Section 1. Product and Company Identification

**Product Name**  
13-cis-Retinoic Acid

**Product ID**  
R1779

**Chemical Name (Synonyms)**  
Isotretinoin; Isotrexa; 13-cis-Vitamin A acid; Teriosal

**Supplier**  
LKT Laboratories, Inc  
545 Phalen Blvd.  
St. Paul, MN 55130 USA  
Ph: 651-644-8424 Fax: 651-644-8357  
www.lktlabs.com - getinfo@lktlabs.com

**Emergency Phone #**  
1-800-424-9300

Section 2. Hazards Identification

**GHS Classification**  
Skin irritation (Category 2) H315  
Eye irritation (Category 2A) H319  
Reproductive toxicity (Category 1B) H360  
Specific target organ toxicity - single exposure (Category 3) Respiratory system, H335

GHS Label elements including precautionary statements

**Pictogram**

**Signal word**  
Danger

**Hazard and precautionary statements**

**Hazard statements**
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.
H360 - May damage fertility or the unborn child.

**Precautionary statements**
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust, fumes, gas, mist, vapors, spray.
P280 - Wear protective gloves and protective clothing.
P301 + P338 + P313 - IF SKIN irritation occurs: Get medical advice/attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 - IF exposed or in contact with skin: Get medical advice/attention.
P313 - IF eye irritation persists: Get medical advice/attention.
P362 - Take off contaminated clothing and wash before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to an approved waste disposal plant.

**HMIS Classification**
Health hazard: 2  
Chronic health hazard: *  
Flammability: 0  
Physical hazard: 0

**NFPA Rating**
Health hazard: 2  
Fire hazard: 0  
Reactivity hazard: 0

**Potential Health Effects**
Inhalation - May be harmful if inhaled. May cause respiratory tract irritation. Specific target organ toxicity - single exposure - respiratory.  
Skin - May be harmful if absorbed through skin. Causes skin irritation.
Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Substances</th>
<th>Ingredient: Title Compound</th>
<th>Percent: 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>C_{20}H_{28}O_2</td>
<td>300.44</td>
</tr>
<tr>
<td>CAS No.</td>
<td>4759-48-2</td>
<td>EC No. 225-296-0</td>
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</tbody>
</table>

Section 4. First Aid Measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Eye Contact
Flush eyes with plenty of water for at least 15 minutes and consult a physician.

Skin Contact
Wash off with soap and plenty of water. Consult a physician.

Inhalation
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

Ingestion
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Section 5. Firefighting Measures

Flash Point
Not available.

Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Firefighting Procedures
Wear self-contained breathing apparatus for firefighting if necessary.

Unusual Fire Hazards
Carbon oxides.

Section 6. Accidental Release Measures

Personal Precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental Precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleanup
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

Section 7. Handling and Storage

Handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

Storage Conditions
Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature: 80°C

Hazardous Decomposition Products
Not available.

Other Remarks
Light sensitive.
Section 8. Exposure Controls/Personal Protection

Personal protective equipment

EXPOSURE CONTROLS
Contains no substances with occupational exposure limit values.
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

PERSONAL PROTECTION
Eye/face protection: Safety glasses with side-shields conforming to EN 166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).
Skin protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full and Splash contact - Material: Nitrile rubber. Minimum layer thickness: 0.11 mm. Break through time: 480 min. Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M).
This recommendation is for advice only and must be evaluated by an industrial hygienist and safety officer that is familiar with the specific situation of intended use by the customer. It should not be interpreted as an offering of approval for any specific use by the customer.

Body protection: Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid</td>
<td>Yellow crystalline powder</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Boiling Point</th>
<th>Volatility</th>
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</thead>
<tbody>
<tr>
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<td>Not available.</td>
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</table>

<table>
<thead>
<tr>
<th>Melting Point</th>
<th>Density</th>
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<tbody>
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<td>174-175°C</td>
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</table>

<table>
<thead>
<tr>
<th>Solubility</th>
<th>pH</th>
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</thead>
<tbody>
<tr>
<td>Sparingly soluble in water.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>Ignition temperature</th>
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</thead>
<tbody>
<tr>
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<td>Not available.</td>
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</table>

<table>
<thead>
<tr>
<th>Lower explosion limit</th>
<th>Autoignition temperature</th>
</tr>
</thead>
<tbody>
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<td>Not available.</td>
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</table>

<table>
<thead>
<tr>
<th>Upper explosion limit</th>
<th>Vapor pressure</th>
</tr>
</thead>
<tbody>
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<td>Not available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water solubility</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sparingly soluble in water.</td>
<td>Not available.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Partition coefficient: n-octanol/water</th>
<th>Odor Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Relative vapor density</th>
<th>Evaporation rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Section 10. Stability and Reactivity

Stability
Stable under recommended storage conditions.

Materials To Avoid
Strong oxidizing agents.

Hazardous Decomposition Products
Not available.
Section 11. Toxicological Information

**Oral LD50**  Rat > 4,000 mg/kg

**Inhalation LC50**  Not available.

**Dermal LD50**  Not available.

**Other information on acute toxicity**  Not available.

**Skin corrosion/irritation**  Not available.

**Serious eye damage/irritation**  Not available.

**Respiratory or skin sensitization**  Not available.

**Germ cell mutagenicity**  Not available.

**Carcinogenicity**  IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.


**Specific organ toxicity single exposure (GHS)**  Inhalation - May cause respiratory irritation.

**Specific organ toxicity repeated exposure (GHS)**  Not available.

**Teratogenicity**  Not available.

**Aspiration Hazard**  Not available.

**Synergistic effects**  Not available.

**Potential Health Effects**  Inhalation - May be harmful if inhaled. May cause respiratory tract irritation. Specific target organ toxicity - single exposure - respiratory. Skin - May be harmful if absorbed through skin. Causes skin irritation. Eyes - Causes serious eye irritation. Ingestion - May be harmful if swallowed. Reproductive toxicity - May damage fertility or the unborn child.

**Signs and symptoms of exposure**  Dermatitis - Stomach - irregularities - based on human evidence.

Section 12. Ecological Information

**Toxicity**  Not available.

**Mobility in soil**  Not available.

**PBT and vPvB assessment**  PBT/vPvB assessment not available as chemical safety assessment not required/not
Waste Disposal

Dispose of material according to all federal, state and local regulations. Offer material to a licensed, professional waste disposal company to dispose of as unused product. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

The information in this document is believed to be correct but is not necessarily complete. LKT does not guarantee the accuracy of the information. The burden of verifying the information in this document rests solely upon the user.

Persistence and degradability
Not available.

Bioaccumulative potential
Not available.

Section 13. Disposal Considerations

Waste Disposal

Dispose of material according to all federal, state and local regulations. Offer material to a licensed, professional waste disposal company to dispose of as unused product. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Section 14. Transport Information

DOT (US)
Not dangerous goods.

IATA
Not dangerous goods.

IMDG
Not dangerous goods.

Further Information

Section 15. Regulatory Information

Reach No.

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Components
Acute health hazard, chronic health hazard.

Massachusetts Right To Know Components
13-cis-Retinoic acid CAS #: 4759-48-2 Revision Date: 1993-04-24

Pennsylvania Right To Know Components
13-cis-Retinoic acid CAS #: 4759-48-2 Revision Date: 1993-04-24

New Jersey Right To Know Components
13-cis-Retinoic acid CAS #: 4759-48-2 Revision Date: 1993-04-24

California Prop 65 Components
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. 13-cis-Retinoic acid CAS #: 4759-48-2 Revision Date: 2007-09-28

Section 16. Other Information

Other information
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