**** MATERIAL SAFETY DATA SHEET ****

DL-Thiobitic acid, 98+%  

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: DL-Thiobitic acid, 98+%  
Catalog Numbers:  
13872-0000, 13872-0050, 13872-0250  
Synonyms:  
DL-6,8-Dithiobicotic acid, DL-7-Lipoic acid  
Company Identification (Europe):  
Acros Organics BVBA  
Janssen Pharmaceuticaalaaan 3a  
2440 Geel, Belgium  
Company Identification (USA):  
Acros Organics  
One Reagent Lane  
Fairlawn, NJ 07410  
For information in North America, call:  800-ACROS-01  
For information in Europe, call:  0032(0) 14575211  
For emergencies in the US, call CHEMTREC: 800-824-9300  
For emergencies in Europe, call:  0032(0) 14575299

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS#</th>
<th>Haz Symbols</th>
<th>Risk Phrases</th>
</tr>
</thead>
</table>

Hazard Symbols: None Listed.  
Risk Phrases: None Listed.

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Not available.

Potential Health Effects

Eye:  
May cause eye irritation.

Skin:  
May cause skin irritation. May be harmful if absorbed through the skin.

Ingestion:  
May cause irritation of the digestive tract. May be harmful if swallowed.

Inhalation:  
May cause respiratory tract irritation. May be harmful if inhaled.

Chronic:  
Not available.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:  
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

Skin:  
Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

Ingestion:  
Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation:  
Remove from exposure and move to fresh air immediately.

Notes to Physician:

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:  
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media:  
in case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:  
Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal.

**** SECTION 7 - HANDLING AND STORAGE ****

Handling:  
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.

Storage:  
Store in a cool dry place. Keep container closed when not in use.
store in a cool, dry place. keep container closed when not in use.
keep refrigerated. (store below 4°C/39°F.)

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:
Use adequate general or local exhaust ventilation to keep airborne
concentrations below the permissible exposure limits. use process
enclosure, local exhaust ventilation, or other engineering controls
to control airborne levels.

Personal Protective Equipment

Eyes:
wear safety glasses and chemical goggles if splashing
is possible.

Skin:
wear appropriate protective gloves and clothing to
prevent skin exposure.

Clothing:
wear appropriate protective clothing to minimize
contact with skin.

Respirators:
wear a niosh/msha or European Standard EN 149
approved full-facepiece airline respirator in the
positive pressure mode with emergency escape
provisions.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Crystalline powder
Color: yellow
Odor: Not available.

pH: Not available.

Vapor Pressure: Not available.
Viscosity: Not available.

Boiling Point: 160 - 165 deg C @ 760.00mm Hg

Freezing/Melting Point: 60 - 63 deg C

Autoignition Temperature: Not available.
Flash Point: Not available.

Explosion Limits, lower: Not available.
Explosion Limits, upper: Not available.

Decomposition Temperature: Not available.

Solubility in water: soluble in 10% sodium hydroxide

Specific Gravity/Density:
Molecular Formula: 206.32

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials.

Incompatibilities with Other Materials:
Strong oxidizing agents.

Hazardous Decomposition Products:
Carbon monoxide, oxides of sulfur, irritating and toxic fumes and
gases, carbon dioxide.

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#: CAS# 1077-28-7: JP1192000
LD50/LCs50: Not available.
Carcinogenicity: DL-thiоtic acid
- Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
See actual entry in RTECS for complete information.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.

**** SECTION 14 - TRANSPORT INFORMATION ****

IATA
No information available.

IMO
No information available.

RID/ADR
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: Not available.
Risk Phrases:
Safety Phrases: S 24/25 avoid contact with skin and eyes.

WGK (Water Danger/Protection)
CAR#: 1077-28-7: 2
United Kingdom Occupational Exposure Limits

United Kingdom Maximum Exposure Limits

Canada
CAS# 1077-28-7 is listed on Canada's DSL List.
CAS# 1077-28-7 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

US FEDERAL
TSCA
CAS# 1077-28-7 is not listed on the TSCA inventory.
It is for research and development use only.

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 7/16/1996 Revision #0 Date: Original.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, however arising, even if the company has been advised of the possibility of such damages.

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