

# Safety Data Sheet

Version 6.0  
Revision Date 12/08/2016

SDS Number 300000007251  
Print Date 06/08/2021

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : ACT<sup>®</sup> 412 Resist Stripper

Product Use Description : Semiconductor Processing

Manufacturer/Importer/Distributor : Versum Materials US, LLC  
8555 South River Parkway  
Tempe, AZ 85284-2601  
Exporter EIN No. 47-5632014  
www.versummaterials.com

Telephone : 800 837 2724

Emergency telephone number (24h) : 1-800-424-9300  
(+1) 703-741-5970 (CHEMTREC)

## 2. HAZARDS IDENTIFICATION

### GHS classification

Flammable liquids - Category 4  
Skin corrosion - Category 1B  
Serious Eye Damage - Category 1  
Reproductive toxicity - Category 1B

### GHS label elements

#### Hazard pictograms/symbols



Signal Word: Danger

#### Hazard Statements:

H227: Combustible liquid  
H314: Causes severe skin burns and eye damage.  
H360: May damage fertility or the unborn child

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## Precautionary Statements:

- Prevention : P201:Obtain special instructions before use.  
P202:Do not handle until all safety precautions have been read and understood.  
P210:Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.  
P264:Wash hands thoroughly after handling.  
P280:Wear protective gloves/protective clothing/eye protection/face protection.  
P281:Use personal protective equipment as required.
- Response : P301+P330+P331 :IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
P303+P361+P353 :IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304+P340 :IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305+P351+P338 :IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308+P313 :IF exposed or concerned: Get medical advice/attention.  
P310 :Immediately call a POISON CENTRE/doctor.  
P363 :Wash contaminated clothing before reuse.  
P370+P378 :In case of fire, use recommended extinguishing media for extinction.
- Storage : P403+P235:Store in a well-ventilated place. Keep cool.  
P405:Store locked up.
- Disposal : P501:Disposal of contents/container to be specified in accordance with regulations.

## Hazards not otherwise classified

Corrosive  
Reproductive toxin.  
Severe eye irritant.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Weight)
Methyl-2-pyrrolidinone, 1-	872-50-4	> 70%
Amine	Not Available	< 30 %

The composition is trade secret. Contains no other components or impurities which will influence the classification of the product. Please treat the information contained within the SDS(s) as confidential information. In this regard, the information contained within the SDS(s) may be the subject of, for example, a confidentiality agreement or non-disclosure agreement (NDA) with your company and/or a patent application or

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patent.

## 4. FIRST AID MEASURES

- General advice : Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.
- Eye contact : Hold eyelids apart, initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour.
- Skin contact : Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Flush immediately with copious amounts of water. Initiate and maintain continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour. Cover wound with sterile dressing.
- Ingestion : If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person. Prevent aspiration of vomit. Turn victim's head to the side.
- Inhalation : If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Move to fresh air.
- Most important symptoms/effects - acute and delayed : Eye disease. Skin disorders and Allergies. Asthma.

### Immediate Medical Attention and Special Treatment

- Treatment : In case of shortness of breath, give oxygen.

## 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Alcohol-resistant foam.  
Carbon dioxide (CO<sub>2</sub>).  
Dry chemical.  
Dry sand.  
Limestone powder.
- Specific hazards : Ammonia gas may be liberated at high temperatures. In case of incomplete combustion an increased formation of oxides of nitrogen (NO<sub>x</sub>) is to be expected. Incomplete combustion may form carbon monoxide. May generate ammonia gas. May generate toxic nitrogen oxide gases. Burning produces noxious and toxic fumes.
- Special protective equipment for fire-fighters : Use personal protective equipment. Wear self contained breathing apparatus for fire fighting if necessary.
- Further information : Do not allow run-off from fire fighting to enter drains or water courses., Fire

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residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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## 6. ACCIDENTAL RELEASE MEASURES

- Personal Precautions, Protective Equipment, and Emergency Procedures : Use self-contained breathing apparatus and chemically protective clothing. Evacuate personnel to safe areas.
- Environmental precautions : Construct a dike to prevent spreading.
- Methods for cleaning up : Call Emergency Response number for advice. Approach suspected leak areas with caution. Place in appropriate chemical waste container.
- Additional advice : If possible, stop flow of product.

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## 7. HANDLING AND STORAGE

### Handling

Use only in well-ventilated areas. Avoid breathing vapors and/or aerosols. Avoid contact with skin and eyes. Avoid contact with eyes. Use personal protective equipment. When using, do not eat, drink or smoke.

### Storage

Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated place.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Engineering measures

Provide readily accessible eye wash stations and safety showers.  
Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.

### Personal protective equipment

- Respiratory protection : Wear appropriate respirator when ventilation is inadequate. Keep self contained breathing apparatus readily available for emergency use.
- Hand protection : Butyl-rubber  
Nitrile rubber.  
Neoprene gloves.  
Polyvinyl Alcohol Gloves (PVA).  
Impervious gloves.  
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eye protection : Full face shield with goggles underneath.  
Chemical resistant goggles must be worn.

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Skin and body protection : Slicker Suit.  
Impervious clothing.  
Full rubber suit (rain gear).  
Rubber or plastic boots.

Special instructions for protection and hygiene : Provide readily accessible eye wash stations and safety showers.

## Exposure limit(s)

Methyl-2-pyrrolidinone, 1-	Time Weighted Average (TWA): WEEL	10 ppm	40 mg/m3
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## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid. Colorless.

Odor : Ammoniacal.

Odor threshold : No data available.

pH : No data available.

Melting point/range : -4 °F (-20 °C)

Boiling point/range : 435 °F (224 °C)

Flash point : 196 °F (91 °C) closed cup

Evaporation rate : No data available.

Flammability (solid, gas) : Not applicable.

Upper/lower explosion/flammability limit : Not applicable.

Vapor pressure : No data available.

Water solubility : Completely soluble.

Relative vapor density : Not applicable.

Relative density : 1.027 (water = 1)

Partition coefficient (n-octanol/water) : No data available.

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Auto-ignition temperature	: No data available.
Decomposition temperature	: No data available.
Viscosity	: No data available.
Molecular Weight	: No data available.
Density	: 64.114 lb/ft3 (1.027 g/cm3) at 68 °F (20 °C)

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## 10. STABILITY AND REACTIVITY

Chemical Stability	: Stable under normal conditions.
Conditions to avoid	: No data available.
Materials to avoid	: Organic acids (i.e. acetic acid, citric acid etc.). Mineral acids. Sodium hypochlorite. Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Oxidizing agents.
Hazardous decomposition products	: Nitric acid. Ammonia Nitrogen oxides (NOx). Nitrogen oxide can react with water vapors to form corrosive nitric acid. Carbon monoxide. Carbon dioxide (CO2).
Possibility of hazardous Reactions/Reactivity	: No data available.

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## 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

#### Likely routes of exposure

Effects on Eye	: Corneal edema may give rise to a perception of "blue haze" or "fog" around lights. Exposed individuals may see rings around bright lights. This effect is temporary and has no known residual effect. Product vapor can cause glaucopsia (corneal edema ) when absorbed into the tissue of the eye from the atmosphere. Causes eye burns. May cause blindness. Severe eye irritation.
Effects on Skin	: Causes skin burns.
Inhalation Effects	: Harmful if inhaled and may cause delayed lung injury. Can cause severe eye, skin and respiratory tract burns. Risk of serious damage to the lungs (by inhalation). May cause nose, throat, and lung irritation. Inhalation of aerosol

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may cause irritation to the upper respiratory tract.

Ingestion Effects : If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

Symptoms : No data available.

## Acute toxicity

Acute Oral Toxicity : No data is available on the product itself.

### Acute Oral Toxicity - Components

Methyl-2-pyrrolidinone, 1-Amine

LD50 : 3,914 mg/kg

Species : Rat.

LD50 : 3,560 mg/kg

Species : Rat.

Inhalation : No data is available on the product itself.

### Inhalation - Components

Methyl-2-pyrrolidinone, 1-

LC50 (4 h) : > 5.1 mg/l

Species : Rat.

Acute Dermal Toxicity : No data is available on the product itself.

### Acute Dermal Toxicity - Components

Methyl-2-pyrrolidinone, 1-Amine

LD50 : 8,000 mg/kg

Species : Rabbit.

LD50 : 2,300 mg/kg

Species : Rabbit.

Skin corrosion/irritation : Severe skin irritation., Skin irritation.

Serious eye damage/eye irritation : Severe eye irritation.

Sensitization. : No data available.

## Chronic toxicity or effects from long term exposures

Carcinogenicity : No data available.

Reproductive toxicity : 1-Methyl-2-Pyrrolidone has caused embryotoxic and teratogenic effects in laboratory animals.

Germ cell mutagenicity : No data is available on the product itself.

Specific target organ systemic toxicity (single exposure) : No data available.

Specific target organ systemic toxicity (repeated exposure) : No data available.

Aspiration hazard : No data available.

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Delayed and Immediate Effects and Chronic Effects from Short and Long Term Exposure

This product contains no listed carcinogens according to IARC, ACGIH, NTP and/or OSHA in concentrations of 0.1 percent or greater. Reproductive toxin. Eye disease., Skin disorders and Allergies., Asthma.

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## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

Aquatic toxicity	: No data is available on the product itself.		
Toxicity to fish - Components			
Methyl-2-pyrrolidinone, 1-	LC50 (96 h) : 832 mg/l	Species : Bluegill sunfish (Lepomis macrochirus).	
Methyl-2-pyrrolidinone, 1-	LC50 (96 h) : 4,000 mg/l	Species : Golden orfe (Leuciscus idus).	
Toxicity to daphnia - Components			
Methyl-2-pyrrolidinone, 1-	EC50 (48 h) : > 4,000 mg/l	Species : Daphnia	
Toxicity to other organisms	: No data available.		

### Persistence and degradability

Biodegradability	: No data is available on the product itself.		
Mobility	: No data available.		
Bioaccumulation	: No data is available on the product itself.		
Bioaccumulation - Components			
Methyl-2-pyrrolidinone, 1-	Negligible bioaccumulation potential.		

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## 13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products	: Contact supplier if guidance is required.		
Contaminated packaging	: Dispose of container and unused contents in accordance with federal, state, and local requirements.		

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## 14. TRANSPORT INFORMATION



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## DOT

UN/ID No. : UN3267  
Proper shipping name : Corrosive liquid, basic, organic, n.o.s., (Amine)  
Class or Division : 8  
Packing group : II  
Label(s) : 8  
Marine Pollutant : No

## IATA

UN/ID No. : UN3267  
Proper shipping name : Corrosive liquid, basic, organic, n.o.s., (Amine)  
Class or Division : 8  
Packing group : II  
Label(s) : 8  
Marine Pollutant : No

## IMDG

UN/ID No. : UN3267  
Proper shipping name : CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S., (Amine)  
Class or Division : 8  
Packing group : II  
Label(s) : 8  
Marine Pollutant : No

## TDG

UN/ID No. : UN3267  
Proper shipping name : CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S., (Amine)  
Class or Division : 8  
Packing group : II  
Label(s) : 8  
Marine Pollutant : No

## Further Information

The transportation information is not intended to convey all specific regulatory data relating to this material. For complete transportation information, contact customer service.

## 15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) 12(b) Component(s):  
Methyl-2-pyrrolidinone, 1-

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on

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		EINECS inventory or no longer polymer.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
Japan	ENCS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level

Methyl-2-pyrrolidinone, 1-  
Benzoic acid, ammonium salt

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Methyl-2-pyrrolidinone, 1-

## 16. OTHER INFORMATION

### HMIS Rating

Health : 3\*  
Flammability : 1  
Physical hazard : 0

Prepared by : Versum Materials, Product Regulatory Department

Telephone : 800 837 2724

Preparation Date : 06/08/2021

For additional information, please visit Versum Materials' Product Stewardship web site.

<http://www.versummaterials.com/productstewardship/>