| Vapour density | Not available. |
| Relative density | Not available. |
| Solubility(ies) | |
| Solubility (water) | Not available. |
| Partition coefficient (n-octanol/water) | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| Viscosity | Not available. |
| Explosive properties | Not explosive. |
| Oxidising properties | Not oxidising. |

9.2. Other information

| | |
|-------------------------|----------------------------------|
| Density | 4,96 g/cm ³ estimated |
| Specific gravity | 4,96 estimated |

SECTION 10: Stability and reactivity

| | |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 10.1. Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| 10.2. Chemical stability | Material is stable under normal conditions. |
| 10.3. Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| 10.4. Conditions to avoid | Contact with incompatible materials. |
| 10.5. Incompatible materials | Acids. Strong oxidising agents. |

10.6. Hazardous decomposition products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

| | |
|---------------------|---------------------------------------------------------------------------------------------------------------------|
| Inhalation | Prolonged inhalation may be harmful. |
| Skin contact | No adverse effects due to skin contact are expected. |
| Eye contact | Direct contact with eyes may cause temporary irritation. |
| Ingestion | May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure. |

Symptoms Headache.

11.1. Information on toxicological effects

| | |
|------------------------------------------|-----------------------------------------------------------------------------|
| Acute toxicity | No data available. |
| Skin corrosion/irritation | Due to partial or complete lack of data the classification is not possible. |
| Serious eye damage/eye irritation | Due to partial or complete lack of data the classification is not possible. |
| Respiratory sensitisation | Due to partial or complete lack of data the classification is not possible. |
| Skin sensitisation | Due to partial or complete lack of data the classification is not possible. |
| Germ cell mutagenicity | Due to partial or complete lack of data the classification is not possible. |
| Carcinogenicity | Risk of cancer cannot be excluded with prolonged exposure. |

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

IARC Monographs. Overall Evaluation of Carcinogenicity

| | |
|--------------------------|-----------------------------------------------------|
| Arsenic (CAS 7440-38-2) | 1 Carcinogenic to humans. |
| Selenium (CAS 7782-49-2) | 3 Not classifiable as to carcinogenicity to humans. |

| | |
|-----------------------------------------------------------|-----------------------------------------------------------------------------|
| Reproductive toxicity | Due to partial or complete lack of data the classification is not possible. |
| Specific target organ toxicity - single exposure | Due to partial or complete lack of data the classification is not possible. |
| Specific target organ toxicity - repeated exposure | Due to partial or complete lack of data the classification is not possible. |
| Aspiration hazard | Due to partial or complete lack of data the classification is not possible. |
| Mixture versus substance information | No information available. |
| Other information | Not available. |

SECTION 12: Ecological information

12.1. Toxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

| Components | Species | Test results |
|-------------------------|---------|------------------------------------------------------------------|
| Arsenic (CAS 7440-38-2) | | |
| Aquatic | | |
| Fish | LC50 | Fathead minnow (<i>Pimephales promelas</i>) 9,9 mg/l, 96 hours |

* Estimates for product may be based on additional component data not shown.

12.2. Persistence and degradability No data is available on the degradability of this product.

12.3. Bioaccumulative potential No data available.

Partition coefficient n-octanol/water (log Kow) Not available.

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil No data available.

12.5. Results of PBT and vPvB assessment Not available.

12.6. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

12.7. Additional information

Estonia Dangerous substances in groundwater Data

| | |
|--------------------------|-----------------------------------------------|
| Arsenic (CAS 7440-38-2) | ARSENIC (AS) 100 UG/L ARSENIC (AS) 5 UG/L |
| Selenium (CAS 7782-49-2) | Selenium (Se) 5 UG/L Selenium (Se) 50 UG/L |

Estonia Dangerous substances in soil Data

| | |
|--------------------------|--------------------------------------------------------------------------|
| Arsenic (CAS 7440-38-2) | ARSENIC (AS) 20 mg/kg ARSENIC (AS) 30 mg/kg ARSENIC (AS) 50 mg/kg |
| Selenium (CAS 7782-49-2) | Selenium (Se) 1 mg/kg Selenium (Se) 20 mg/kg Selenium (Se) 5 mg/kg |

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Disposal methods/information Collect and reclaim or dispose in sealed containers at licensed waste disposal site.

Special precautions Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number UN3077

14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.

14.3. Transport hazard class(es)

Class 9

Subsidiary risk -

Label(s) 9

Hazard No. (ADR) 90

Tunnel restriction code E

14.4. Packing group III

14.5. Environmental hazards Yes

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number UN3077

14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.

14.3. Transport hazard class(es)

Class 9

Subsidiary risk -

Label(s) 9

14.4. Packing group III

14.5. Environmental hazards Yes

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number UN3077

14.2. UN proper shipping name Environmentally Hazardous Solid, N.o.s.

14.3. Transport hazard class(es)

Class 9
Subsidiary risk -
Label(s) 9

14.4. Packing group III

14.5. Environmental hazards Yes

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number UN3077

14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.

14.3. Transport hazard class(es)

Class 9
Subsidiary risk -

14.4. Packing group III

14.5. Environmental hazards Yes

ERG Code 9L

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Other information

Passenger and cargo aircraft Allowed with restrictions.

Cargo aircraft only Allowed with restrictions.

IMDG

14.1. UN number UN3077

14.2. UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., MARINE POLLUTANT

14.3. Transport hazard class(es)

Class 9
Subsidiary risk -

14.4. Packing group III

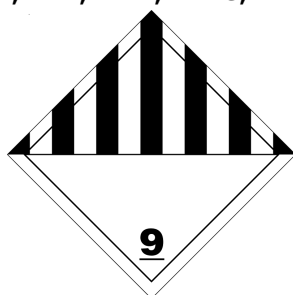
14.5. Environmental hazards

Marine pollutant Yes

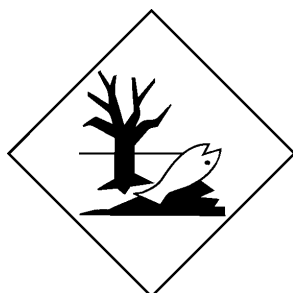
EmS F-A, S-F

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

ADN; ADR; IATA; IMDG; RID



Marine pollutant



SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Arsenic (CAS 7440-38-2)

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Arsenic (CAS 7440-38-2)

Selenium (CAS 7782-49-2)

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

National regulations

Follow national regulation for work with chemical agents. Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

Information on evaluation method leading to the classification of mixture

The classification for health and environmental hazards is derived by a combination of calculator methods and test data, if available.

Disclaimer

Materion Advanced Chemicals Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. This document has been prepared using data from sources considered to be technically reliable and the information is believed to be correct. Materion makes no warranties, expressed or implied, as to the accuracy of the information contained herein. Materion cannot anticipate all conditions under which this information and its products may be used and the actual conditions of use are beyond its control. The user is responsible to evaluate all available information when using this product for any particular use and to comply with all Federal, State, Provincial and Local laws, statutes and regulations.