

## Safety Data Sheet

according to Regulation (EC) No 1907/2006

### Developer for hybrid polymers OrmoDev

Print date: 09.02.2017

Product code: R41DEV0

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

### 1.1. Product identifier

Developer for hybrid polymers OrmoDev

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

#### Use of the substance/mixture

developer liquid

Product Categories [PC] 30: Photosensitive agent and other photochemicals

Sector of uses [SU] 16: Manufacture of computer, electronic and optical products, electrical equipment.

#### Uses advised against

Do not use for private purposes (household).

### 1.3. 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	

### 1.4. Emergency telephone number:

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

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Regulation (EC) No. 1272/2008

Hazard categories:

Flammable liquid: Flam. Liq. 2

Acute toxicity: Acute Tox. 4

Serious eye damage/eye irritation: Eye Irrit. 2

Specific target organ toxicity - single exposure: STOT SE 3

Specific target organ toxicity - single exposure: STOT SE 3

Hazard Statements:

Highly flammable liquid and vapour.

Causes serious eye irritation.

Harmful if inhaled.

May cause respiratory irritation.

May cause drowsiness or dizziness.

### 2.2. Label elements

#### Regulation (EC) No. 1272/2008

#### Hazard components for labelling

propan-2-ol; isopropyl alcohol; isopropanol

4-methylpentan-2-one, isobutyl methyl ketone

Signal word: Danger

Pictograms:



#### Hazard statements

H225

Highly flammable liquid and vapour.

H319

Causes serious eye irritation.

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H332 Harmful if inhaled.  
 H335 May cause respiratory irritation.  
 H336 May cause drowsiness or dizziness.

#### Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

#### Special labelling of certain mixtures

EUH066 Repeated exposure may cause skin dryness or cracking.

#### 2.3. Other hazards

No information available.

### SECTION 3: Composition/information on ingredients

#### 3.2. Mixtures

##### Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification according to Regulation (EC) No. 1272/2008 [CLP]			
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol			40-70 %
	200-661-7	603-117-00-0	01-2119457558-25	
	Flam. Liq. 2, Eye Irrit. 2, STOT SE 3; H225 H319 H336			
108-10-1	4-methylpentan-2-one, isobutyl methyl ketone			40-70 %
	203-550-1	606-004-00-4	01-2119473980-30	
	Flam. Liq. 2, Acute Tox. 4, Eye Irrit. 2, STOT SE 3; H225 H332 H319 H335 EUH066			

Full text of H and EUH statements: see section 16.

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

##### General information

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if 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 respiratory tract irritation, consult a physician.

##### 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 plenty of water.  
 Caution if victim vomits: Risk of aspiration!  
 Medical treatment necessary.

#### 4.2. Most important symptoms and effects, both acute and delayed

Causes serious eye irritation.  
 May cause respiratory irritation.

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May cause drowsiness or dizziness.

#### **4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

### **SECTION 5: Firefighting measures**

#### **5.1. Extinguishing media**

##### **Suitable extinguishing media**

Carbon dioxide (CO<sub>2</sub>). Dry extinguishing powder. Foam.

##### **Unsuitable extinguishing media**

Water.

#### **5.2. Special hazards arising from the substance or mixture**

In case of fire and/or explosion do not breathe fumes.

#### **5.3. Advice for firefighters**

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

### **SECTION 6: Accidental release measures**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

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

#### **6.2. Environmental precautions**

Do not allow to enter into surface water or drains.

#### **6.3. Methods and material for containment and cleaning up**

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Do not rinse down with water. Collect in closed containers for disposal. Clean contaminated articles and floor according to the environmental legislation.

#### **6.4. Reference to other sections**

Treat the recovered material as prescribed in the section on waste disposal.

See protective measures under point 7 and 8.

### **SECTION 7: Handling and storage**

#### **7.1. Precautions for safe handling**

##### **Advice on safe handling**

Use only in well-ventilated areas. Only use the material in places where open light, fire and other flammable sources can be kept away. Do not breathe vapour/aerosol.

##### **Advice on protection against fire and explosion**

Take precautionary measures against static discharges. Keep away from sources of ignition. - No smoking.

##### **Further information on handling**

In case of fire, use sand, earth, extinguishing powder or foam. Never use water.

#### **7.2. Conditions for safe storage, including any incompatibilities**

##### **Requirements for storage rooms and vessels**

Keep container tightly closed and in a well-ventilated place.

##### **Advice on storage compatibility**

Do not store together with: Oxidising agent. Pyrophoric or self-heating substances.

##### **Further information on storage conditions**

Protect against: UV-radiation/sunlight. heat.

#### **7.3. Specific end use(s)**

No data available

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## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Exposure limits (EH40)

CAS No	Substance	ppm	mg/m <sup>3</sup>	fibres/ml	Category	Origin
108-10-1	4-Methylpentan-2-one	50	208		TWA (8 h)	WEL
		100	416		STEL (15 min)	WEL
67-63-0	Propan-2-ol	400	999		TWA (8 h)	WEL
		500	1250		STEL (15 min)	WEL

#### Biological Monitoring Guidance Values (EH40)

CAS No	Substance	Parameter	Value	Test material	Sampling time
108-10-1	4-methylpentan-2-one	4-methylpentan-2-one	20 µmol/L	urine	Post shift

#### DNEL/DMEL values

CAS No	Substance	Exposure route	Effect	Value
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol			
	Worker DNEL, long-term	inhalation	systemic	500 mg/m <sup>3</sup>
	Worker DNEL, long-term	dermal	systemic	888 mg/kg bw/day
	Consumer DNEL, long-term	inhalation	systemic	89 mg/m <sup>3</sup>
	Consumer DNEL, long-term	dermal	systemic	319 mg/kg bw/day
	Consumer DNEL, acute	oral	systemic	26 mg/kg bw/day

#### PNEC values

CAS No	Substance	Value
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol	
	Freshwater	140,9 mg/l
	Marine water	140,9 mg/l
	Freshwater sediment	552 mg/kg
	Marine sediment	552 mg/kg
	Soil	28 mg/kg

#### Additional advice on limit values

No data available

### 8.2. Exposure controls



#### Appropriate engineering controls

If handled uncovered, arrangements with local exhaust ventilation have to be used. Do not breathe gas/fumes/vapour/spray. Wear personal protection equipment. Provide adequate ventilation.

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#### Protective and hygiene measures

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

#### Eye/face protection

Suitable eye protection: Tightly sealed safety glasses.

#### Hand protection

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: Butyl rubber.

Thickness of glove material: 0.7 mm

penetration time (maximum wearing period): > 480 min

Recommended protective gloves brand: KCL 898 Butoject, 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): > 30 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). Wear antistatic work clothing.

#### Respiratory protection

If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn. Respiratory protection necessary at: aerosol or mist generation. Filtering device (full mask or mouthpiece) with filter: AP3

#### Environmental exposure controls

Do not empty into drains.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state:	liquid
Colour:	colourless - light yellow
Odour:	characteristic

#### Test method

pH-Value:	No data available
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#### Changes in the physical state

Melting point:	No data available
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Initial boiling point and boiling range:	82,4 °C
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Flash point:	11,5 °C DIN EN ISO 13736
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#### Flammability

Solid:	No data available
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Gas:	No data available
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#### Explosive properties

The 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: 425 °C

#### Auto-ignition temperature

Solid: No data available

Gas: No data available

Decomposition temperature: No data available

#### Oxidizing properties

not determined

Vapour pressure: 43 hPa  
(at 20 °C)

Density (at 25 °C): 0,79 g/cm<sup>3</sup>

Water solubility: No data available

#### Solubility in other solvents

not determined

Partition coefficient: No data available

Viscosity / dynamic: <7 mPa·s  
(at 25 °C)

Viscosity / kinematic: No data available

Flow time: No data available

Vapour density: No data available

Evaporation rate: No data available

Solvent separation test: not determined

#### 9.2. Other information

No data available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Flammable, Ignition hazard.

#### 10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

#### 10.3. Possibility of hazardous reactions

No known hazardous reactions.

#### 10.4. Conditions to avoid

Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. Vapours can form explosive mixtures with air.

#### 10.5. Incompatible materials

Oxidizing agents, strong. Reducing agents. Alkalis (alkalis).

Alkali metals. Alkaline earth metals. Aluminium. (Ignition hazard.)

Exothermic reactions with: Oxidizing agents. Nitric acid. aldehydes. Amines. iron.

Formation of explosive mixtures with: Phosgene. Hydrogenium peroxide. Nitrogen oxides (NOx).

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#### 10.6. Hazardous decomposition products

Carbon monoxide. Carbon dioxide.

#### **Further information**

Materials to avoid: copper. Oil.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

##### **Acute toxicity**

Harmful if inhaled.

##### **ATEmix calculated**

ATE (inhalative aerosol) 3,000 mg/l

CAS No	Chemical name			
	Exposure route	Dose	Species	Source
67-63-0	propan-2-ol; isopropyl alcohol; isopropanol			
	oral	LD50 5001 mg/kg	Rat	
	dermal	LD50 5001 mg/kg	Rat	
	inhalative (4 h) vapour	LC50 72,6 mg/l	Rat	
108-10-1	4-methylpentan-2-one, isobutyl methyl ketone			
	oral	LD50 2080 mg/kg	Rat	RTECS
	dermal	LD50 >16000 mg/kg	Rabbit	IUCLID
	inhalative vapour	ATE 11 mg/l		
	inhalative aerosol	ATE 1,5 mg/l		

##### **Irritation and corrosivity**

Causes serious eye irritation.

Skin corrosion/irritation: Based on available data, the classification criteria are not met.

##### **Sensitising effects**

Based on available data, the classification criteria are not met.

##### **Carcinogenic/mutagenic/toxic effects for reproduction**

Based on available data, the classification criteria are not met.

##### **STOT-single exposure**

May cause respiratory irritation. (4-methylpentan-2-one, isobutyl methyl ketone)

May cause drowsiness or dizziness. (propan-2-ol; isopropyl alcohol; isopropanol)

##### **STOT-repeated exposure**

Repeated exposure may cause skin dryness or cracking.

##### **Aspiration hazard**

Based on available data, the classification criteria are not met.

### SECTION 12: Ecological information

#### 12.1. Toxicity

The product is not: Ecotoxic.

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CAS No	Chemical name				
	Aquatic toxicity	Dose	[h]   [d]	Species	Source
108-10-1	4-methylpentan-2-one, isobutyl methyl ketone				
	Acute fish toxicity	LC50 mg/l	505 - 540	96 h	Pimephales promelas
	Acute algae toxicity	ErC50	400 mg/l	96 h	Selenastrum capricornutum
	Acute crustacea toxicity	EC50	170 mg/l	48 h	Daphnia magna
					IUCLID

#### 12.2. Persistence and degradability

propan-2-ol; isopropyl alcohol; isopropanol:

Biological degradation: Results: Easily biodegradable (concerning to the criteria of the OECD). Degree of elimination: 95 %, Time (d): 21, Method: OECD 301E / EEC 92/69 annex V, C.4-B

4-methylpentan-2-one, isobutyl methyl ketone:

Biological degradation: Results: Easily biodegradable (concerning to the criteria of the OECD). Degree of elimination: 99 %, Time (d): 7, Method: OECD 301E / EEC 92/69 annex V, C.4-B

#### 12.3. Bioaccumulative potential

propan-2-ol; isopropyl alcohol; isopropanol:

Distribution coefficient (n-octanol / water) (log P O/W): 0,05 (OECD 107)

4-methylpentan-2-one, isobutyl methyl ketone:

Distribution coefficient (n-octanol / water) (log P O/W): 1,31

Due to the n-octanol-water partition coefficient, a bio-accumulation in organisms is not to be expected.

#### Partition coefficient n-octanol/water

CAS No	Chemical name	Log Pow
108-10-1	4-methylpentan-2-one, isobutyl methyl ketone	1,31

#### 12.4. Mobility in soil

No data available

#### 12.5. Results of PBT and vPvB assessment

No data available

#### 12.6. Other adverse effects

No information available.

#### Further information

product has not been tested. Do not allow uncontrolled leakage of product into the environment.

### SECTION 13: Disposal considerations

#### 13.1. 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.

Consult the local waste disposal expert about waste disposal.

##### Contaminated packaging

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.

Consult the local waste disposal expert about waste disposal.

### SECTION 14: Transport information

#### Land transport (ADR/RID)



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**14.1. UN number:** UN 1993  
**14.2. UN proper shipping name:** FLAMMABLE LIQUID, N.O.S. (Isopropanol, Methyl isobutyl ketone)  
**14.3. Transport hazard class(es):** 3  
**14.4. Packing group:** II  
 Hazard label: 3



Classification code: F1  
 Special Provisions: 274 601 640D  
 Limited quantity: 1 L  
 Excepted quantity: E2  
 Transport category: 2  
 Hazard No: 33  
 Tunnel restriction code: D/E

#### Marine transport (IMDG)

**14.1. UN number:** UN 1993  
**14.2. UN proper shipping name:** FLAMMABLE LIQUID, N.O.S. (Isopropanol, Methyl isobutyl ketone)  
**14.3. Transport hazard class(es):** 3  
**14.4. Packing group:** II  
 Hazard label: 3



Special Provisions: 274  
 Limited quantity: 1 L  
 Excepted quantity: E2  
 EmS: F-E, S-E

#### Air transport (ICAO)

**14.1. UN number:** UN 1993  
**14.2. UN proper shipping name:** FLAMMABLE LIQUID, N.O.S. (Isopropanol, Methyl isobutyl ketone)  
**14.3. Transport hazard class(es):** 3  
**14.4. Packing group:** II  
 Hazard label: 3



Special Provisions: A3  
 Limited quantity Passenger: 1 L  
 Passenger LQ: Y341  
 Excepted quantity: E2  
 IATA-packing instructions - Passenger: 353  
 IATA-max. quantity - Passenger: 5 L  
 IATA-packing instructions - Cargo: 364  
 IATA-max. quantity - Cargo: 60 L

#### 14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

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#### 14.6. Special precautions for user

No information available.

#### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not applicable

### SECTION 15: Regulatory information

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

##### EU regulatory information

2010/75/EU (VOC):	100 % (790 g/l)
2004/42/EC (VOC):	100 % (790 g/l)
Information according to 2012/18/EU (SEVESO III):	P5c FLAMMABLE LIQUIDS

##### National regulatory information

Employment restrictions:	Observe restrictions to employment for juvenils according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.
Water contaminating class (D):	1 - slightly water contaminating

#### 15.2. Chemical safety assessment

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

### SECTION 16: Other information

#### Changes

chapter: 1; 8; 11; 13; 15

#### 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%

#### Relevant H and EUH statements (number and full text)

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
EUH066	Repeated exposure may cause skin dryness or cracking.

#### 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 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.

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