

**JPS-35**

Prepared in accordance with the provisions of
Article 41 of the Industrial Safety and Health Act

1. Product and company identification

1-1 Product Name	JPS-35
1-2 Identification of the supplier of the substance and uses advised against	
Recommended use	Photoresist stripper, Electronic parts cleaner
Restriction of use	Only Industrial Application
1-3 Manufacturer/Supplier/Distributor	
Company Name	JAEWON INDUSTRIAL CO., LTD.
Address	60, Segyosandan-ro, Pyeongtaek-si, Gyeonggi-do, Republic of Korea
Emergency phone number	031-647-6098

2. Hazards identification

2-1. Harzard, Risk Classification	Acute toxicity (Oral) : Category 4 Skin corrosion/irritation : Category 1 Serious Eye Damage: Category 1 Carcinogenicity : Category 2 Germ cell mutagenicity : Category 2 Reproduction-toxicity : Category 2 Specific target organ toxicity (single exposure) : Category 3 (respiratory irritation) Specific target organ toxicity (repeated exposure) : Category 1 Chronic aquatic environment harmfulness : Category 3
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2-2. Label elements, including precautionary statements Symbols



Signal word

Hazard statements

Dager

H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H341 Suspected of causing genetic defects
H351 Suspected of causing cancer
H361 Suspected of damaging fertility or the unborn child
H370 Causes damage to organs
H372 Causes damage to organs
H412 Harmful to aquatic life with long lasting effects

Precautionary statements

Prevention	<p>P201 Obtain special instructions before use.</p> <p>P202 Do not handle until all safety precautions have been read and understood.</p> <p>P260 Do not breathe dust/fume/gas/mist/vapours/spray.</p> <p>P264 Wash...thoroughly after handling</p> <p>P270 Do not eat, drink or smoke when using this product.</p> <p>P273 Avoid release to the environment.</p>
Response	<p>P280 Wash...thoroughly after handling</p> <p>P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</p> <p>P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.</p> <p>P308+P313 IF exposed or concerned: Get medical advice/attention.</p> <p>P310 Immediately call a POISON CENTER or doctor/physician.</p> <p>P314 Get medical advice/attention if you feel unwell.</p> <p>P321 Specific treatment (see ... on this label).</p> <p>P330 Rinse mouth.</p> <p>P363 Take off contaminated clothing and wash before reuse.</p>
Storage	P405 Store locked up.
Disposal	P501 Dispose of contents/container to ...
2.3 Other hazards	
Health	3
Fire	1
Reaction	0

3. Composition/Information on ingredients

Composition	Common name	Cas No	wt %
Ethanolamine	2-Aminoethanol	141-43-5	40 ~ 65
Dimethyl Sulfoxide	Dimethyl Sulfoxide	67-68-5	10 ~ 30
Solvent 2	Trade secret	Trade secret	3 ~ 15
additive 1	Alkyl Amino Alcohol	Trade secret	1 ~ 10
additive 2	Cyclo alkyl alcohol	Trade secret	1 ~ 10
WATER	DIHYDROGEN OXIDE	7732-18-5	10 ~ 30

4. First aid measures

4.1 Eye contact	<p>Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>Get medical attention immediately.</p>
4.2 Skin contact	<p>Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>If you feel uncomfortable, seek medical advice.</p> <p>Wash contaminated clothing before reuse.</p> <p>In the case of burns, immediately cool the affected area for as long as possible in cold water, and do not remove any clothing adhering to the skin.</p> <p>Remove contaminated clothing and shoes and isolate contaminated areas</p>

4.3 Inhalation	Prevent spread of contamination on mild skin contact
4.4 Ingestion	Immediately call a POISON CENTER or doctor / physician. If swallowed, wash your mouth. If exposed or concerned: Get medical advice/attention. If substance is ingested or inhaled, do not use artificial respiration with mouth-to-mouth method and use appropriate respiratory medical equipment
4.5 PROTECTION OF: FIRST-AIDERS	Contact your health care professional and take special first aid measures such as follow-up investigations. Have the medical personnel know about the material and take protective measures.

5. Fire-Fighting measure

5-1. Suitable extinguishing media	Use alcohol foam, carbon dioxide or water spray for fire extinguishing related to this material. Use dry sand or earth to smother fire.
5-2. Specific hazards arising from the chemical	During burning, pyrolysis or combustion can produce irritating and highly toxic gases. Container may explode on heating Some can burn, but not easily ignite Non-flammable, the substance itself does not burn but decomposes on heating, resulting in corrosive / toxic fumes
5-3. Special precautions for fire-fighters	Rescuers need to note the personal protective equipment. Extinguish the area and maintain safety distance. Be aware that it may be melted and transported. Please note that some can be transported at high temperatures. Drill ditches for the disposal of digestive waters and keep them from dispersing. Move container from fire area if it is not hazardous. In case of tank fire, extinguish at maximum distance or use unmanned fire fighting equipment. Do not let water get inside the container. Cool containers with large amounts of water even after the fire has evolved. If there is a high sound level in the pressure relief device or a iscoloration of the tank in the event of a tank fire, immediately withdraw it. Get out of the flame tank when the tank fires. Spilled water may cause skin and eye burns. In the event of a large fire in a tank fire, use unmanned fire fighting equipment and allow it to retreat if it is not possible.

6. Accidental release measures

6-1. Personal precautions, protective equipment and emergency edures	Avoid inhalation of fumes, gases, vapors and spray. Wipe off any spills immediately and follow all protective precautions. Isolate the contaminated area. If you do not need to enter or do not have protective equipment, do not go in. Remove all ignition sources. Stop the leak if it is not dangerous. Do not touch a damaged container or spill without adequate protection. Cover with plastic sheet to prevent diffusion.
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	Prevent dust formation Note the substances and conditions to avoid.
6-2. Environmental precautions	Prevent entry into waterways, sewers, basements or confined areas Avoid release to the environment.
6-3. Methods and materials for containment and cleaning up	Make an embankment for further processing. Absorb spill with inert material (e. g. dry sand or earth), then place in a chemical waste container for proper disposal. Rinse the area with water and industrial detergent. In case of large spills, make liquid dripping from dripping water. With clean shovel, put in the spills in dry container, loosely closed, then remove container from leak area Cover with plastic sheet to prevent spreading and keep dry when powder is leaked In case of small spills, absorb with sand and non-combustible material and place in container.

7. Handling and storage

7-1. Precautions for safe handling	Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only in well-ventilated areas. Follow all MSDS / label precautions as product residues may remain after emptying containers. Handle / store carefully. Carefully open the stopper before opening. Prevent long-term or persistent skin contact. If there is no adequate ventilation, do not go into storage area. Note the substances and conditions to avoid. Take any precaution to heat.
7-2. Conditions for safe storage, including any incompatibilities	Store in lockable storage area. Empty drums should be completely drained and properly bunged. Keep away from food and drink.

8. Exposure controls & personal protection

8-1. Control parameters	
Domestic regulations	TWA - 3ppm STEL - 6ppm (Ethanolamine) Solvent 1 - No data available, Solvent 2 - No data available additive 1 - No data available, additive 2 - TWA - 5ppm water - No data available
ACGIH regulations	STEL 6 ppm TWA 3 ppm (Ethanolamine) Solvent 1 - No data available, Solvent 2 - No data available additive 1 - No data available, additive 2 - TWA - 5ppm water - No data available
Biological exposure	Ethanolamine - No data available Solvent 1 - No data available, Solvent 2 - No data available additive 1 - No data available, additive 2 - TWA - 5ppm water - No data available
8-2. Appropriate engineering controls	Use process isolation, local exhaust ventilation or other engineering controls to keep air levels below exposure limits.

If dust, fumes or mist are generated during operation, ventilate to keep air contamination below the exposure limit
Equipment for storing and using this material should be worn and fitted with a safety shower.

8-3. Individual protection measures

Respiratory protection

Wear a respirator that has been approved by the Korean Occupational Safety and Health Administration in accordance with the physicochemical properties of the substance being exposed.

9. Physical and chemical properties

9-1. Appearance

Physical state

Transparent Liquid

Color

yellow orange~ Reddish orange

9-2. Odor

characteristic

9-3. Odor threshold

No data available

9-4. pH

10 ~ 12 (10% Solu.)

9-5. Melting point/freezing point

No data available

9-6. Initial boiling point and boiling

No data available

9-7. Flash point

> 100°C (212°F)

9-8. Evaporation rate

No data available

9-9. Flammability(solid, gas)

No data available

9-10. Upper flammability or explosive limit

Ethanolamine - 17 / 5.5 %

Solvent 1 - 9.7 / 1.5 %, Solvent 2 - 2.6 / 42.0 %

Additive 1 - 2.6 / 0.9 % (25°C), Additive 2 - 1.97 %

water - No data available

9-11. Vapour pressure

Ethanolamine - 0.3975 mmHg (20°C)

Solvent 1 - 0.801 mmHg (25 °C), Solvent 2 - 0.61 mmHg (@ 25 °C)

Additive 1 - 1.08 mmHg (25°C), Additive 2 - 0.03 mmHg (20°C)

water - 23.8 mmHg (25°C)

9-12. Solubility

Soluble in water

9-13. Vapor density

No data available

9-14. Specific gravity

0.95 ~ 1.20

9-15. Partition coefficient : n-

No data available

9-16. Auto-ignition temperature

No data available

9-17. Decomposition temperature

No data available

9-18. Viscosity

No data available

9-19. Molecular weight

No data available

10. Stability and reactivity

10-1. Chemical stability and possibility of hazardous reactions

Containers may explode when heated.

On heating the vapor may form an explosive mixture with the air: Exposure to indoors,
Some may burn, but not easily ignite

Some may generate flammable hydrogen gas on contact with metal

Toxic: inhalation, ingestion, skin contact may result in serious injury and death.

Contact with molten material may cause severe skin and eye burns.

May cause irritating, corrosive and toxic gases in case of fire

Can decompose at high temperature to produce toxic gas

	Non-flammable, the substance itself does not burn but decomposes on heating, Some may ignite flammable materials with oxidizing agents
10-2. Condition to avoid (electrostatic, discharge, shock, vibration, etc..)	Avoid heat, sparks, flames and other sources of ignition. No smoking.
10-3. Incompatible materials	Flammable materials.
10-4. Decomposition products	During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Corrosive / Toxic Fume

11. Toxicological information

11-1. Information on the likely routes of exposure	No data available
11-2. Health hazards information	
Acute toxicity	
Oral	LD50 1089 mg/kg Rat (Ethanalamine) Solvent 1 - LD50 1600 mg/kg Rat, Solvent 2 - LD50 > 20000 mg/kg (mouse) Additive 1 - LD50 1391 mg/kg Rat, Additive 2 - LD50 300 mg/kg Rat water - LD50 90000 mg/kg Rat (LD50 > 90 ml/kg (Rat))
Dermal	LD50 2504 mg/kg Rabbit (Ethanalamine) Solvent 1 - LD50 5000 mg/kg Guinea pig, Solvent 2 - LD50 20000 ~ 40000 mg/kg Rabbit Additive 1 - LD50 2000 mg/kg Rat, Additive 2 - LD50 600 mg/kg Rabbit (OECD TG 402) water - No data available
Inhalation	Vapor LC50> 1487 mg/l 4 hr Rat (Ethanalamine) Solvent 11 - No data available, Solvent 2 - No data available Additive 1 - No data available, Additive 2 - dust LC50> 2.8 mg/l 8 hr Rat water - No data available
Skin corrosion/irritation	Skin corrosion / irritation test result using rabbit, corrosive, strongly basic at pH 12.1, OECD TG 404 (ethanalamine)
Serious Eye Damage	Severe eye damage / irritation test using rabbits, causticity was observed. Corneal Index=3, Conjunctival index=2, Conjunctival edema index=2, pH 12.1 strong basic, OECD TG 405, GLP (ethanalamine)
Sensitization - Respiratory	No data available
Skin reaction	Test substances do not cause sensitization in animal tests (ethanalamine)
Carcinogenicity	
Industrial Safety and Health	No data available
Regulations of the Ministry of Employment and Labor	2 (Additive 2)
IARC	2B (Additive 2)
OSHA	No data available
ACGIH	A3 (Additive 2)
NTP	No data available
EU CLP	No data available
Germ cell mutagenicity	In vitro microbial return mutation test, chromosome aberration test, gene mutation test result Negative, in vivo rodent micronucleus test Negative (ethanalamine)

Reproduction-toxicity	As a result of second generation reproductive toxicity test, no significant effects other than weight loss were observed. NOAEL = 300 mg / kg bw / day (general systemic toxicity) (ethanolamine)
Specific target organ toxicity (single exposure)	In people, headache, vomiting, burning, dizziness, numbness of the fingertips, chest pain, hepatic enlargement, hepatitis. Decrease in central nervous system in experimental animals causing ataxia, seizures, fatty degeneration of hepatocytes (ethanolamine)
Specific target organ toxicity (repeated exposure)	Mice, guinea pigs, and dogs exposed to vapor, (ACGIH (7th 2001) DFGOT (vol. 12, 1999), PATTY (6th, 2012)) In 12-15 mg / m3 concentration, rats, dogs at 40 or 60 days (0.021-0.04 mg/L/ 6hr) decreased activity. Mice, guinea pigs, and dogs at 90 days in 29-64 mg/m3 concentration(0.12-0.26 mg/L/6hr) observation of effects of central nervous system such as drowsiness (ethanolamine)
Aspiration Hazard	No data available
Other harmful effects	No data available

12. Ecological Information

12-1. Ecotoxicity	
Fish	LC50 170 mg/l 96 hr Carassius auratus (Ethanolamine)
Crustacea	EC50 32.6 mg/l 48 hr Daphnia magna (Ethanolamine)
algae	ErC50 2.8 mg/l 72 hr (Pseudokirchneriella subcapitata) (Ethanolamine)
12-2. Persistence and degradability	
Persistence	log Kow -2.3
Degradability	No data available
12-3. Bioaccumulative potentia	
Bioconcentration	No data available
Biodegradability	94 % 21 day (OECD TG 301 A) (Ethanolamine)
12-4. Mobility in soil	No data available
12-5. Other adverse effects	NOECDaphnia magna, 21d, reproduction= 0.85 mg/L (Ethanolamine)
12-6. Ozone layer hazard	No data available

13. Disposal considerations

13-1. Methods of disposal	1) Treat with neutralization, hydrolysis, oxidation and reduction. 2) Incinerate at high temperature or melt at high temperature. 3) Solidify. Waste must be disposed of in accordance with federal, state and local environmental control regulations.
13-2. Caution of disposal	Dispose of contents/container according to applicable federal and local regulations.

14. Transport Information

14-1. IMDG Code (UN No.)	2491
14-2. Shipment name	Ethanolamine or Ethanolamine Solution
14-3. Packing	8
14-4. Container grade	III
14-5. Marine pollutant	No data available
14-6. Special precautions which a user needs to be aware of, or needs to comply with	
Fire	F-A
Leak	S-B

15. Regulatory information

15-1. The regulation by the industry Safety and Health Act	(Ethanalamine) Toxic substances to manage Working environment Measured material Exposure criteria Selected substances (Additive 2) Exposure criteria Selected substances
15-2. The regulation by the hazardous chemical substance management method	No data available
15-3. The regulation by the Dangerous Goods Safety Management Act	The 4th kind (the 3rd petroleum kind) / water-insoluble liquid
15-4. The regulation by the Waste Management Act	Designated waste
15-5. Regulations by other domestic and foreign law	
Domestic regulatory	
Persistent organic pollutant management system	No data available
Foreign regulatory	
OSHA regulation	No data available
CERCLA regulation	45.3599kg 100lb (Additive2)
EPCRA 302 regulation	Not applicable.
EPCRA 304 regulation	Not applicable.
EPCRA 313 regulation	Not applicable.
Rotterdam Convention material	Not applicable.
Stockholm Convention materia	Not applicable.
Montreal Protocol material	Not applicable.
EU classify information (Confirmation classification results)	(Ethanalamine) Acute Tox. 4 * Acute Tox. 4 * Acute Tox. 4 * Skin Corr. 1B (Solvent 1) Xi; R36 (Additive 1) Xn; R21/22C; R34 (Additive 2) Acute Tox. 4 * Acute Tox. 4 * Skin Irrit. 2 Eye Irrit. 2
EU classify information (Risk phrases)	(Ethanalamine) H332 H312 H302 H314 (Solvent 1) R36 (Additive 1) R21/22, R34 (Additive 2) H312 H302 H315 H319
EU classify information (Safety phrases)	(Solvent 1) S2, S39 (Additive1) S1/2, S26, S36/37/39, S45

16. Other information

16-1. Source of data	ECHA,NLM Akron University(http://ull.chemistry.uakron.edu/erd/)(Information about possible routes of exposure) Emergency Response Guidebook(2008)(Information about possible routes of exposure) Emergency Response Guidebook(2008) nternational Chemical Safety Cards (ICSC) Ecological Structure Activity Relationships(ECOSAR) Quantitative Structure Activity Relation(QSAR) National Institute of Technology and Evaluation(NITE) Ecological Structure Activity Relationships(ECOSAR)
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Quantitative Structure Activity Relation(QSAR)
National Library of Medicine(NLM)
14303 Chemical Product (Japan)
Emergency Response Guidebook(2008)
UCLID(degradability)

2019-02-19

1.0 / 2019-09-17

16-2 Issuing date

16-3 Revision number and date

16-4 Others

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