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

1.1. Product identifier
Product form : Substance (UVCB)
Substance name : Lanthanum Strontium Cobalt Iron Oxide
EC no : 266-340-9
CAS No : 66402-68-4
Other means of identification : Ceramic Materials and Wares
LSCF
Lanthanum strontium cobalt ferrite
Lanthanum strontium cobaltite ferrite

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

1.2.1. Relevant identified uses
Use of the substance/mixture : Laboratory chemicals; Manufacture of substances.

1.2.2. Uses advised against
No additional information available

1.3. Details of the supplier of the safety data sheet
Nexceris, LLC
404 Enterprise Drive
Lewis Center, Ohio 43035 - USA
T 614-842-6606
http://www.nexceris.com

1.4. Emergency telephone number

<table>
<thead>
<tr>
<th>Country</th>
<th>Official advisory body</th>
<th>Address</th>
<th>Emergency number</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRELAND (REPUBLIC OF)</td>
<td>National Poisons Information Centre</td>
<td>PO Box 1209 Beaumont Road 9 Dublin</td>
<td>+353 1 809 2166 (public, 8am - 10pm, 7/7)</td>
</tr>
<tr>
<td>UNITED KINGDOM</td>
<td>National Poisons Information Service</td>
<td>Dudley Road B18 1QH Birmingham</td>
<td>0844 892 0111 (UK only, Monday to Friday, 08.00 to 18.00 hours)</td>
</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Resp. Sens. 1 H334
Full text of H-phrases: see section 16

Adverse physicochemical, human health and environmental effects
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard pictograms (CLP) : 

GHS08

Signal word (CLP) : Danger.
Hazard statements (CLP) : H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
Precautionary statements (CLP) : P281 - Avoid breathing dust
P284 - Wear respiratory protection
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P342 + P311 - IF experiencing respiratory symptoms: Call a POISON CENTER/doctor
P501 - Dispose in a safe manner in accordance with local/national regulations.
2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lanthanum Strontium Cobalt Iron Oxide</td>
<td>(CAS No) 66402-68-4</td>
</tr>
<tr>
<td></td>
<td>(EC no) 266-340-9</td>
</tr>
</tbody>
</table>

% 100

Full text of H- and EUH-phrases: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general
Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation
If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

First-aid measures after skin contact
Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.

First-aid measures after eye contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion
Rinse mouth. Do NOT induce vomiting unless directed to do so by medical personnel.

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

Symptoms/injuries after inhalation
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/injuries after eye contact
Symptoms may include pain, blinking, tears and redness.

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

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media
None known.

5.2. Special hazards arising from the substance or mixture
No additional information available

5.3. Advice for firefighters

Firefighting instructions
Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting
Do not enter fire area without proper protective equipment, including respiratory protection. Wear fire/flame resistant/retardant clothing. Wear a self-contained breathing apparatus. EN469.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures
Evacuate unnecessary personnel.
Lanthanum Strontium Cobalt Iron Oxide
Safety Data Sheet
according to Regulation (EC) No. 453/2010

6.1.2. For emergency responders
Protective equipment : Equip cleanup crew with proper protection. Chemical goggles or safety glasses. Avoid breathing dust.
Emergency procedures : Ventilate area.

6.2. Environmental precautions
Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up : On land, sweep or shovel into suitable containers. Minimize generation of dust.

6.4. Reference to other sections
See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Handle in a well-ventilated area.
Hygiene measures : Wash hands thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions : Keep only in the original container in a cool well ventilated place.

7.3. Specific end use(s)
Laboratory chemicals; manufacture of substances.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th></th>
<th>Tricobalt tetraoxide (1306-06-1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>HTP-arvo (8h) (mg/m³) 0.02 mg/m³</td>
</tr>
<tr>
<td>Finland</td>
<td>Huomautus (Fl) (Co)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Cobalt oxides</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>WEL TWA (mg/m³) 0.1 mg/m³</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Remark (WEL) includes compounds, as Co, MDHS 30/2 (reference to measurement method), applies to cobalt dichloride and cobalt sulphate, asthmagen. See notation</td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Appropriate engineering controls : Avoid dispersal of dust in the air (ie, clearing dust surfaces with compressed air). Ensure good ventilation of the work station.
Personal protective equipment : Avoid all unnecessary exposure.
Hand protection : Dust impervious gloves. EN374
Eye protection : Chemical goggles or safety glasses. In case of dust production: protective goggles. EN166
Respiratory protection : Where excessive dust may result, use approved respiratory protection equipment. Use air-purifying respirator equipped with particulate filtering cartridges. Filtering Half-face mask (DIN EN 149)
Other information : When using, do not eat, drink or smoke.
Lanthanum Strontium Cobalt Iron Oxide
Safety Data Sheet
according to Regulation (EC) No. 453/2010

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Powder.</td>
</tr>
<tr>
<td>Colour</td>
<td>Black – grey.</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless.</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Self ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non flammable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble in water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Product is not explosive.</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No oxidizing properties.</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

VOC content : 0 %

SECTION 10: Stability and reactivity

10.1. Reactivity
No dangerous reactions known.

10.2. Chemical stability
The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Oxides.
SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>May cause allergy or asthma symptoms or breathing difficulties if inhaled.</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Not classified</td>
</tr>
<tr>
<td>Aspiration hazard</td>
<td>Not classified</td>
</tr>
<tr>
<td>Potential Adverse human health effects and symptoms</td>
<td>May cause allergy or asthma symptoms or breathing difficulties if inhaled.</td>
</tr>
</tbody>
</table>

SECTION 12: Ecological information

12.1. Toxicity

No additional information available.

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Substance</th>
<th>Persistence and degradability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lanthanum Strontium Cobalt Iron Oxide (66402-68-4)</td>
<td>Not established</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Substance</th>
<th>Bioaccumulative potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lanthanum Strontium Cobalt Iron Oxide (66402-68-4)</td>
<td>Not established</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

No additional information available.

12.5. Results of PBT and vPvB assessment

No additional information available.

12.6. Other adverse effects

Other information: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste disposal recommendations</td>
<td>Dispose in a safe manner in accordance with local/national regulations.</td>
</tr>
<tr>
<td>Ecology - waste materials</td>
<td>Avoid release to the environment.</td>
</tr>
</tbody>
</table>

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

Not considered a dangerous good for transport regulations

14.2. UN proper shipping name

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name (ADR)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Proper Shipping Name (IMDG)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Proper Shipping Name (IATA)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Proper Shipping Name (ADN)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Proper Shipping Name (RID)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

14.3. Transport hazard class(es)

<table>
<thead>
<tr>
<th>Mode of Transport</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Lanthanum Strontium Cobalt Iron Oxide
Safety Data Sheet
according to Regulation (EC) No. 453/2010

IMDG
Transport hazard class(es) (IMDG) : Not applicable

IATA
Transport hazard class(es) (IATA) : Not applicable

ADN
Transport hazard class(es) (ADN) : Not applicable

RID
Transport hazard class(es) (RID) : Not applicable

14.4. Packing group
Packing group (ADR) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable
Packing group (ADN) : Not applicable
Packing group (RID) : Not applicable

14.5. Environmental hazards
Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user
14.6.1. Overland transport : None
14.6.2. Transport by sea : None
14.6.3. Air transport : None
14.6.4. Inland waterway transport : No
14.6.5. Rail transport : No
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not subjected to ADN : No

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations
No REACH Annex XVII restrictions
Lanthanum Strontium Cobalt Iron Oxide is not on the REACH Candidate List
Contains no REACH candidate substance
Lanthanum Strontium Cobalt Iron Oxide is not on the REACH Annex XIV List
Contains no REACH Annex XIV substances.

VOC content : 0 %

15.1.2. National regulations
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Germany
Water hazard class (WGK) : 1 - slightly hazardous to water
WGK remark : Classification based on the components in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS)
15.2. Chemical safety assessment
No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:
Original Document.

Abbreviations and acronyms:
- CAS (Chemical Abstracts Service) number.
- GHS: Globally Harmonized System (of Classification and Labeling) of Chemicals
- OSHA: Occupational Safety & Health Administration
- TSCA: Toxic Substances Control Act

Data sources:
- Component Supplier SDSs.
- European Chemicals Agency (ECHA) Registered Substances list.

Other information:
- None.

Full text of H- and EUH-phrases:

<table>
<thead>
<tr>
<th>Resp. Sens. 1</th>
<th>Respiratory sensitisation Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>H334</td>
<td>May cause allergy or asthma symptoms or breathing difficulties if inhaled</td>
</tr>
</tbody>
</table>

SDS EU (REACH Annex II)

SDS Prepared by: The Redstone Group, LLC
6397 Emerald Pkwy, Suite 200
Dublin, OH 43016
T 614-923-7472 www.redstonegrp.com

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.