

ALFAA00595

## Gadolinium foil

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

|                                                       |                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>产品说明:</b><br><b>Product Description:</b>           | 钆箔<br><b>Gadolinium foil</b>                                                                                                                                                                                                                                       |
| <b>Cat No. :</b><br><b>CAS No</b>                     | <b>00595</b><br>7440-54-2                                                                                                                                                                                                                                          |
| <b>Supplier</b>                                       | Avocado Research Chemicals Ltd.<br>(Part of Thermo Fisher Scientific)<br>Shore Road, Heysham<br>Lancashire, LA3 2XY,<br>United Kingdom<br>Office Tel: +44 (0) 1524 850506<br>Office Fax: +44 (0) 1524 850608                                                       |
| <b>Emergency Telephone Number</b>                     | For information <b>US</b> call: 001-800-227-6701 / <b>Europe</b> call: +32 14 57 52 11<br>Emergency Number <b>US</b> :001-201-796-7100 / <b>Europe</b> : +32 14 57 52 99<br><b>CHEMTREC</b> Tel. No. <b>US</b> :001-800-424-9300 / <b>Europe</b> :001-703-527-3887 |
| <b>E-mail address</b>                                 | begel.sdsdesk@thermofisher.com                                                                                                                                                                                                                                     |
| <b>Recommended Use</b><br><b>Uses advised against</b> | Laboratory chemicals.<br>No Information available                                                                                                                                                                                                                  |

### SECTION 2. HAZARD IDENTIFICATION

|                                                                 |                                  |                         |
|-----------------------------------------------------------------|----------------------------------|-------------------------|
| <b>Physical State</b><br>Solid                                  | <b>Appearance</b><br>Silver Grey | <b>Odor</b><br>Odorless |
| <b>Emergency Overview</b><br>Moisture sensitive. Air sensitive. |                                  |                         |

#### Classification of the substance or mixture

Based on available data, the classification criteria are not met

#### Label Elements

None required

#### **Physical and Chemical Hazards**

None identified.

#### **Health Hazards**

The product contains no substances which at their given concentration are considered to be hazardous to health.

#### **Environmental hazards**

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Is not likely mobile in the environment due its low water solubility. Spillage unlikely to penetrate soil.

This product does not contain any known or suspected endocrine disruptors.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Component  | CAS No    | Weight % |
|------------|-----------|----------|
| Gadolinium | 7440-54-2 | <=100    |

**SECTION 4. FIRST AID MEASURES****Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

**Skin Contact**

Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

**Inhalation**

Remove to fresh air. Get medical attention immediately if symptoms occur.

**Ingestion**

Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

**Most important symptoms and effects**

None reasonably foreseeable.

**Self-Protection of the First Aider**

No special precautions required.

**Notes to Physician**

Treat symptomatically.

**SECTION 5. FIRE-FIGHTING MEASURES****Suitable Extinguishing Media**

approved class D extinguishers. Do not use water or foam.

**Extinguishing media which must not be used for safety reasons**

Water may be ineffective.

**Specific Hazards Arising from the Chemical**

Thermal decomposition can lead to release of irritating gases and vapors.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**SECTION 6. ACCIDENTAL RELEASE MEASURES****Personal Precautions**

Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. No special precautions required.

**Environmental Precautions**

Should not be released into the environment. See Section 12 for additional Ecological Information. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

**Methods for Containment and Clean Up**

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Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Pick up and transfer to properly labelled containers.

Refer to protective measures listed in Sections 8 and 13.

**SECTION 7. HANDLING AND STORAGE****Handling**

Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.

**Storage**

Keep in a dry place. Keep away from acids.

**Specific Use(s)**

Use in laboratories

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Control Parameters****Monitoring methods**

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust MDHS 91 Metals and metalloids in workplace air by X-ray fluorescence spectrometry MDHS 99 Metals in air by ICP-AES

**Exposure Controls****Engineering Measures**

None under normal use conditions.

**Personal protective equipment**

|                        |                                                                                 |
|------------------------|---------------------------------------------------------------------------------|
| <b>Eye Protection</b>  | Wear safety glasses with side shields (or goggles) (European standard - EN 166) |
| <b>Hand Protection</b> | No special protective equipment required                                        |

| Glove material    | Breakthrough time                 | Glove thickness | EU standard | Glove comments        |
|-------------------|-----------------------------------|-----------------|-------------|-----------------------|
| Disposable gloves | See manufacturers recommendations | -               | EN 374      | (minimum requirement) |

**Skin and body protection** Long sleeved clothing

**Respiratory Protection** No protective equipment is needed under normal use conditions.

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
**Recommended Filter type:** Particle filter

**Small scale/Laboratory use** Maintain adequate ventilation

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls** No information available.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

|                                                |                          |                                          |
|------------------------------------------------|--------------------------|------------------------------------------|
| <b>Appearance</b>                              | Silver Grey              |                                          |
| <b>Physical State</b>                          | Solid                    |                                          |
| <b>Odor</b>                                    | Odorless                 |                                          |
| <b>Odor Threshold</b>                          | No data available        |                                          |
| <b>pH</b>                                      | No information available |                                          |
| <b>Melting Point/Range</b>                     | 1312 °C / 2393.6 °F      |                                          |
| <b>Softening Point</b>                         | No data available        |                                          |
| <b>Boiling Point/Range</b>                     | 3000 °C / 5432 °F        |                                          |
| <b>Flash Point</b>                             | No information available | <b>Method -</b> No information available |
| <b>Evaporation Rate</b>                        | Not applicable           | Solid                                    |
| <b>Flammability (solid,gas)</b>                | No information available |                                          |
| <b>Explosion Limits</b>                        | No data available        |                                          |
| <b>Vapor Pressure</b>                          | 23 hPa @ 20 °C           |                                          |
| <b>Vapor Density</b>                           | Not applicable           | Solid                                    |
| <b>Specific Gravity / Density</b>              | 7.89 g/cm3               | @ 20 °C                                  |
| <b>Bulk Density</b>                            | No data available        |                                          |
| <b>Water Solubility</b>                        | Insoluble in water       |                                          |
| <b>Solubility in other solvents</b>            | No information available |                                          |
| <b>Partition Coefficient (n-octanol/water)</b> |                          |                                          |
| <b>Autoignition Temperature</b>                | No data available        |                                          |
| <b>Decomposition Temperature</b>               | No data available        |                                          |
| <b>Viscosity</b>                               | Not applicable           | Solid                                    |
| <b>Explosive Properties</b>                    | No information available |                                          |
| <b>Oxidizing Properties</b>                    | No information available |                                          |

## SECTION 10. STABILITY AND REACTIVITY

|                                 |                                    |
|---------------------------------|------------------------------------|
| <b>Stability</b>                | Air sensitive. Moisture sensitive. |
| <b>Hazardous Reactions</b>      | None under normal processing.      |
| <b>Hazardous Polymerization</b> | No information available.          |
| <b>Conditions to Avoid</b>      | None known.                        |
| <b>Materials to avoid</b>       | Acids. Strong bases.               |

**Hazardous Decomposition Products** Gadolinium oxide.

## SECTION 11. TOXICOLOGICAL INFORMATION

## Product Information

|                                               |                   |
|-----------------------------------------------|-------------------|
| <b>(a) acute toxicity;</b>                    |                   |
| <b>(b) skin corrosion/irritation;</b>         | No data available |
| <b>(c) serious eye damage/irritation;</b>     | No data available |
| <b>(d) respiratory or skin sensitization;</b> |                   |
| <b>Respiratory</b>                            | No data available |
| <b>Skin</b>                                   | No data available |

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|                                            |                                                                                |
|--------------------------------------------|--------------------------------------------------------------------------------|
| (e) germ cell mutagenicity;                | No data available                                                              |
| (f) carcinogenicity;                       | No data available<br>There are no known carcinogenic chemicals in this product |
| (g) reproductive toxicity;                 | No data available                                                              |
| (h) STOT-single exposure;                  | No data available                                                              |
| (i) STOT-repeated exposure;                | No data available                                                              |
| Target Organs                              | No information available.                                                      |
| (j) aspiration hazard;                     | Not applicable<br>Solid                                                        |
| Symptoms / effects, both acute and delayed | No information available                                                       |

## SECTION 12. ECOLOGICAL INFORMATION

|                                       |                                                                                                                   |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Ecotoxicity effects                   | May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system. |
| Persistence and Degradability         | Product contains heavy metals. Discharge into the environment must be avoided. Special pre-treatment is necessary |
| Persistence                           | Insoluble in water, May persist.                                                                                  |
| Degradability                         | Not relevant for inorganic substances.                                                                            |
| Degradation in sewage treatment plant | Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.   |
| Bioaccumulative Potential             | May have some potential to bioaccumulate; Product has a high potential to bioconcentrate                          |
| Mobility in soil                      | Spillage unlikely to penetrate soil Is not likely mobile in the environment due its low water solubility          |
| Endocrine Disruptor Information       | This product does not contain any known or suspected endocrine disruptors                                         |
| Persistent Organic Pollutant          | This product does not contain any known or suspected substance                                                    |
| Ozone Depletion Potential             | This product does not contain any known or suspected substance                                                    |

## SECTION 13. DISPOSAL CONSIDERATIONS

|                                     |                                                                                                                                                                                                                             |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste from Residues/Unused Products | Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification. |
| Contaminated Packaging              | Empty remaining contents. Dispose of in accordance with local regulations. Do not re-use empty containers.                                                                                                                  |

**SAFETY DATA SHEET****Gadolinium foil**

**Other Information** Waste codes should be assigned by the user based on the application for which the product was used.

**SECTION 14. TRANSPORT INFORMATION****Road and Rail Transport**

**IMDG/IMO** Not regulated

**IATA** Not regulated

**Special Precautions for User** No special precautions required

**SECTION 15. REGULATORY INFORMATION****Measures on the Environmental Administration of New Chemical Substances Registration**

Registration/Notification number B1A222252544

Downstream users need to comply with the conditions of safe use of the chemical, understand the environmental and health hazard and risk management measures identified on the SDS as well as the local/national regulations concerning the chemical.

**International Inventories**

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

| Component  | The Inventory of Hazardous Chemicals (2015 Edition) | List of dangerous goods GB 12268 - 2012 | IECSC | EINECS    | TSCA | DSL | PICCS | ENCS | ISHL | AICS | KECL       |
|------------|-----------------------------------------------------|-----------------------------------------|-------|-----------|------|-----|-------|------|------|------|------------|
| Gadolinium | -                                                   | -                                       | -     | 231-162-2 | X    | -   | -     | X    |      | -    | KE-05-0661 |

**National Regulations****SECTION 16. OTHER INFORMATION**

**Prepared By** Health, Safety and Environmental Department  
**Creation Date** 09-Apr-2018  
**Revision Date** 31-Jul-2026  
**Revision Summary** Not applicable.

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

**Legend**

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

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**IECSC** - Chinese Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances

**AICS** - Australian Inventory of Chemical Substances  
**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit  
**ACGIH** - American Conference of Governmental Industrial Hygienists  
**DNEL** - Derived No Effect Level  
**RPE** - Respiratory Protective Equipment  
**LC50** - Lethal Concentration 50%  
**NOEC** - No Observed Effect Concentration  
**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average  
**IARC** - International Agency for Research on Cancer  
**PNEC** - Predicted No Effect Concentration  
**LD50** - Lethal Dose 50%  
**EC50** - Effective Concentration 50%  
**POW** - Partition coefficient Octanol:Water  
**vPvB** - very Persistent, very Bioaccumulative

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association  
**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road  
**OECD** - Organisation for Economic Co-operation and Development  
**BCF** - Bioconcentration factor

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code  
**MARPOL** - International Convention for the Prevention of Pollution from Ships  
**ATE** - Acute Toxicity Estimate  
**VOC** - (Volatile Organic Compound)

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>  
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**