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

1.1 Product identifier

Trade name Lanthanum, AAS standard solution, Specpure®, La 1000µg/ml
Stock number: 88074

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

Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Thermo Fisher (Kandel) GmbH
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com
Informing department: Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:
Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
GHS05 corrosion
Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC
C; Corrosive
R34: Causes burns.
Information concerning particular hazards for human and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
Other hazards that do not result in classification No information known.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008
The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS05

Signal word Danger

Hazard-determining components of labelling:
Nitric acid

Hazard statements
H314 Causes severe skin burns and eye damage.

Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Dangerous components:

Nitric acid

C R35; R8
Ox. Liq. 3, H272; Skin Corr. 1A, H314
5,0%

Non-Hazardous Ingredients

Lanthanum(III) oxide

CAS: 1312-81-5
EINECS: 215-200-5
0,12%

Water

CAS: 7732-18-5
EINECS: 231-791-2
94,88%

SECTION 4: First aid measures

4.1 Description of first aid measures

General information Instantly remove any clothing soiled by the product.
After inhalation Suppliy fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. Seek immediate medical advice.
After skin contact Instantly wash with water and soap and rinse thoroughly. Seek immediate medical advice.
After eye contact Rinse opened eye for several minutes under running water. Then consult doctor.
After swallowing Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Causes severe eye damage.

4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.
SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents: CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

5.2 Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
- Nitrogen oxides (NOx)
- Metal oxide

5.3 Advice for firefighters
Protective equipment:
- Wear self-contained breathing apparatus.
- Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation.

6.2 Environmental precautions
Do not allow material to be released to the environment without proper governmental permits.

6.3 Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Use neutralizing agent. Dispose of contaminated material as waste according to section 13. Ensure adequate ventilation.

Prevention of secondary hazards: No special measures required.

6.4 Reference to other sections
See Section 7 for information on safe handling. See section 8 for information on personal protection equipment. See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.

Information about protection against explosions and fires: No information known.

7.2 Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and containers: No special requirements.

Information about storage in one common storage facility:
Store away from strong bases.
Water reacts with many metals to give hydrogen, often violently. Water also reacts violently with many reactive organic and inorganic chemicals.
Further information about storage conditions:
- Keep container tightly sealed.
- Store in cool, dry conditions in well sealed containers.
- Store in a locked cabinet or with access restricted to technical experts or their assistants.

7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.1 Control parameters
Components with critical values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Component</th>
<th>Long-term value</th>
<th>Short-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7697-37-2 Nitric acid (5,0%)</td>
<td>AGW (Germany) Long-term value: 2,6 mg/m³, 1 ppm</td>
<td>EU, 13, 16</td>
</tr>
<tr>
<td></td>
<td>PEL (USA) Long-term value: 5 mg/m³, 2 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>REL (USA) Short-term value: 20 mg/m³, 4 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TLV (USA) Short-term value: 10 mg/m³, 4 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term value: 5,2 mg/m³, 2 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Additional information:
- No data

8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures should be adhered to in handling the chemicals. Keep away from foodstuffs, beverages and food. Instantly remove any soiled and impregnated garments. Wash hands during breaks and at the end of the work. Avoid contact with the eyes and skin. Maintain an ergonomically appropriate working environment.
Breathing equipment: Use breathing protection with high concentrations.
Recommended filter device for short term use:
Use a respirator with acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).
Protection of hands:
Check protective gloves prior to each use for their proper condition. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Material of gloves
- Neoprene
Penetration time of glove material (in minutes) Not determined
Eye protection:
- Tightly sealed safety glasses.
- Full face protection
Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance:
- Form: Liquid
- Colour: Clear
- Smell: Not determined
- Odour threshold: Not determined.
Trade name: Lanthanum, AAS standard solution, Specpure®, La 1000µg/ml

38.0.2 pH-value: Not determined.

Change in condition:
Melt temperature/Melting range: Not determined.

Boiling point/Boiling range: Not determined.
Sublimation temperature / start: Not determined.

Inflammability (solid, gaseous): Not determined.
Ignition temperature: Not determined.

Decomposition temperature: Not determined.
Self-inflammability: Product is not selfigniting.

Danger of explosion: Not determined.
Critical values for explosion:
Lower: Not determined.
Upper: Not determined.

Steam pressure at 20 °C: 23 hPa.

Density: Not determined.

Relative density: Not determined.

Vapour density: Not determined.

Evaporation rate: Not determined.

Solubility in / Miscibility with:
Water: Fully miscible.

Viscosity:
dynamic: Not determined.
kinematic: Not determined.

Solvent content:
Organic solvents: 0,0 %

Solids content: 0,1 %

9.2 Other information: No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity: No information known.

10.2 Chemical stability: Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions:
Water reacts violently with alkali metals.
Water reacts with many metals to give hydrogen, often violently. Water is also incompatible with many reactive organic and inorganic chemicals.

10.4 Conditions to avoid: No further relevant information available.

10.5 Incompatible materials:
Bases

10.6 Hazardous decomposition products:
Nitrogen oxides (NOx)
Metal oxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects:
Acute toxicity:
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.

LD/LC50 values that are relevant for classification:

7697-37-2 Nitric acid
Inhalative LC50/4H 0,13 mg/l/4H (rat)
Oral LD50 >8500 mg/kg (rat)

Skin irritation or corrosion: Causes severe skin burns.
Eye irritation or corrosion: Causes serious eye damage.
Sensitization: No sensitizing effect known.
Germ cell mutagenicity: No effects known.
Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

Reproductive toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for components in this product.

Specific target organ system toxicity - repeated exposure: No effects known.
Specific target organ system toxicity - single exposure: No effects known.
Aspiration hazard: No effects known.
Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
Corrosive

SECTION 12: Ecological information

12.1 Toxicity:
Aquatic toxicity: No further relevant information available.

12.2 Persistence and degradability: No further relevant information available.

12.3 Bioaccumulative potential: No further relevant information available.

12.4 Mobility in soil: No further relevant information available.

Additional ecological information:
General notes:
Do not allow product to reach ground water, water bodies or sewage system.
Do not allow material to be released to the environment without proper governmental permits.

Water hazard class 2 (Self-assessment): Hazardous for water.

12.5 Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.

12.6 Other adverse effects: No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods:
Recommendation:
Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.
Consult state, local or national regulations for proper disposal.
SECTION 14: Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>UN3264</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR, IMDG, IATA</td>
<td>UN3264</td>
</tr>
</tbody>
</table>

14.2 UN proper shipping name
ADR: 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
IMDG, IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

14.3 Transport hazard class(es)
ADR

<table>
<thead>
<tr>
<th>Class</th>
<th>8 (C1) Corrosive substances.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>8</td>
</tr>
</tbody>
</table>

IMDG, IATA

<table>
<thead>
<tr>
<th>Class</th>
<th>8 Corrosive substances.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>8</td>
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</tbody>
</table>

Packing group
ADR, IMDG, IATA

<table>
<thead>
<tr>
<th>Class</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

14.5 Environmental hazards:
Marine pollutant: No

14.6 Special precautions for user
Kemler Number: 80
EMS Number: F-A,S-B
Segregation groups Acids

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Transport category: Not applicable.

ADR

<table>
<thead>
<tr>
<th>Excepted quantities (EQ):</th>
<th>5L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport category</td>
<td>3</td>
</tr>
</tbody>
</table>

Tunnel restriction code: E

UN “Model Regulation”: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Australian Inventory of Chemical Substances
All ingredients are listed.

Standard for the Uniform Scheduling of Drugs and Poisons
7697-37-2 [Nitric acid] [55, 56]

National regulations

- Information about limitation of use: Employment restrictions concerning young persons must be observed.
- For use only by technically qualified individuals.
- Classification according to VbF: Not applicable
- Water hazard class: Water hazard class 2 (Self-assessment): hazardous for water.
- Other regulations, limitations and prohibitive regulations

ELINCS (European List of Notified Chemical Substances)
None of the ingredients is listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
None of the ingredients are listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
None of the ingredients is listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use)
None of the ingredients is listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Relevant phrases
H272 May intensify fire; oxidiser.
H314 Causes severe skin burns and eye damage.
H315 Causes severe skin burns and eye damage.
R35 Causes severe burns.
R8 Contact with combustible material may cause fire.

Department issuing SDS: Global Marketing Department

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VfP: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
**Trade name** Lanthanum, AAS standard solution, Specpure®, La 1000µg/ml

ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)