

Safety Data Sheet

according to 29 CFR 1910.1200(g)

ma-D 525 - 532; ma-D 530/S - 532/S; mr-D 526/S

Revision date: 20.10.2016

Product code: R813X_USA

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1. Identification

Product identifier

ma-D 525 - 532; ma-D 530/S - 532/S; mr-D 526/S

Recommended use of the chemical and restrictions on use

Use of the substance/mixture

developer liquid (Developer for Photoresists)

Product Categories [PC]: Photosensitive agent and other photochemicals

Sector of uses [SU]: Manufacture of computer, electronic and optical products, electrical equipment.

Uses advised against

Do not use for private purposes (household).

Details of the supplier of the safety data sheet

Company name: micro resist technology GmbH
Street: Koepenicker Str. 325
Place: D-12555 Berlin
Telephone: +49 30 641670-100 Telefax: +49 30 641670-200
e-mail: safety@microresist.de
Internet: www.microresist.de

Emergency phone number: Chemtrec (International - 24 h): +1 703 527 3887

2. Hazard(s) identification

Classification of the chemical

29 CFR Part 1910.1200

Hazard categories:

Skin corrosion/irritation: Skin Irrit. 2

Serious eye damage/eye irritation: Eye Irrit. 2A

Specific target organ toxicity single exposure: STOT SE 1

Specific target organ toxicity repeated or prolonged exposure: STOT RE 1

Hazard Statements:

Causes skin irritation

Causes serious eye irritation

Causes damage to organs

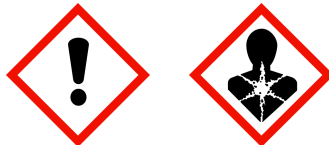
Causes damage to organs through prolonged or repeated exposure

Label elements

29 CFR Part 1910.1200

Signal word: Danger

Pictograms:



Hazard statements

Causes skin irritation

Causes serious eye irritation

Causes damage to organs

Causes damage to organs through prolonged or repeated exposure

Precautionary statements

Do not breathe dust/fume/gas/mist/vapors/spray.

Wear protective gloves/protective clothing/eye protection/face protection.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

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Continue rinsing.

If exposed: Call a poison center or doctor/physician.

Hazards not otherwise classified

No information available.

3. Composition/information on ingredients**Mixtures****Hazardous components**

CAS No	Components	Quantity
75-59-2	Tetramethylammonium hydroxide	< 3 %

4. First-aid measures**Description of first aid measures****General information**

First aider: Pay attention to self-protection! Remove affected person from the danger area and lay down.

After inhalation

Provide fresh air. Medical treatment necessary.

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Change contaminated clothing. In case of skin irritation, seek medical treatment.

After contact with eyes

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.

After ingestion

Observe risk of aspiration if vomiting occurs. Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting. Adverse human health effects and symptoms: Gastric perforation. Call a physician immediately.

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. Fire-fighting measures**Extinguishing media****Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings.

Unsuitable extinguishing media

No data available

Specific hazards arising from the chemical

Thermal decomposition can lead to the escape of irritating gases and vapors.

Special protective equipment and precautions for fire-fighters

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

Additional information

Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately.

Do not allow entering drains or surface water.

6. Accidental release measures

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Personal precautions, protective equipment and emergency procedures

Provide adequate ventilation. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Use personal protection equipment.

Environmental precautions

Do not allow to enter into surface water or drains.

Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal.

Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

7. Handling and storage

Precautions for safe handling

Advice on safe handling

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

Advice on protection against fire and explosion

No special fire protection measures are necessary.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed. Keep locked up. Store in a place accessible by authorized persons only. Provide adequate ventilation as well as local exhaustion at critical locations.

Advice on storage compatibility

Do not store together with:

Acid

Food and feedingstuffs

8. Exposure controls/personal protection

Control parameters

Exposure controls



Appropriate engineering controls

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray.

Protective and hygiene measures

Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme.

Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink.

Eye/face protection

Suitable eye protection: goggles.

Hand protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the

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specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Tested protective gloves are to be worn:
 German Industry Norms (DIN) / European Norms (EN): DIN EN 374

Duration of wearing with permanent contact:
 Suitable material: FKM (fluororubber).
 Thickness of glove material: 0.7 mm
 penetration time (maximum wearing period): > 480 min
 Recommended protective gloves brand: KCL 890 Vitoject, Manufacturer: KCL GmbH, D-36124 Eichenzell,
 Source of supply: www.kcl.de

Wearing time with occasional contact (splashes):
 Suitable material: NBR (Nitrile rubber).
 Thickness of glove material: 0.4 mm
 penetration time (maximum wearing period): > 10 min
 Recommended protective gloves brand: KCL 730 Camatril-Velours, Manufacturer: KCL GmbH, D-36124 Eichenzell, Source of supply: www.kcl.de

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Skin protection

For the protection against direct skin contact, body protective clothing is essential (in addition to the usual working clothes).

Take off immediately all contaminated clothing.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Filter types: A, B, E, K. Class 1: Maximum permitted contaminant concentration in inhaled air = 1000 mL/m³ (0.1 % by vol.); class 2: maximum permitted contaminant concentration in inhaled air = 5000 mL/m³ (0.5 % by vol.); class 3: maximum permitted contaminant concentration in inhaled air = 10000 mL/m³ (1.0 % by vol.)

Environmental exposure controls

Do not empty into drains.

9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state:	liquid
Color:	colourless
Odor:	Amines

Test method

pH-Value (at 20 °C):	> 11
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Changes in the physical state

Melting point/freezing point:	not determined
Initial boiling point and boiling range:	not determined
Flash point:	not determined

Flammability

Solid:	not applicable
Gas:	not applicable

Explosive properties

No data available

Lower explosion limits:	not determined
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Upper explosion limits:	not determined
Auto-ignition temperature	
Solid:	not applicable
Gas:	not applicable
Decomposition temperature:	not determined
Oxidizing properties	
Not oxidising.	
Vapor pressure:	not determined
Density:	1 g/cm ³
Water solubility:	easily soluble
Solubility in other solvents	
not determined	
Partition coefficient:	not determined
Viscosity / dynamic:	not determined
Viscosity / kinematic:	not determined
Flow time:	not determined
Vapor density:	not determined
Evaporation rate:	not determined

Other information

Solid content: not determined

No data available

10. Stability and reactivity

Reactivity

No data available

Chemical stability

Stability: Stable

The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions

Hazardous reactions: Will not occur

Exothermic reaction with: Acid, Peroxides, Oxidising agent.

Conditions to avoid

heat. Thermal decomposition can lead to the escape of irritating gases and vapours.

Incompatible materials

Keep away from: Acid, Oxidising agent, Peroxides. metal.

Hazardous decomposition products

In case of fire may be liberated: Nitrogen oxides (NO_x). Carbon monoxide. Carbon dioxide.

11. Toxicological information

Information on toxicological effects

Route(s) of Entry

inhalation, ingestion, skin contact, eye contact

Acute toxicity

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Mixture related information:

Acute toxicity (oral): LD50: > 2000 mg/kg (Method: Calculation method.)

Acute toxicity (dermal): LD50: > 2000 mg/kg Rat (Method: OECD 402)

CAS No	Components				
	Exposure route	Dose	Species	Source	Method
75-59-2	Tetramethylammonium hydroxide				
	oral	LD50 50 mg/kg	Rat		
	dermal	LD50 50 mg/kg	Rat		

Irritation and corrosivity

Mixture related information:

Results from in vitro test for skin corrosivity/irritancy: not corrosive (OECD 431.)

Causes serious eye damage. Method: Calculation method.

Causes skin irritation. Method: Calculation method.

Sensitizing effects

No data available

Carcinogenic/mutagenic/toxic effects for reproduction

No data available

Specific target organ toxicity (STOT) - single exposure

Causes damage to organs.

Method: Calculation method.

Specific target organ toxicity (STOT) - repeated exposure

Causes damage to organs through prolonged or repeated exposure.

Method: Calculation method.

Carcinogenicity (OSHA): Ingredient (name): none

Carcinogenicity (IARC): Ingredient (name): none

Carcinogenicity (NTP): Ingredient (name): none

Aspiration hazard

No data available

Specific effects in experiment on an animal

Data apply to the main component.

Tetramethylammonium hydroxide:

Ingestion causes nausea, weakness and central nervous system effects.

May cause damage to liver through prolonged or repeated exposure if swallowed.

12. Ecological information

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Persistence and degradability

The product has not been tested.

Bioaccumulative potential

The product has not been tested.

Mobility in soil

The product has not been tested.

Other adverse effects

No information available.

Further information

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

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13. Disposal considerations

Waste treatment methods

Advice on disposal

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation.

Contaminated packaging

This material and its container must be disposed of as hazardous waste. Handle contaminated packages in the same way as the substance itself.

14. Transport information

US DOT 49 CFR 172.101

Proper shipping name:

Not a hazardous material with respect to these transport regulations.

Marine transport (IMDG)

UN number:

No dangerous good in sense of this transport regulation.

UN proper shipping name:

No dangerous good in sense of this transport regulation.

Transport hazard class(es):

No dangerous good in sense of this transport regulation.

Packing group:

No dangerous good in sense of this transport regulation.

Air transport (ICAO-TI/IATA-DGR)

UN number:

No dangerous good in sense of this transport regulation.

UN proper shipping name:

No dangerous good in sense of this transport regulation.

Transport hazard class(es):

No dangerous good in sense of this transport regulation.

Packing group:

No dangerous good in sense of this transport regulation.

Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

Special precautions for user

No information available.

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

not applicable

15. Regulatory information

U.S. Regulations

National Inventory TSCA

TSCA Inventory: All ingredients are listed.

National regulatory information

SARA Section 311/312 Hazards:

Tetramethylammonium hydroxide (75-59-2): Immediate (acute) health hazard, Delayed (chronic) health hazard

State Regulations

Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)

This product contains no chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other information

Hazardous Materials Information Label (HMIS)

Health: *2

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Flammability: 0
Physical Hazard: 0
Personal Protection: B

NFPA Hazard Ratings

Health: 2
Flammability: 0
Reactivity: 0
Unique Hazard: /



Changes

Revision date: 20.10.2016
Revision No: 1,00
chapter: 1

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
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service
LC50: Lethal concentration, 50%
LD50: Lethal dose, 50%

Other data

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)