

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

MSDS Number : 000000505725

Print Date: 2014.01.01

1. SUBSTANCE / MIXTURE AND COMPANY IDENTIFICATION

Product name : **AZ LOR-28**

Recommended use of the chemical and restrictions on use

Specific use(s) : Photoresist

Restriction on use : No data.

Information on supplier/distributor

Company	: AZ Chem (Korea) Ltd. 21, Teheran-ro 8-gil, Gangnam-gu, Seoul
Telephone	: +82 (0)2 2056 1315
Telefax	: +82 (0)2 514 5918

Emergency telephone number : +82 (0)31 670 8301

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Flammable liquids	: Category 3
Eye irritation	: Category 2
Specific target organ toxicity - single exposure	: Category 3

Label elements including precautionary statements

Pictogram



Signal word : Warning

Hazard statements : Flammable liquid and vapour.
Causes serious eye irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.

Precautionary statements : Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

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smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Call a POISON CENTER or doctor/ physician if you feel unwell.

If eye irritation persists: Get medical advice/ attention.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

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

Store in a well-ventilated place. Keep cool.

Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

NFPA

Test substance: 2-methoxy-1-methylethyl acetate

Health: 0

Flammability: 2

Reactivity: 0

Protection: NONE

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	KE No.	Concentration(%)
2-Methoxy-1-methylethyl acetate	108-65-6	KE-23315	55 - 65
Creosl novolak resin	Trade Secret	Trade Secret	25 - 35
Phenolic polyol	Trade Secret	Trade Secret	5 - 15
Triazine derivative	Trade Secret	Trade Secret	1 - 5

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

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- ※ KE: Korean Existing Chemical no.
- ※ Detail composition information is trade secret.

4. FIRST AID MEASURES

- | | |
|------------------|---|
| Eye contact | : In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water.
Seek medical aid immediately |
| Skin contact | : Remove contaminated clothing and shoes. Before decontaminating clothing and shoes allow to dry fully. Wash items and allow to dry before reuse.
Wash thoroughly with water and soap.
If skin problems persist, seek medical advice. |
| Inhalation | : If inhaled, remove immediately to fresh air; if not breathing give artificial respiration; obtain medical help. |
| Ingestion | : Do not induce vomiting.
When swallowed seek medical aid immediately and show the physician the packaging or the label of the packaging.
Let plenty of water be drunk in small gulps.
In case of unconsciousness keep victim in lateral head-down position, do not give anything by mouth and do not induce vomiting. |
| Advice to doctor | : Treat symptomatically. |

5. FIREFIGHTING MEASURES

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Carbon dioxide, water spray, dry chemical, alcohol resistant foam.

Unsuitable extinguishing media : No Data

Specific hazards during fire fighting

- : Combustion gases of organic materials must in principle be graded as inhalation poisons.
- Thermal decomposition may generate carbon dioxide, carbon monoxide, and oxides of nitrogen and sulfur.

Special protective equipment for fire-fighters

- : Use self-contained breathing apparatus
- Well closed full protective clothing (coat and pants) including helmet.
- If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

MSDS Number : 000000505725

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Further information : De-energize the area and remove any source of ignition. Remove material from the area if can be done without risk. Cool container and metallic parts with a water spray jet. Avoid breathing vapors and keep upwind. Evacuate endangered area, close off area. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Vapor may travel considerable distance to source of ignition and flash back. Do not use direct water stream. May spread fire. Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Keep away sources of ignition.
Wear personal protective equipment. Unprotected persons must be kept away.
Keep people away and stay on the upwind side.

Environmental precautions : Do not allow to enter drains or waterways
If the product gets into drains, inform the relevant authorities immediately.

Methods for cleaning up : Wearing appropriate personal protective equipment, contain spill, ventilate area of spill or leak. Collect onto inert absorbent. Place in suitable container.
Containers in which spilt substance has been collected must be adequately labelled

Additional advice : Keep away sources of ignition, stop running engines, no smoking. Close leakages. Evacuate endangered area, seal off area. Dispose appropriately.

7. HANDLING AND STORAGE

Handling

Advice on safe handling : Keep away from sources of ignition - No smoking.
Take precautionary measures against electrostatic loading.
Earth vessels and equipment well.
Avoid breathing vapors and contact with skin, eyes, and clothing.
Provide good ventilation of working area (local exhaust ventilation if necessary).
Empty containers may contain residue which can be dangerous – do not pressurize, cut, weld, drill, grind and also do not expose such

Material Safety Data Sheet

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AZ LOR-28

Version 2

Revision date: 2014.01.01

MSDS Number : 000000505725

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containers to heat, flame, sparks, or other ignition sources.

Advice on protection
against fire and
explosion

: The heavy vapours can overcome a considerable distance upto the source of ignition.
Vapours may form explosive mixtures with air
The product vapours are heavier than air.

Storage

Requirements for
storage areas and
containers

: Protect from direct sunlight

Further information on
storage conditions

: Store in original container.
Keep containers tightly closed in a cool, well-ventilated place.

Materials to avoid

: Oxidizing agents, Strong acids, Bases

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits of the chemical substance, biological exposure limits etc

Contains no substances with occupational exposure limit values.

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
2-Methoxy-1-methylethyl acetate	108-65-6	TWA	50 ppm	US WEEL

Appropriate engineering controls

Provide local exhaust or process enclosure ventilation to meet exposure limits. Ventilation equipment should be explosion proof if explosion concentrations of dust, vapor, or fume are present.

Personal protective equipment

Respiratory protection : In case of insufficient exhaust ventilation or prolonged exposure use respiratory protection equipment.
Respirator with filter for organic vapour

Eye protection : Safety goggles

Hand protection : Chemical resistant gloves

Skin and body protection : Chemically impervious clothing.

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

MSDS Number : 000000505725

Print Date: 2014.01.01

Hygiene measures	: Remove soaked clothing immediately. Wash hands before breaks and after work. Do not eat or drink during work time. Keep away from foodstuffs and beverages. Provide washing facilities at the place of work. Observe the usual precautions when handling chemicals.
Protective measures	: Do not inhale vapours Avoid contact with eyes and skin Observe the usual precautions for handling chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form : Liquid

Colour : red-brown

Odour : ether-like

Odour Threshold : No Data

pH : not applicable

Melting point/range : No data.

Boiling point/boiling range : 145.8 °C
2-methoxy-1-methylethyl acetate

Flash point : 47 °C

Method: KS M 2010:2008
(Tag closed cup)

Evaporation rate : No Data

Flammability (solid, gas) : No Data

Upper/lower flammability or explosive limits

Lower explosion limit : 1.5 %(V)
2-methoxy-1-methylethyl acetate

Upper explosion limit : 7 %(V)
2-methoxy-1-methylethyl acetate

Vapour pressure : No Data

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

MSDS Number : 000000505725

Print Date: 2014.01.01

Water solubility	: The solvent is partially water soluble but the product forms two layers.
Relative vapour density	: No Data
Specific gravity	: 1.067
Partition coefficient: n-octanol/water	: No Data
Auto-ignition temperature	: No Data
Thermal decomposition	: No Data
Viscosity, dynamic	: 155 cP
Molecular Weight	: No Data

10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions

- : Exothermic reaction may occur at high temperature.
Evolution of flammable mixtures possible in air when heated above flash point and/or during spraying or misting., Hazardous polymerisation does not occur.
May form explosive peroxides. Avoid prolonged storage or contact with air, light, or storage and use above room temperature.

Conditions to avoid : Keep away from heat, sparks, open flames, and other sources of ignition.
Prolonged Or Excessive Heat.

Incompatible materials : Oxidizing agents
Strong acids
Bases

Hazardous decomposition products : Risk of formation of toxic pyrolysis products.

11. TOXICOLOGICAL INFORMATION

Information on the likely routes of exposure

Primary routes of entry : No Data

Health Hazard Information

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

MSDS Number : 000000505725

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Acute toxicity

Acute oral toxicity : Acute Toxicity Estimate (ATE): 10,417 mg/kg
Method: Calculation method

Skin corrosion/irritation : No Data

Serious eye damage/eye irritation : No Data

Respiratory or skin sensitization

Sensitisation : No Data

Carcinogenicity

NTP No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Germ cell mutagenicity : No Data

Reproductive toxicity : No Data

Specific target organ toxicity - single exposure

: No Data

Specific target organ toxicity - repeated exposure

: No Data

Aspiration hazard : No Data

Further information : No data is available on the product itself.

Component information

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

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2-Methoxy-1-methylethyl acetate

- Acute toxicity : Oral, LD50: > 8,532 mg/kg, rat (female)
Source : OECD SIDS
Inhalation, LC0: 23.4 mg/l, 4345 ppm, 7 h, rat
Source : OECD SIDS
Dermal, LD50: > 5,000 mg/kg, rabbit
Source : OECD SIDS
- Skin irritation : rabbit, non-irritant
Source : OECD SIDS
- Eye irritation : rabbit eye, slightly irritant
Source : OECD SIDS
- Sensitisation : Skin, Guinea pig, non-sensitizing
Source : OECD SIDS
- Genotoxicity in vitro : Bacterial reverse mutation assay, Negative, GLP yes
Source : OECD SIDS
: Chromosome Aberration Test, Negative, GLP yes
Source : OECD SIDS
- Reproductive toxicity : Did not show teratogenic effects in animal experiments.
Animal testing did not show any effects on fertility., Source : OECD SIDS
- Specific target organ toxicity - single exposure
: May cause respiratory irritation., May cause drowsiness or dizziness.

12. ECOLOGICAL INFORMATION

- Ecotoxicology : No Data
- Persistence and degradability : No Data
- Bioaccumulation : No Data
- Stability in soil : No Data
- Other adverse effects
Additional ecological information : No ecological testing was carried out on the preparation.

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

Revision date: 2014.01.01

MSDS Number : 000000505725

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Component information

2-Methoxy-1-methylethyl acetate

Ecotoxicology	: Fish, <i>Oryzias latipes</i> , LC50: > 100 mg/l , 96 h Source : OECD SIDS Invertebrates, <i>Daphnia magna</i> , EC0: 373 mg/l , 48 h Source : OECD SIDS Algae, <i>Selenastrum capricornutum</i> , EC50: > 1,000 mg/l , 72 h Source : OECD SIDS
Biodegradation	: 83 %, 28 d, readily biodegradable Source : OECD SIDS
Bioaccumulation	: Bioconcentration factor (BCF): < 100 Bioaccumulation is unlikely.

13. DISPOSAL CONSIDERATIONS

Disposal methods	: Product should be taken to a suitable and authorized waste disposal site in accordance with relevant regulations and if necessary after consultation with the waste disposal operator and/or the competent Authorities
Precautions for disposal	: When discarding an empty container, the contaminated to the inside is removed completely and it discards according to your local regulations

14. TRANSPORT INFORMATION

Sea transport

IMDG	
UN number	: 1993
Description of the goods	: FLAMMABLE LIQUID, N.O.S. (2-Methoxy-1-methylethyl acetate)
Class	: 3
Packing group	: III
Labels	: 3
EmS Number 1	: F-E
EmS Number 2	: S-E

Marine pollutant : no

Air transport

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AZ LOR-28

Version 2

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IATA
UN number : 1993
Description of the goods : Flammable liquid, n.o.s.
(2-Methoxy-1-methylethyl acetate)
Class : 3
Packing group : III
Labels : 3
Packing instruction (cargo aircraft) : 366
Packing instruction (passenger aircraft) : 355
Packing instruction (passenger aircraft) : Y344
Environmentally hazardous : no

15. REGULATORY INFORMATION

Information according to ISHA

A Material Safety Datasheet (MSDS) has to be prepared and provided for this product according to article 41 of ISHA.

Regulation	Chemical Name	Threshold limits
Harmful Substances Prohibited from Manufacturing	Not relevant	
Korea. Harmful Substances Requiring Permission	Not relevant	
Substances to be controlled (Article 166 of the Regulation on Industrial Health Standards)	Not relevant	
Controlled Substances Subject to Environment Monitoring	Not relevant	
Controlled Substances Subject to Health Examination	Not relevant	

Information according to TCCA

Regulation	Chemical Name	Threshold limits
Toxic chemicals, TCCL Article 19	Not relevant	
Banned Toxic Chemicals TCCL Article 32 & 33	Not relevant	
Observational chemicals, TCCL Article 31	Not relevant	
Restricted toxic chemicals TCCL Article 32 & 33	Not relevant	

Material Safety Data Sheet

According to the provisions of Art. 41, ISHA, Korea



AZ LOR-28

Version 2

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Toxic Release Inventory	Not relevant	
Accident Precaution Chemicals	Not relevant	

Information according to DSSMA

Classification : Class 4 , Flammable liquids , Type 2 Petroleums
Hazard rank : Hazardous rank III
Property : Water insoluble liquid
Designated Quantity : 1000 litre
Warning : Keep away from fire

Information according to Waste Management Law

Waste Management Law	All national and local regulations of this product should be observed and dispose in accordance with relevant regulations., If organic solvent is contained in waste, it must be treated as designated wastes.
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Other regulations in domestic and foreign countries

Regulation	Chemical Name	Threshold limits
PIC Convention	Neither banned nor restricted	

16. Further information

Sources of reference materials:

Manufacturer : AZ Electronic Materials (Korea) Ltd.

Source : OECD SIDS

The first date of preparation: 2010.12.23

Number of revision and the latest revision date: Version 2, 2014.01.01

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