

Safety Data Sheet

according to Regulation (EC) No 1907/2006

ma-N 400 Negative Tone Photoresist Series

Print date: 30.04.2013

Product code: R211XXX

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

Product identifier

ma-N 400 Negative Tone Photoresist Series

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

Use of the substance/mixture

Manufacture of computer, electronic and optical products, electrical equipment.

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 telephone: +49 30 641670-100

Further Information

This number is serviced during office hours.

SECTION 2: Hazards identification

Classification of the substance or mixture

Indications of danger : Irritant
R-phrases:
Flammable.
Irritating to eyes and skin.

GHS classification

Hazard categories:
Flammable liquid: Flam. Liq. 3
Skin corrosion/irritation: Skin Irrit. 2
Serious eye damage/eye irritation: Eye Irrit. 2
Hazard Statements:
Flammable liquid and vapour.
Causes skin irritation.
Causes serious eye irritation.

Label elements

Hazardous components which must be listed on the label

Anisole
cyclopentanone
1-Ethylpyrrolidin-2-One

Signal word: Warning
Pictograms: GHS02-GHS07



Hazard statements

H226 Flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

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Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P352	Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P370+P378	In case of fire: Use Foam. Extinguishing powder. Carbon dioxide (CO ₂). for extinction.
P403+P235	Store in a well-ventilated place. Keep cool.

Other hazards

Flammable liquid and vapour.

The components in this formulation do not meet the criteria for classification as PBT or vPvB.

SECTION 3: Composition/information on ingredients

Mixtures

Hazardous components

EC No	Chemical name	Quantity
CAS No	Classification	
Index No	GHS classification	
REACH No		
202-876-1	Anisole	15 - 32 %
100-66-3	R10	
	Flam. Liq. 3, Skin Irrit. 2, Eye Irrit. 2; H226 H315 H319	
204-435-9	cyclopentanone	12 - 30 %
120-92-3	Xi R10-36/38	
606-025-00-9	Flam. Liq. 3, Eye Irrit. 2, Skin Irrit. 2; H226 H319 H315	
203-603-9	2-methoxy-1-methylethyl acetate	12 - 30 %
108-65-6	R10	
	Flam. Liq. 3; H226	
01-2119475791-29		
220-250-6	1-Ethylpyrrolidin-2-One	2 - 8 %
2687-91-4	Xn, Xi R22-36	
	Acute Tox. 4, Eye Irrit. 2; H302 H319	
01-2119472138-36		

Full text of R- and H-phrases: see section 16.

SECTION 4: First aid measures

Description of first aid measures

General information

In case of accident or if you feel unwell, seek medical advice immediately (show safety data sheet if

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possible).

After inhalation

Provide fresh air. In case of breathing difficulties administer oxygen. If victim is at risk of losing consciousness, position and transport on their side. In case of irritation of the respiratory tract seek medical advice.

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

Rinse immediately carefully and thoroughly with eye-bath or water. Consult an ophthalmologist.

After ingestion

Rinse mouth immediately and drink large quantities of water.
Caution if victim vomits: Risk of aspiration!
Medical treatment necessary.

Most important symptoms and effects, both acute and delayed

Causes skin irritation.
Causes serious eye irritation.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

Extinguishing media**Suitable extinguishing media**

Carbon dioxide (CO₂). Dry extinguishing powder. Foam.

Extinguishing media which must not be used for safety reasons

High power water jet.

Special hazards arising from the substance or mixture

Formation of potentially explosive mixtures with: Air.
In case of fire and/or explosion do not breathe fumes.
Can be released in case of fire: Nitrogen oxides (NO_x). Carbon monoxide. Carbon dioxide (CO₂).

Advice for firefighters

In case of fire: Wear self-contained breathing apparatus. Wear chemical resistant suit.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Provide adequate ventilation. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eye and clothing. Wear personal protection equipment.

Environmental precautions

Do not empty into drains or the aquatic environment.

Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Collect in closed containers for disposal. Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections

Treat the assimilated material according to the section on waste disposal.
See protective measures under point 7 and 8.

SECTION 7: Handling and storage

Precautions for safe handling

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Advice on safe handling

Use only in well-ventilated areas. Only use material in places where open light, fire and other sources of ignition can be kept away.
Do not breathe vapour or spray.

Advice on protection against fire and explosion

Take precautionary measures against static discharges.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed and in a well-ventilated place. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Suitable material for floor covering: Solvent-proof.

Further information on storage conditions

Protect against: heat. UV-radiation/sunlight.

Specific end use(s)

No data available

SECTION 8: Exposure controls/personal protection

Control parameters

Exposure limits (EH40)

CAS No	Chemical name	ml/m ³	mg/m ³	F/ml	Category	Origin
108-65-6	1-Methoxypropyl acetate	50	274		TWA (8 h)	WEL
		100	548		STEL (15 min)	WEL

Additional advice on limit values

No data available

Exposure controls



Occupational exposure controls

In case of open handling equipment with built-in suction must be used. Do not breathe gas/fumes/vapour/spray. Wear personal protection equipment. Provide adequate ventilation.

Protective and hygiene measures

Take off immediately all contaminated clothing. Protect skin by using skin protective cream. After work, wash hands and face. When using do not eat or drink.

Respiratory protection

If technical suction or ventilation measures are not possible or are insufficient, protective breathing apparatus must be worn. Respiratory protection required in case of: aerosol or mist generation. Filter respirator (full mask or mouth-piece) with filter: A

Hand protection

Tested protective gloves are to be worn: Single-use gloves.
German Industry Norms (DIN) / European Norms (EN): DIN EN 374

Duration of wearing with permanent contact:
Suitable material: Butyl rubber.
Thickness of glove material: 0.7 mm
penetration time (maximum wearing period): > 480 min

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Recommended protective gloves brand: KCL 898 Butoject, Manufacturer: KCL GmbH, D-36124 Eichenzell, Source of supply: www.kcl.de

Duration of wearing with occasional contact (splashes):

Suitable material: NBR (Nitrile rubber).

Thickness of glove material: 0.4 mm

penetration time (maximum wearing period): > 240 min

Recommended protective gloves brand: KCL 730 Camatril-Velours, Manufacturer: KCL GmbH, D-36124 Eichenzell, Source of supply: www.kcl.de

In the cases of special applications, it is recommended to check the chemical resistance with the manufacturer of the gloves.

Eye protection

Suitable eye protection: Tightly sealed safety glasses.

Don't wear contact lenses.

Skin protection

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

Environmental exposure controls

Do not empty into drains.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Physical state:	liquid
Colour:	amber coloured
Odour:	characteristic

Test method

pH-Value: No data available

Changes in the physical state

Melting point: No data available

Boiling point: 131 °C (cyclopentanone)

Flash point: 43 °C DIN EN ISO 13736

Explosive properties

Product is: not explosive.

In case of insufficient ventilation and/or through use, explosive/highly flammable mixtures may develop.

Lower explosion limits: No data available

Upper explosion limits: No data available

Ignition temperature: No data available

Vapour pressure: No data available

Density: 1,00-1,12 g/cm³

Water solubility: slightly soluble

Partition coefficient: No data available

Viscosity / dynamic:
(at 25 °C) 3-320 mPa·s

Viscosity / kinematic: No data available

Flow time: No data available

Vapour density: No data available

Evaporation rate: No data available

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Other information

No data available

SECTION 10: Stability and reactivity

Reactivity

No data available

Chemical stability

No data available

Possibility of hazardous reactions

No data available

Conditions to avoid

UV-radiation/sunlight. heat.

Incompatible materials

Oxidizing agents, strong. Reducing agents, strong. Acid, concentrated. Peroxides.

Hazardous decomposition products

Nitrogen oxides (NOx).

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Anisole:

Acute toxicity, oral LD50: 3700 mg/kg species: Rat. (RTECS)

2-methoxy-1-methylethyl acetate:

Acute toxicity, oral LD50: 8532 mg/kg species: Rat. (RTECS)

Acute toxicity, dermal LD50: >5000 mg/kg species: Rabbit. (RTECS)

Acute toxicity, inhalant LC50: 23,8 mg/l /6 h species: Rat. (IUCLID)

cyclopentanone:

Acute toxicity, oral LD50: 1180 mg/kg species: Rat. (IUCLID)

Acute toxicity, dermal LD50: >5000 mg/kg species: Rabbit. (IUCLID)

Acute toxicity, inhalant LC50: >19,5 mg/l /4 h species: Rat.

1-Ethylpyrrolidin-2-One:

Acute toxicity, oral LD50: 3200 mg/kg species: Rat.

Acute toxicity, dermal LD50: >2000 mg/kg species: Rat. (OECD 402)

Acute toxicity, inhalant LC50: >5,1 mg/l /4 h species: Rat. (OECD 403)

CAS No	Chemical name				
	Exposure routes	Method	Dose	Species	Source
100-66-3	Anisole				
	oral	LD50	3700 mg/kg	Rat.	
108-65-6	2-methoxy-1-methylethyl acetate				
	oral	LD50	8532 mg/kg	Rat.	
	dermal	LD50	7500 mg/kg	Rabbit.	
2687-91-4	1-Ethylpyrrolidin-2-One				
	oral	LD50	1350 mg/kg	Rat.	

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SECTION 12: Ecological information

Toxicity

Anisole:

Acute Daphnia toxicity EC50: 40 mg/l /24h species: Daphnia magna

2-methoxy-1-methylethyl acetate:

Acute fish toxicity LC50: 100-180 mg/l/96h species: Oncorhynchus mykiss (OECD 203)

Acute Daphnia toxicity EC50: >500 mg/l/48h species: Daphnia magna (OECD 202)

cyclopentanone:

Acute fish toxicity Leuciscus idus LC50: 2950 mg/l/ 48h (IUCLID)

Acute Daphnia toxicity Daphnia magna EC50: 1435 mg/l/ 24h (IUCLID)

Bacterial toxicity: Pseudomonas putida EC5: 175 mg/l/ 16h (IUCLID)

1-Ethylpyrrolidin-2-One:

Acute fish toxicity Brachydanio rerio LC50: >446-999 mg/l/ 96h (OECD 203)

Acute Daphnia toxicity Daphnia magna EC50: >100 mg/l/ 48h

Bacterial toxicity: Pseudomonas putida EC50: >1000 mg/l/ 16h

CAS No	Chemical name					
	Aquatic toxicity	Method	Dose	h	Species	Source
100-66-3	Anisole					
	Acute fish toxicity	LC50	> 1 mg/l	96	Danio rerio	
108-65-6	2-methoxy-1-methylethyl acetate					
	Acute fish toxicity	LC50	161 mg/l	96	Pimephales promelas	
	Acute crustacea toxicity	EC50	408 mg/l	48	Daphnia magna	
2687-91-4	1-Ethylpyrrolidin-2-One					
	Acute fish toxicity	LC50	999 mg/l	96	Danio rerio	
	Acute crustacea toxicity	EC50	>100 mg/l	48	Daphnia magna	

Persistence and degradability

No data available

Bioaccumulative potential

Distribution coefficient (n-octanol / water) (log P O/W):

Anisole: 2,11

2-methoxy-1-methylethyl acetate: 0,43

1-Ethylpyrrolidin-2-One: -0,2

Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
100-66-3	Anisole	2,11
108-65-6	2-methoxy-1-methylethyl acetate	0,43
2687-91-4	1-Ethylpyrrolidin-2-One	-0,2

Mobility in soil

No data available

Results of PBT and vPvB assessment

No data available

Other adverse effects

No data available

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SECTION 13: Disposal considerations

Waste treatment methods

Advice on disposal

Do not empty into drains or the aquatic environment. Waste disposal according to official state regulations.

Contaminated packaging

Handle contaminated packaging in the same way as the substance itself.

SECTION 14: Transport information

Land transport (ADR/RID)

UN number: UN1866
UN proper shipping name: Resin solution
Transport hazard class(es): 3
Packing group: III
 Hazard label: 3



Classification code: F1
 Special Provisions: 640E
 Limited quantity: 5 L
 Transport category: 3
 Hazard No: 30
 Tunnel restriction code: D/E

Other applicable information (land transport)

Excepted Quantity: E1

Marine transport

UN number: UN1866
UN proper shipping name: Resin solution
Transport hazard class(es): 3
Packing group: III
 Hazard label: 3



Special Provisions: 223, 955
 Limited quantity: 5 L
 EmS: F-E, S-E

Other applicable information (marine transport)

Excepted Quantity: E1

Air transport

UN/ID number: UN1866
UN proper shipping name: Resin solution
Transport hazard class(es): 3

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Packing group:	III	
Hazard label:	3	
Special Provisions:	A3	
Limited quantity Passenger:	10 L	
IATA-packing instructions - Passenger:		355
IATA-max. quantity - Passenger:		60 L
IATA-packing instructions - Cargo:		366
IATA-max. quantity - Cargo:		220 L

Other applicable information (air transport)

 Excepted Quantity: E1
 Passenger-LQ: Y344

Environmental hazards

Dangerous for the environment: no

Special precautions for user

No data available

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

not applicable

SECTION 15: Regulatory information
Safety, health and environmental regulations/legislation specific for the substance or mixture
EU regulatory information

1999/13/EC (VOC): 41% - 100%

National regulatory information

Employment restrictions: Observe employment restrictions for young people. Observe employment restrictions for child bearing mothers and nursing.

Water contaminating class (D): 2 - water contaminating

Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information
Changes

chapter: 1; 2; 4; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15; 16

Full text of R-phrases referred to under sections 2 and 3

10	Flammable.
22	Harmful if swallowed.
36	Irritating to eyes.
36/38	Irritating to eyes and skin.

Full text of H-Statements referred to under sections 2 and 3

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.

Further Information

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

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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.)