Safety Data Sheet

Gardolene® D 6812 (previously Gardo TP 10724/2)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Gardolene® D 6812 (previously Gardo TP 10724/2)

Substance number : REL_11388

Chemical usage : Surface Pre-treatment material

Manufacturer or supplier’s details

Company : Chemetall US, Inc.

Address : 675 Central Avenue
            New Providence NJ 07974

Telephone : (800) 526-4473
Telefax : (908) 464-4658
Emergency telephone no : CHEMTREC - 800-424-9300, 1-703-527-3887 (International)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

<table>
<thead>
<tr>
<th>Appearance</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>green</td>
</tr>
<tr>
<td>Odour</td>
<td>acid</td>
</tr>
<tr>
<td>Hazard Summary</td>
<td>Liquid or vapor causes burns which may be delayed. Causes burns. Harmful if swallowed. May cause cancer.</td>
</tr>
</tbody>
</table>

GHS Classification

Skin irritation : Category 2
Eye irritation : Category 2A
Carcinogenicity : Category 1B

GHS Label element

Hazard pictograms :

Signal word : Danger
Hazard statements : Causes skin irritation. Causes serious eye irritation.
May cause cancer.

Precautionary statements:

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash skin thoroughly after handling.
Wear eye protection/face protection.
Wear protective gloves.
Use personal protective equipment as required.

Response:
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.

Storage:
Store locked up.

Disposal:
Dispose of contents/container to an approved waste disposal plant.

Potential Health Effects

Inhalation: no
Skin: yes
Ingestion: yes
Aggravated Medical Condition: None known.

Carcinogenicity:
IARC: Group 2A: Probably carcinogenic to humans

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.

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.

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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS
Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese gluconate</td>
<td>6485-39-8</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Chromium (III) phosphate</td>
<td>7789-04-0</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Chromic (III) nitrate</td>
<td>13548-38-4</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Citric acid</td>
<td>77-92-9</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Manganese (II) citrate</td>
<td>10024-66-5</td>
<td>1 - 5</td>
</tr>
</tbody>
</table>


Specific chemical identity of composition has been withheld as a trade secret.

Exact percentage of composition has been withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

If inhaled : Remove to fresh air.
If symptoms persist, call a physician.
If breathing is irregular or stopped, administer artificial respiration.

In case of skin contact : Wash off immediately with plenty of water for at least 15 minutes.
Take off contaminated clothing and shoes immediately.
Get medical attention immediately if irritation develops and persists

In case of eye contact : Rinse immediately with plenty of water for at least 15 minutes.
Keep eye wide open while rinsing.
Get medical attention immediately

If swallowed : Rinse mouth.
Drink 1 or 2 glasses of water.
Never give anything by mouth to an unconscious person.
Get medical attention immediately

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Carbon dioxide (CO2)
Dry chemical
Foam
Water spray

Further information : Use water spray to cool unopened containers.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:
- Ensure adequate ventilation.
- Use personal protective equipment.

Methods and materials for containment and cleaning up:
- Ventilate area.
- Neutralize with lime milk or soda and flush with plenty of water.
- Clean up with inert absorbent material.
- Keep in suitable, closed containers for disposal.
- Flush with plenty of water.

Additional advice:
- Never return spills in original containers for re-use.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling:
- Add this product to surface of solution slowly to avoid spattering.
- Do not add large amounts of product to solution at any one time.
- Use with adequate ventilation.

Conditions for safe storage:
- KEEP FROM FREEZING.
- Keep containers dry and tightly closed to avoid moisture absorption and contamination.
- Store indoors in a cool, well-ventilated place.

SECTION 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manganese gluconate</td>
<td>6485-39-8</td>
<td>C</td>
<td>5.000000 mg/m3</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>5.000000 mg/m3</td>
<td>OSHA P0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1.000000 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>3.000000 mg/m3</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td>Chromium (III) phosphate</td>
<td>7789-04-0</td>
<td>TWA</td>
<td>0.500000 mg/m3</td>
<td>OSHA Z-1</td>
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<td></td>
<td>ST</td>
<td>3.000000 mg/m3</td>
<td>NIOSH REL</td>
</tr>
</tbody>
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Personal protective equipment
Respiratory protection: If the occupational exposure limits cannot be met, in exceptional cases suitable respiratory equipment should be worn only for a short period of time.

Hand protection
Remarks: Impervious butyl rubber gloves

Eye protection: Chemical resistant goggles must be worn.
Face-shield

Skin and body protection: Complete suit protecting against chemicals

Hygiene measures: Avoid contact with skin, eyes and clothing.
Wear suitable gloves and eye/face protection.
Wear suitable protective clothing.
Wash hands before breaks and immediately after handling the product.
Provide adequate ventilation.
Do not inhale fumes.
Keep away from food and drink.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid

Colour: green

Odour: acrid

pH: < 2.5

Freezing point: 0 °C

Boiling point/boiling range: no data available

Flash point: does not flash

Evaporation rate: 1
Water = 1

Upper explosion limit: Not applicable.

Lower explosion limit: Not applicable.

Vapour pressure: no data available

Relative vapour density: 0

Relative density: 1.257

Bulk density: 10.47 lb/gal

Solubility(ies)

Water solubility: completely soluble

Partition coefficient: n-octanol/water: no data available

Auto-ignition temperature: No data available

Thermal decomposition: No data available
SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid: freezing
Direct sources of heat.

Incompatible materials: Bases
Warning! Do not use together with other products. May release dangerous gases (chlorine).

Hazardous decomposition products:
- Acidic fumes
- Chromium oxides
- Hydrogen, by reaction with metals
- Nitrogen Oxides
- Phosphorus Oxides
- Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:
Acute oral toxicity: Acute toxicity estimate: > 5,000.000000 mg/kg
Method: Calculation method

Components:
Chromic (III) nitrate:
Acute oral toxicity: LD50 rat: 3,250.000000 mg/kg

Citric acid:
Acute oral toxicity: LD50 mouse: 5,040.000000 mg/kg
LD50 rat: 3,000.000000 mg/kg

Manganese (II) citrate:
Acute oral toxicity: LD50 rat: > 5,000.000000 mg/kg
Acute inhalation toxicity: LC50 rat: 2.810000 mg/l
Acute dermal toxicity: LD50 rabbit: > 5,050.000000 mg/kg

Skin corrosion/irritation

Product:
Result: Severe skin irritation

Components:
Citric acid:
Result: Severe skin irritation

Serious eye damage/eye irritation

Product:
Result: Eye irritation

Components:
Citric acid:
Result: Corrosive

Respiratory or skin sensitisation
no data available

Germ cell mutagenicity
no data available

Carcinogenicity
no data available

Reproductive toxicity
no data available

STOT - single exposure
no data available

STOT - repeated exposure
no data available

Aspiration toxicity
no data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

no data available

Bioaccumulative potential

Product:
Partition coefficient: n-octanol/water
: Remarks: no data available

Components:
Citric acid:
Partition coefficient: n-octanol/water
: log Pow: -1.64 (20 °C)
Other adverse effects

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
Waste from residues: Refer to all federal, provincial, state and local regulation prior to disposition of container and unused contents by reuse, recycle or disposal.

SECTION 14. TRANSPORT INFORMATION

International regulation
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

SECTION 15. REGULATORY INFORMATION

TSCA Status: All components of this material comply with US TSCA requirements.

OSHA Hazards: Severe skin irritant, Moderate eye irritant, Carcinogen
WHMIS Classification: D2A: Very Toxic Material Causing Other Toxic Effects
E: Corrosive Material

EPCRA - Emergency Planning and Community Right-to-Know Act

<table>
<thead>
<tr>
<th>Nitric acid</th>
<th>7697-37-2</th>
<th>1,000</th>
</tr>
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SARA 311/312 Hazards: Acute Health Hazard
Chronic Health Hazard

SARA 302: The following components are subject to reporting levels established by SARA Title III, Section 302:
Nitric acid: 7697-37-2

SARA 313: The following components are subject to reporting levels established by SARA Title III, Section 313:
Manganese gluconate: 6485-39-8
Chromium (III) phosphate: 7789-04-0
Chromic (III) nitrate: 13548-38-4

US State Regulations
Massachusetts Right To Know
Nitric acid 7697-37-2

Pennsylvania Right To Know
water 7732-18-5
Manganese gluconate 6485-39-8
Chromium (III) phosphate 7789-04-0
Chromic (III) nitrate 13548-38-4
Citric acid 77-92-9
Manganese (II) citrate 10024-66-5
Nitric acid 7697-37-2

New Jersey Right To Know
water 7732-18-5
Manganese gluconate 6485-39-8
Chromium (III) phosphate 7789-04-0
Chromic (III) nitrate 13548-38-4
Citric acid 77-92-9
Manganese (II) citrate 10024-66-5

NFPA:
Flammability
Health
0 3 0
Instability
Special hazard.

HMIS III:

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAMMABILITY</td>
<td>0</td>
</tr>
<tr>
<td>PHYSICAL HAZARD</td>
<td>0</td>
</tr>
</tbody>
</table>

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Corrosive Acid
Splash Goggles, Gloves, Apron, Dust
and Vapour Respirator

SECTION 16. OTHER INFORMATION

Further Information

Version 1.0
Revision Date 06/05/2015

Chemetall US, Inc. warrants that the products described herein will conform with its published specifications.

The products supplied by Chemetall and information related to them are intended for use by buyers having necessary industrial skill and knowledge. Buyers should undertake sufficient verification and testing to determine the suitability of the Chemetall materials for their own particular purpose. Since buyer's conditions of use of products are beyond Chemetall's control, Chemetall does not warrant any recommendations and information for the use of such products. CHEMETALL DISCLAIMS ALL OTHER WARRANTIES INCLUDING THE IMPLIED
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