SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product name: CALDOFIX-2 HARDENER
Cat. No: 40200086, 40200084
CAS-No.: 1761-71-3
EC No.: 217-168-8
REACH Reg. No: 01-2119541673-38-xxxx
Container size: 300ml; 500ml

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

Application: For embedding and impregnation of materialographic specimens
Uses advised against: No specific uses advised against are identified. (*)

Details of the supplier of the safety data sheet

Supplier: Struers ApS
Pederstrupvej 84
DK-2750 Ballerup
Tel:+45 44 600 800

Responsible for material safety data sheet authoring: Responsible for material safety data sheet authoring: DHI

Any questions to the contents of this material safety data sheet should be sent to: struers@struers.dk

Emergency telephone number

National Capital Poison Center: 1-800-222-1222

Infotrac: 1-800-535-5053
Struers US: 1-440-871-0071

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture

OSHA 2012: Acute Oral Toxicity Category 4
Skin Corrosive Category 1B
Serious Eye Damage Category 1
Skin Sensitizer Category 1
Category 2 Target organ toxicant, Repeated Exposure
SAFETY DATA SHEET

Product name: CALDOFIX-2 HARDENER
Revision Date: 2019-12-10
Document No.: M0169

Label elements

Danger
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H373 May cause damage to organs through prolonged or repeated exposure.

P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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 + P311 IF exposed or concerned: Call a POISON CENTER/doctor.
P501 Dispose of contents/container in accordance with local regulations.

P260 Do not breathe gas, fume, vapours or spray.
P264 Wash contaminated skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.
P405 Store locked up.

Other hazards
Vapors are corrosive. After 24-36 hours, injured persons may develop serious shortness of breath and lung edema.
PBT/vPvB: Not Classified as PBT/vPvB by current EU criteria.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances
The product contains: amine compound.
SECTION 4: FIRST AID MEASURES

Description of first aid measures

**Inhalation:** Move injured person into fresh air immediately. Call an ambulance. Be aware that symptoms of lung edema (shortness of breath) may develop up to 24 hours after exposure. Bring these instructions.

**Skin contact:** Flush immediately with plenty of water and remove contaminated clothing. Call an ambulance, continue to rinse during transportation to hospital and bring these instructions.

**Eye contact:** Immediately flush with plenty of water. Remove any contact lenses and open eyes wide apart. Call an ambulance and continue flushing during transportation to hospital taking along these instructions.

**Ingestion:** Immediately call a Poison Center/doctor. Rinse mouth. Do not induce vomiting. Do not drink anything without first consulting a doctor. Have these instructions at hand.

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

**Symptoms/effects:** See section 11 for more detailed information on health effects and symptoms.

**Indication of any immediate medical attention and special treatment needed**

**Medical attention/treatments:** Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

**Extinguishing media**

**Extinguishing media:** Extinguish with foam, carbon dioxide, dry powder or water fog. Do not use water jet as an extinguisher, as this will spread the fire.

**Special hazards arising from the substance or mixture**

**Specific hazards:** In case of fire, toxic gases may be formed (COx, NOx).

**Advice for firefighters**

**Protective equipment for firefighters:** Use air-supplied respirator, gloves and protective goggles.
SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:
Avoid inhalation of vapors and contact with skin and eyes. For personal protection, see section 8.

For emergency responders:
No specific recommendations. For personal protection, see section 8.

Environmental precautions

Do not discharge into drains, water courses or onto the ground.

Methods and material for containment and cleaning up

Spill Cleanup Methods:
Dam and absorb spillages with sand, earth or other non-combustible material.

Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Safe handling advice:
Avoid inhalation of vapors and contact with skin and eyes. Observe good chemical hygiene practices.

Technical measures:
Wash hands before breaks and before smoking, eating or drinking.

Technical precautions:
Local exhaust is recommended. First-aid equipment, including eye wash bottle, must be available at the work site.

Conditions for safe storage, including any incompatibilities

Storage conditions:
Store in tightly closed original container in a dry, cool and well-ventilated place.

Specific end use(s):
No information available.
SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
No occupational exposure limit assigned.

Exposure controls

Engineering measures: Local exhaust is recommended. Mix and prepare in a place with efficient exhaust ventilation. An eye wash bottle must be available at the work site. Provide access to washing facilities including soap, skin cleanser and fatty cream.

Personal protection: Personal protection equipment should be chosen according to the ANSI standards and in discussion with the supplier of the personal protective equipment.

Respiratory equipment: In case of inadequate ventilation and work of brief duration, use suitable respiratory equipment. It is recommended to use respiratory equipment with combination filter, type ABEK

Hand protection: Wear protective gloves. Butyl rubber gloves are recommended, but be aware that the liquid may penetrate the gloves. Frequent change is advisable. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material.

Eye protection: Wear goggles/face shield.

Skin protection: Wear apron or protective clothing in case of splashes.

Hygiene measures: Remove contaminated clothing and wash the skin thoroughly with soap and water after work. When using do not eat, drink or smoke.

Environmental Exposure Controls: Not available.
### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

- **Form:** Liquid.
- **Color:** Colorless.
- **Odor:** ammonia
- **Odor threshold:** Not available.
- **pH:** 12
- **Melting point:** Not available.
- **Boiling point:** 320°C / 608°F
- **Flash point:** 160°C / 320°F
- **Evaporation rate:** Not available.
- **Flammability (solid, gas):** Not available.
- **Explosion limits:** Not available.
- **Vapor pressure:** 0.0549 Pa @ 20°C OECD 104 (*)
- **Vapor density:** 7.24 (*)
- **Relative density:** 0.96
- **Solubility:** insoluble in water
- **Partition coefficient (n-octanol/water):** log Pow 2.03 (*)
- **Auto-ignition temperature (°F):** 300°C / 572°F (*)
- **Decomposition temperature (°F):** Not available.
- **Viscosity:** 29.6 mPa s @ 40°C (*)
- **Explosive properties:** Not available.
- **Oxidizing properties:** Not available.

**Other information**

**Other data:** Volatile Organic Compound (VOC): 0 g/l
### SECTION 10: STABILITY AND REACTIVITY

**Reactivity**

Reactivity: Reacts violently with strong oxidizing substances.

**Chemical stability**

Stability: Stable under normal temperature conditions.

**Possibility of hazardous reactions**

Hazardous Reactions: No data available.

**Conditions to avoid**

Conditions/materials to avoid: Avoid heat, flames and other sources of ignition.

**Incompatible materials**

Incompatible materials: Strong oxidizing substances. Acids and metals (e.g. aluminum and zinc).

**Hazardous decomposition products**

Hazardous decomposition products: When heated, toxic and corrosive vapors/gases may be formed.

### SECTION 11: TOXICOLOGICAL INFORMATION

**Information on toxicological effects**

- **Acute Toxicity (Oral):** Harmful if swallowed.
- **Acute Toxicity (Dermal):** Based on available data, the classification criteria are not met.
- **Acute Toxicity (Inhalation):** Based on available data, the classification criteria are not met.
- **Skin Corrosion/Irritation:** Causes severe burns.
- **Serious eye damage/irritation:** Causes serious eye damage.
- **Respiratory or skin sensitization:** May cause an allergic skin reaction.
- **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
- **Carcinogenicity:** Based on available data, the classification criteria are not met.

- **National Toxicology Program (NTP):** No.
- **I.A.R.C. Monographs:** No.
- **OSHA:** No.

- **Reproductive Toxicity:** Based on available data, the classification criteria are not met.
- **STOT - Single exposure:** Based on available data, the classification criteria are not met.
- **STOT - Repeated exposure:** May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard:** Based on available data, the classification criteria are not met.
- **Inhalation:** Vapors are corrosive. After 24-36 hours, injured persons may develop serious shortness of breath and lung edema.
- **Ingestion:** Strongly corrosive. Even small amounts may be fatal. Symptoms are severe burning pains in mouth, throat and stomach.

**Toxicological data:**

- **LD50 (Oral, Rat):** 625 mg/kg
- **LD50 (Dermal, Rabbit):** 2110 mg/kg
SECTION 12: ECOLOGICAL INFORMATION

Toxicity
Ecotoxicity: LC50 96 hours, fish, mg/l(Leuciscus idus): > 100

Persistence and degradability
Degradability: The product is slowly degradable.

Bioaccumulative potential
Bioaccumulative potential: No data available on bioaccumulation.
log Pow 2.03 (*)

Mobility in soil
Mobility: No data available.

Results of PBT and vPvB assessment
PBT/vPvB: This product does not contain any PBT or vPvB substances.

Other adverse effects
Other adverse effects: No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods
Waste from residues: Dispose of waste and residues in accordance with local authority requirements.
Note that fully cured material is not considered as hazardous waste.

Contaminated packaging: Dispose of waste and residues in accordance with local authority requirements.
SECTION 14: TRANSPORT INFORMATION

UN number

UN-No: 2735

UN proper shipping name

Proper Shipping Name: AMINES, LIQUID, CORROSIVE, N.O.S. (4,4’-Methylenebiscyclohexanamine)

Additional IMDG information:
- EmS: F-A, S-B
- MFAG: 1
- Segregation Group: Alkali

Transport hazard class(es)

Class: 8

Packing group

PG: II

Environmental hazards

Marine pollutant: No.

Environmentally Hazardous substance: No.

Special precautions for user

Special precautions: None known.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Transport in bulk: Not relevant.
SECTION 15: REGULATORY INFORMATION

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

Special provisions:
State and local regulation may apply.

TSCA: Listed.

NFPA Rating: Health: 3  Fire: 1  Reactivity: 0  Other:-

SARA Section 302: No.
SARA Section 304: No.
SARA Section 313: No.
SARA (311/312) Hazard categories: Yes.

National regulation:
The following lists have been checked:
Threshold Limit Values (2019), ACGIH, by the American Conference on Governmental Industrial Hygienists.
NIOSH Pocket Guide to Chemical Hazards.
The Code of Federal Regulation, Title 40, part 261.33. Identification and listing of hazardous waste.
SECTION 16: OTHER INFORMATION

The user must be instructed in the proper work procedure and be familiar with the contents of these instructions.

The following sections contain revisions or new statements: 1, 9, 12.
The (*) indicates the changes made with respect to the previous version.

Approved by DHI.

Abbreviations and acronyms used in the safety data sheet:
- PBT = Persistent, Bioaccumulative and Toxic.
- vPvB = very Persistent and very Bioaccumulative.

Additional information:
- Classification according to HCS 2012:
- Calculation method.

The information on this data sheet represents our current data and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user.

Made by DHI - Environment and Toxicology, Agern Allé 5, DK-2970 Hørsholm, Denmark.