SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Trade name: trans-Crotonic acid

1.2 Relevant identified uses of the substance or mixture and uses advised against.
Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: Thermo Fisher (Kandel) GmbH
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0)721 84007 300
Email: tech@alfa.com
www.alfa.com
Informing department: Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:
Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
GHS05 corrosion
Skin Corr. 1B H314 Causes severe skin burns and eye damage.
GHS07
Acute Tox. 4 H302 Harmful if swallowed.
Classification according to Directive 67/548/EEC or Directive 1999/45/EC
C; Corrosive
R34: Causes burns.
Xn; Harmful
R22: Harmful if swallowed.
Information concerning particular hazards for human and environment: Not applicable
Other hazards that do not result in classification No information known.

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labelled according to the CLP regulation.

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances
CAS# Designation:
107-93-7 trans-Crotonic acid
Identification number(s):
EC number: 203-533-9

SECTION 4: First aid measures

4.1 Description of first aid measures
General information Instantly remove any clothing soiled by the product.
After inhalation Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
Seek immediate medical advice.
After skin contact Instantly wash with water and soap and rinse thoroughly.
Seek immediate medical advice.
After eye contact Rinse opened eye for several minutes under running water. Then consult doctor.
Seek medical treatment.
After swallowing Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Causes serious eye damage.
SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents: CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

5.2 Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide

5.3 Advice for firefighters
Protective equipment:
Wear self-contained breathing apparatus.
Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation

6.2 Environmental precautions: Do not allow material to be released to the environment without proper governmental permits.

6.3 Methods and material for containment and cleaning up:
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.

Prevention of secondary hazards: Keep away from ignition sources.

6.4 Reference to other sections
See Section 7 for information on safe handling
See section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure adequate ventilation

7.2 Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and containers:
No special requirements.

Information about storage in one common storage facility: Store away from oxidising agents.

Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store in a locked cabinet or with access restricted to technical experts or their assistants.

7.3 Specific end use(s)
No further relevant information available.

SECTION 8: Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.1 Control parameters
Components with critical values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: No data

8.2 Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instinctively remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.

Breathing equipment: Use breathing protection with high concentrations.

Protection of hands:
Check protective gloves prior to each use for their proper condition.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Material of gloves: Impervious gloves
Penetration time of glove material (in minutes) Not determined

Eye protection:
Tightly sealed safety glasses.

Full face protection
Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance:
Form: Crystalline solid
Colour: White
Smell: Not determined
Odour threshold: Not determined.

pH-value: Not applicable.

Change in condition
Melting point/Melting range: 70-74 °C
Boiling point/Boiling range: 128 °C (100mm)
Sublimation temperature / start: Not determined

Flash point: 87 °C
Inflammability (solid, gaseous) Not determined.
Ignition temperature: 336 °C
Decomposition temperature: Not determined
Self-inflammability: Not determined.

Danger of explosion: Not determined.
Critical values for explosion: Lower: 2.2 Vol %

(Contd. on page 3)
Trade name: trans-Crotonic acid

(Contd. of page 2)

### SECTION 10: Stability and reactivity

#### 10.1 Reactivity
No information known.

#### 10.2 Chemical stability
Stable under recommended storage conditions.

#### 10.3 Possibility of hazardous reactions
Reacts with strong oxidising agents.

#### 10.5 Incompatible materials:
- Oxidising agents

#### 10.6 Hazardous decomposition products:
- Carbon monoxide and carbon dioxide

### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects
- **Acute toxicity**: Harmful if swallowed. Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **LD/LC50 values that are relevant for classification:**
  - Oral LD50: 1000 mg/kg (rat)

- **Skin irritation or corrosion**: Causes severe skin burns.
- **Eye irritation or corrosion**: Causes serious eye damage.
- **Sensitization**: No sensitizing effect known.
- **Germ cell mutagenicity**: No effects known.
- **Carcinogenicity**: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
- **Reproductive toxicity**: No effects known.
- **Specific target organ system toxicity - repeated exposure**: No effects known.
- **Specific target organ system toxicity - single exposure**: No effects known.
- **Subacute to chronic toxicity**: No effects known.
- **Aspiration hazard**: No effects known.
- **Subacute to chronic toxicity**: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

### SECTION 12: Ecological information

#### 12.1 Toxicity
- **Aquatic toxicity**: No further relevant information available.

#### 12.3 Bioaccumulative potential
- **Bioaccumulative potential**: No further relevant information available.

#### 12.4 Mobility in soil
- **Mobility in soil**: No further relevant information available.

### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods
**Recommendation**
Hand over to disposers of hazardous waste. Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.

**Uncleaned packagings**:
**Recommendation**: Disposal must be made according to official regulations. Recommended cleaning agent: Water, if necessary with cleaning agent.

### SECTION 14: Transport information

#### UN-Number
- **ADR, IMDG, IATA**: UN2823

#### 14.2 UN proper shipping name
- **ADR**: 2823 CROTONIC ACID, SOLID
- **IMDG, IATA**: CROTONIC ACID, SOLID

#### 14.3 Transport hazard class(es)
- **ADR**
  - Class 8 (C4) Corrosive substances.
  - Label 8
- **IMDG, IATA**
  - Class 8 Corrosive substances.
  - Label 8

(Contd. on page 4)
Safety data sheet according to 1907/2006/EC, Article 31

Trade name trans-Crotonic acid

Packing group
ADR, IMDG, IATA
III

14.5 Environmental hazards:
Not applicable.

14.6 Special precautions for user
Kemler Number: 80
Acids

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

Transport/Additional information:

ADR
Exempted quantities (EQ): E1
Limited quantities (LQ)
5 kg
Transport category
3
Tunnel restriction code
E
UN "Model Regulation":
UN2823, CROTONIC ACID, SOLID, 8, III

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Australian Inventory of Chemical Substances Substance is not listed.
Standard for the Uniform Scheduling of Drugs and Poisons Substance is not listed.

National regulations
Information about limitation of use:
For use only by technically qualified individuals.
Employment restrictions concerning young persons must be observed.

Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

ELINCS (European List of Notified Chemical Substances) Substance is not listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.
The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
EC: European Community
LD50: Lethal dose, 50 percent
LC50: Lethal concentration, 50 percent
vPvB: very Persistent and very Bioaccumulative
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
EPA: Environmental Protection Agency (USA)
IARC: International Agency for Research on Cancer
EINECS: European Inventory of Existing Commercial Chemical Substances