# SAFETY DATA SHEET
# Yttrium Iron Oxide (YIG, pieces)

## 1. Identification

### Product identifier

**Product name** Yttrium Iron Oxide (YIG, pieces)

**Internal identification** Replaces M-5000-034

**CAS number** 12063-56-8

### Recommended use of the chemical and restrictions on use

**Application** Physical vapor deposition of thin films

**Uses advised against** No specific uses advised against are identified.

### Details of the supplier of the safety data sheet

**Supplier** Kurt J Lesker Company

**Manufacturer**

Kurt J Lesker Company
1925 Route 51
Jefferson Hills, PA 15025
+1 412-387-9200

Kurt J Lesker Company LTD
United Kingdom
Austin House
Sidney Little Road
Churchfields Industrial Estate
St Leonards on Sea, East Sussex, TN38 9PU, United Kingdom
Customer Service: +44 (0) 1424 458100
msds@lesker.com

### Emergency telephone number

**Emergency telephone**

Emergency Numbers
North America [USA, Canada, Mexico]: 1-866-519-4752
Mainland China: (+86) 4001 2001 74
Europe: {int'l call prefix}-1-760-476-3961
Asia Pacific: {int'l call prefix}-1-760-476-3960
Middle East & Africa: {int'l call prefix}-1-760-476-3959
South Korea: +080-880-0455
Philippines: (+63) 2 83953471

## 2. Hazard(s) identification

### Classification of the substance or mixture

**Physical hazards** Not Classified

**Health hazards** Skin Irrit. 2 - H315 Eye Irrit. 2A - H319 STOT SE 3 - H335

**Environmental hazards** Not Classified

### Label elements

# Yttrium Iron Oxide (YIG, pieces)

**Hazard symbols**



| | |
|---|---|
| **Signal word** | Warning |
| **Hazard statements** | H315 Causes skin irritation.<br>H319 Causes serious eye irritation.<br>H335 May cause respiratory irritation. |
| **Precautionary statements** | P261 Avoid breathing dust.<br>P302+P352 If on skin: Wash with plenty of water.<br>P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.<br>P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P332+P313 If skin irritation occurs: Get medical advice/ attention.<br>P337+P313 If eye irritation persists: Get medical advice/ attention. |
| **Contains** | Yttrium Iron Oxide (YIG, pieces) |

**Other hazards**

This substance is not classified as PBT or vPvB according to current EU criteria.

## 3. Composition/information on ingredients

**Mixtures**

| | |
|---|---|
| **Yttrium Iron Oxide (YIG, pieces)**<br>CAS number: 12063-56-8 | **100%** |

**Composition comments** The exact percentage is withheld as a trade secret in accordance with 29 CFR 1910.1200.

## 4. First-aid measures

**Description of first aid measures**

| | |
|---|---|
| **General information** | Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel. |
| **Inhalation** | Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention. Place unconscious person on their side in the recovery position and ensure breathing can take place. |
| **Ingestion** | Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Place unconscious person on their side in the recovery position and ensure breathing can take place. Keep affected person under observation. Get medical attention. |
| **Skin Contact** | Rinse with water. |
| **Eye contact** | Rinse with water. Do not rub eye. Remove any contact lenses and open eyelids wide apart. Get medical attention if any discomfort continues. |
| **Protection of first aiders** | First aid personnel should wear appropriate protective equipment during any rescue. |

**Most important symptoms and effects, both acute and delayed**

# Yttrium Iron Oxide (YIG, pieces)

| | |
|---|---|
| **General information** | The severity of the symptoms described will vary dependent on the concentration and the length of exposure. |
| **Inhalation** | A single exposure may cause the following adverse effects: Irritation of nose, throat and airway. Difficulty in breathing. Coughing. |
| **Ingestion** | May cause irritation. |
| **Skin contact** | Redness. Irritating to skin. |
| **Eye contact** | Irritating to eyes. |

### Indication of immediate medical attention and special treatment needed

| | |
|---|---|
| **Notes for the doctor** | Treat symptomatically. |

## 5. Fire-fighting measures

### Extinguishing media

| | |
|---|---|
| **Suitable extinguishing media** | The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire. |
| **Unsuitable extinguishing media** | Do not use water jet as an extinguisher, as this will spread the fire. |

### Special hazards arising from the substance or mixture

| | |
|---|---|
| **Specific hazards** | None known. |
| **Hazardous combustion products** | Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors. |

### Advice for firefighters

| | |
|---|---|
| **Protective actions during firefighting** | Avoid breathing fire gases or vapors. Evacuate area. Keep upwind to avoid inhalation of gases, vapors, fumes and smoke. Ventilate closed spaces before entering them. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities. |
| **Special protective equipment for firefighters** | Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents. |

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

| | |
|---|---|
| **Personal precautions** | Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Avoid inhalation of dust and vapors. Use suitable respiratory protection if ventilation is inadequate. |

### Environmental precautions

| | |
|---|---|
| **Environmental precautions** | Avoid discharge into drains or watercourses or onto the ground. |

### Methods and material for containment and cleaning up

| | |
|---|---|
| **Methods for cleaning up** | Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. For waste disposal, see Section 13. |

# Yttrium Iron Oxide (YIG, pieces)

**Reference to other sections** For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

## 7. Handling and storage

### Precautions for safe handling

**Usage precautions** Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use.

**Advice on general occupational hygiene** Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.

**Dust Explosion Class**

### Conditions for safe storage, including any incompatibilities

**Storage precautions** Store locked up. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage.

**Storage class** Chemical storage.

### Specific end uses(s)

**Specific end use(s)** The identified uses for this product are detailed in Section 1.

## 8. Exposure controls/Personal protection

### Exposure controls

**Protective equipment**



**Appropriate engineering controls** Provide adequate general and local exhaust ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients.

**Eye/face protection** Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

**Hand protection** Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with OSHA 1910.138 and be demonstrated to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

**Other skin and body protection** Wear appropriate clothing to prevent repeated or prolonged skin contact.

**Hygiene measures** Wash hands thoroughly after handling. Wash at the end of each work shift and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.

# Yttrium Iron Oxide (YIG, pieces)

| | |
|---|---|
| **Respiratory protection** | Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with OSHA 1910.134. Full face mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. Half mask and quarter mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. |
| **Environmental exposure controls** | Keep container tightly sealed when not in use. |

## 9. Physical and chemical properties

### Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance** | Solid. |
| **Color** | Green. |
| **Odor** | No characteristic odor. |
| **Odor threshold** | Not applicable. |
| **pH** | Not applicable. |
| **Melting point** | Not available. |
| **Initial boiling point and range** | Not available. |
| **Flash point** | Not applicable. |
| **Evaporation rate** | Not applicable. |
| **Flammability (solid, gas)** | No information available. |
| **Upper/lower flammability or explosive limits** | Data lacking. |
| **Vapor pressure** | Not available. |
| **Vapor density** | Not available. |
| **Relative density** | ~ 5.11 @ 25°C |
| **Bulk density** | Not available. |
| **Solubility(ies)** | Insoluble in water. |
| **Partition coefficient** | No information available. |
| **Auto-ignition temperature** | Not available. |
| **Decomposition Temperature** | Not available. |
| **Viscosity** | Not applicable. |
| **Explosive properties** | Not available. |
| **Oxidizing properties** | Not applicable. |
| **Molecular weight** | 737.94 |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity** | There are no known reactivity hazards associated with this product. |
| **Stability** | Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions. |

# Yttrium Iron Oxide (YIG, pieces)

| | |
|---|---|
| **Possibility of hazardous reactions** | No potentially hazardous reactions known. |
| **Conditions to avoid** | There are no known conditions that are likely to result in a hazardous situation. |
| **Materials to avoid** | No specific material or group of materials is likely to react with the product to produce a hazardous situation. |
| **Hazardous decomposition products** | Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors. |

## 11. Toxicological information

### Information on toxicological effects

**Acute toxicity - oral**

| | |
|---|---|
| **Notes (oral $LD_{50}$)** | Based on available data the classification criteria are not met. |

**Acute toxicity - dermal**

| | |
|---|---|
| **Notes (dermal $LD_{50}$)** | Based on available data the classification criteria are not met. |

**Acute toxicity - inhalation**

| | |
|---|---|
| **Notes (inhalation $LC_{50}$)** | Based on available data the classification criteria are not met. |

**Skin corrosion/irritation**

| | |
|---|---|
| **Animal data** | Irritating. |

**Serious eye damage/irritation**

| | |
|---|---|
| **Serious eye damage/irritation** | Causes serious eye irritation. |

**Respiratory sensitization**

| | |
|---|---|
| **Respiratory sensitization** | Based on available data the classification criteria are not met. |

**Skin sensitization**

| | |
|---|---|
| **Skin sensitization** | Based on available data the classification criteria are not met. |

**Germ cell mutagenicity**

| | |
|---|---|
| **Genotoxicity - in vitro** | Based on available data the classification criteria are not met. |

**Carcinogenicity**

| | |
|---|---|
| **Carcinogenicity** | Based on available data the classification criteria are not met. |
| **IARC carcinogenicity** | None of the ingredients are listed or exempt. |

**Reproductive toxicity**

| | |
|---|---|
| **Reproductive toxicity - fertility** | Based on available data the classification criteria are not met. |
| **Reproductive toxicity - development** | Based on available data the classification criteria are not met. |

**Specific target organ toxicity - single exposure**

| | |
|---|---|
| **STOT - single exposure** | STOT SE 3 - H335 May cause respiratory irritation. |
| **Target organs** | Respiratory system, lungs |

**Specific target organ toxicity - repeated exposure**

| | |
|---|---|
| **STOT - repeated exposure** | Not classified as a specific target organ toxicant after repeated exposure. |

**Aspiration hazard**

| | |
|---|---|
| **Aspiration hazard** | Not relevant. Solid. |

# Yttrium Iron Oxide (YIG, pieces)

| | |
|---|---|
| **General information** | The severity of the symptoms described will vary dependent on the concentration and the length of exposure. |
| **Inhalation** | A single exposure may cause the following adverse effects: Irritation of nose, throat and airway. Difficulty in breathing. Coughing. |
| **Ingestion** | May cause irritation. |
| **Skin Contact** | Redness. Irritating to skin. |
| **Eye contact** | Irritating to eyes. |
| **Route of exposure** | Ingestion Inhalation Skin and/or eye contact |
| **Target Organs** | Respiratory system, lungs |

## 12. Ecological information

| | |
|---|---|
| **Ecotoxicity** | Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment. |
| **Toxicity** | Based on available data the classification criteria are not met. |

**Persistence and degradability**

| | |
|---|---|
| **Persistence and degradability** | The degradability of the product is not known. |

**Bioaccumulative potential**

| | |
|---|---|
| **Bio-Accumulative Potential** | No data available on bioaccumulation. |
| **Partition coefficient** | No information available. |

**Mobility in soil**

| | |
|---|---|
| **Mobility** | No data available. |

**Other adverse effects**

| | |
|---|---|
| **Other adverse effects** | None known. |

## 13. Disposal considerations

**Waste treatment methods**

| | |
|---|---|
| **General information** | The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous. |
| **Disposal methods** | Dispose of waste via a licensed waste disposal contractor. |

## 14. Transport information

| | |
|---|---|
| **General** | The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, DOT). |
| **Road transport notes** | Not regulated. |
| **Rail transport notes** | Not regulated. |
| **Sea transport notes** | Not regulated. |

# Yttrium Iron Oxide (YIG, pieces)

| | |
|---|---|
| **Air transport notes** | Not regulated. |
| **DOT transport notes** | Not regulated. |

**UN Number**

| | |
|---|---|
| **UN No. (International)** | Not applicable. |

**UN proper shipping name**

| | |
|---|---|
| **Proper shipping name (International)** | Not applicable. |

**Transport hazard class(es)**

| | |
|---|---|
| **Transport Labels (International)** | No transport warning sign required. |

**Packing group**

| | |
|---|---|
| **Packing group (International)** | Not applicable. |

**Environmental hazards**

**Environmentally Hazardous Substance**
No.

**Special precautions for user**

Not applicable.

| | |
|---|---|
| **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** | Not applicable. |

## 15. Regulatory information

**US Federal Regulations**

**SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities**
None of the ingredients are listed or exempt.

**CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)**
None of the ingredients are listed or exempt.

**SARA Extremely Hazardous Substances EPCRA Reportable Quantities**
None of the ingredients are listed or exempt.

**SARA 313 Emission Reporting**
None of the ingredients are listed or exempt.

**CAA Accidental Release Prevention**
None of the ingredients are listed or exempt.

**FDA - Essential Chemical**
None of the ingredients are listed or exempt.

**FDA - Precursor Chemical**
None of the ingredients are listed or exempt.

**SARA (311/312) Hazard Categories**
Acute

# Yttrium Iron Oxide (YIG, pieces)

### OSHA Highly Hazardous Chemicals
None of the ingredients are listed or exempt.

## US State Regulations

### California Proposition 65 Carcinogens and Reproductive Toxins
None of the ingredients are listed or exempt.

### California Air Toxics "Hot Spots" (A-I)
None of the ingredients are listed or exempt.

### California Air Toxics "Hot Spots" (A-II)
None of the ingredients are listed or exempt.

### California Directors List of Hazardous Substances
None of the ingredients are listed or exempt.

### Massachusetts "Right To Know" List
Some of the ingredients are listed or exempt.

### Rhode Island "Right To Know" List
Some of the ingredients are listed or exempt.

### Label Prop 65 data

### Minnesota "Right To Know" List
None of the ingredients are listed or exempt.

### Pennsylvania "Right To Know" List
All the ingredients are listed or exempt.

### New Jersey "Right To Know" List
All the ingredients are listed or exempt.

## Inventories

### EU - EINECS/ELINCS
All the ingredients are listed or exempt.

### Canada - DSL/NDSL
All the ingredients are listed or exempt.

### US - TSCA
All the ingredients are listed or exempt.

### US - TSCA 12(b) Export Notification
None of the ingredients are listed or exempt.

### Australia - AICS
All the ingredients are listed or exempt.

### Japan - ENCS
All the ingredients are listed or exempt.

### Korea - KECI
All the ingredients are listed or exempt.

# Yttrium Iron Oxide (YIG, pieces)

**China - IECSC**
All the ingredients are listed or exempt.

**Philippines - PICCS**
All the ingredients are listed or exempt.

**New Zealand - NZIOC**
All the ingredients are listed or exempt.

**Taiwan - TCSI**
All the ingredients are listed or exempt.

## 16. Other information

| | |
|---|---|
| **Revision date** | 8/30/2022 |
| **Revision** | 1 |
| **SDS No.** | 4970 |
| **Hazard statements in full** | H315 Causes skin irritation.<br>H319 Causes serious eye irritation.<br>H335 May cause respiratory irritation. |

**End of SDS**