



# Material Safety Data Sheet


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## Section 1 - Product and Company Identification

Product name : Stripper BM-37
Other names : --
Product use : Stripping photoresist or removing photoresist residual used in TFT-LCD manufacturing processes.
Supplier's name : San Fu Chemical Co., Ltd., Shan Hua Plant
Supplier's address : 340 Hsiao Hsin Li, Shan Hua, Tainan Hsien, Taiwan, R.O.C.
Supplier's phone : 06-5837608                      Emergency phone : 06-5837608
FAX. : 06-5839498

## Section 2 - Hazards Identification

Classification :
1. Flammable liquids                      Category 4
2. Acute toxicity                            Category 4 (ingestion)
3. Acute toxicity                            Category 4 (Skin)
4. Corrosive to metals                    Category 1
5. Skin corrosion / irritation            Category 1
6. Serious eye Damage/eye irritation    Category 1
The Most Important Hazards and effect
Label element :
■ Hazard symbol : Corrosion 、 Exclamation mark

■ Signal word : Danger
Hazard statement :
1. Flammable liquid
2. Harmful if swallow
3. Harmful if contact with skin
4. May corrode metal
5. Cause serious skin burns and eye damage
6. Cause serious eye damage
Precautionary statement :
1. Do not inhale gas/smoke/steam/fog
2. Wear goggles/masks
3. Only use in well-ventilated areas.
Others Hazard : /

## Section 3 – Composition /Information on Ingredients

Mixture :

Component or impurities contributing to the hazard	CAS No.	Concentration or concentration range
Diethylene glycol monobutyl ether	112-34-5	60~70%



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Ethanolamine (MEA)	141-43-5	30~40%
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## Section 4 - First Aid Measures

<p>The First-aid Information :</p> <ul style="list-style-type: none"><li>■ Inhalation : Remove pollution sources or move patient to area with plenty of fresh air. If there is difficulty in breathing, let trained personnel provide oxygen supply. If the person is not conscious give artificial respiration. Do not use mouth-to-mouth resuscitation. Use a pocket mask with a one-way valve or suitable medical device. Seek immediate medical attention.</li><li>■ Skin Contact : Wear leak-proof gloves to prevent contact with this chemical substance. In case of contact, immediately flush skin with plenty of water for at least 20 to 30 minutes while removing clothes, shoes, and leather products. Get medical aid immediately. Do not reuse or disposal the contaminated clothes before thoroughly cleaning.</li><li>■ Eye Contact : In case of contact, immediately flush eyes with plenty of water for at least 20 minutes, lifting eyelids occasionally. Try not to contaminate the unaffected area. If still feel irritation, flush repeatedly and get medical attention immediately.</li><li>■ Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Give large quantities of water, or provide milk later if available. If vomiting occurs, make victim lean forward to reduce change of aspiration. Call a physician immediately.</li></ul>
<p>The Most Important Symptoms and Hazardous Effects :</p> <ol style="list-style-type: none"><li>1. High concentration may cause respiratory irritant, unconsciousness, lung injury, or even damage to kidney and liver. .</li></ol>
<p>Protection of First-aiders :</p> <ol style="list-style-type: none"><li>1. Wear Class C protection equipment and apply first-aid in safe areas.</li></ol>
<p>Notes to a Physician :</p> <ol style="list-style-type: none"><li>1. If inhaled, provide oxygen to the patient.</li><li>2. For ingestion, consider using esophagoscopy for check-up and avoid gastric lavage.</li></ol>

## Section 5 - Fire Fighting Measures

<p>Extinguishing media : Water spray, dry chemical, alcohol foam, or carbon dioxide.</p>
<p>Specific hazard :</p> <ol style="list-style-type: none"><li>1. This substance is flammable liquid.</li><li>2. Avoid vapor accumulate in the low area.</li><li>3. Sealed containers may rupture when heated.</li></ol>
<p>Specific methods :</p> <ol style="list-style-type: none"><li>1. Evacuate to the safety distance or protective area for fire fighting.</li><li>2. Stay in the upwind area to avoid the dangerous vapor and poisonous decomposed substance.</li><li>3. Before fire fighting, stop the leakage of the substance. If there's no danger and unable to stop leaking, let the fire burn. If fire fighting before stopping the leakage, the vapor and the air may generate into the explosive mixture and ignite again.</li><li>4. Separate the non-burning substance and protect the staffs.</li><li>5. If safe to do so, move the undamaged containers from fire area.</li><li>6. Cool tanks or containers with water spray.</li><li>7. May be useless using water spray to put out a fire, but dilute the leakage and flush away</li></ol>



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<p>from the ignition.</p> <ol style="list-style-type: none"><li>8. If the leakage doesn't get burn, use water spray to disperse the vapor and protect the staffs who are attempting to stop leaking.</li><li>9. Useless to put out a fire with water stream.</li><li>10. Large fire within a large area, use unmanned operating spray controller or self swinging fire water monitor.</li><li>11. Try to evacuate from the fire area and let the fire burn out.</li><li>12. Away from the storage tank.</li><li>13. Evacuate immediately if the alarm of the Safety valve starts or changes colors due to fire.</li><li>14. Wear no special protective equipments personnel are not allowed to enter.</li></ol>
<p>The protection of firefighters :</p> <ol style="list-style-type: none"><li>1. Firemen require wearing full protective clothing and NIOSH-approved self-contained breathing apparatus. (Cover an aluminum, anti-spark protecting coat if necessary)</li></ol>

## Section 6 - Accidental Release Measures

<p>Personal precautions :</p> <ol style="list-style-type: none"><li>1. Restrict personnel from entering the polluted area until completely cleaned.</li><li>2. Make sure that only trained personnel are allow to clean up.</li><li>3. Wear appropriate personal protection equipment.</li><li>4. Evacuate the downwind personnel.</li></ol>
<p>Environmental precautions :</p> <ol style="list-style-type: none"><li>1. Ventilate area of leak or spill.</li><li>2. Extinguish or remove all fire sources.</li></ol>
<p>Methods for cleaning up :</p> <ol style="list-style-type: none"><li>1. Do not touch the leaking substance.</li><li>2. Prevent the spilled substances from entering the drainage, canals, or closed spaces.</li><li>3. If safe to do so, try to stop or reduce the spillage.</li><li>4. Surround the leakage with sand, soil, or other adsorbing substances that will not react with the leaking substance.</li><li>5. Small spill: Absorb with non-combustible material. Contaminated absorbents are as dangerous as the spillage and must be kept in properly covered and labeled containers. Small amount of leakage can be diluted with large amount of water.</li><li>6. Large Spill: Contact the fire fighting unit, emergency control unit and supplier for help.</li></ol>

## Section 7 - Handling and Storage

<p>Handling :</p> <ol style="list-style-type: none"><li>1. Staffs should under the training in hazardous info and safety use of the related substance.</li><li>2. Remove all the sources of ignition and away from the heat or other incompatible substance.</li><li>3. Place "Smoking Prohibited" signs.</li><li>4. This substance will accumulate electrostatic charges. Precautions must be taken to avoid possible hazards. Proper grounding of ALL processing equipments (i.e. tanks, containers, or pipes) is required.</li><li>5. While transferring the substance, operate in low flow rate, longer operation-time, and maintain low temperature if possible.</li><li>6. Transferring materials in an open system, make sure that delivering and receiving containers are either grounded or at same potential.</li></ol>
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7. Use of anti-sparkle and anti-explosion mechanical ventilation system.
8. Avoid producing vapor or mist. Operate in well-ventilated area. Handling amount of usage should be kept to a minimum. Separate the working area and storage place.
9. Wear the proper personal protective gears to avoid contacting with the chemical.
10. Do not use with incompatible material, e.g. strong oxidizer, deoxidizer.
11. An eyewash and/or emergency shower should be available in working area.

### Storage :

1. Unblock the exit routes.
2. Consider installing the spill detection and warning system.
3. Should have the leaking emergency equipments and appropriated fire equipments.
4. Store in the compatible containers. Do not spill while dispensing the substances.
5. The container should be labeled. Keep containers closed when not in used. Avoid physical damage to containers.
6. Keep container in a cool, dry, well-ventilated area.
7. Avoid all possible sources of ignition (spark or flame).
8. Keep away from sunshine.
9. Ensure the storage in an isolated fireproof building.
10. The flooring should be impermeable to the product.
11. Make a threshold at the door and build a slope or a groove in front of the door to enable the fluid leakage to be emitted to a safe place.
12. Clearly labeled in the entrance of the storage place, no obstacle. Only allowed trained personnel access.
13. Separate the working area and storage place. Away from the elevator and main entrance of the building/room.
14. Keep MSDS, a fire extinguisher and cleaning equipment nearby.
15. All equipment should be regularly checked and maintained.
16. All containers should be regularly checked and maintained for the label and damage.
17. Control the storage in a limited amount.
18. Ground barrels that store the liquids.
19. The barrels that store the flammable liquids should install the pressure reducing valve and vacuum relief valve.
20. Store in the suggested temperature. If necessary, install temperature alarm.
21. Avoid store indoor in large quantities.
22. Anti-flame device should be installed in the exhaust pipe of the tanks.
23. The storing basin shall be based on the ground with its base completely sealed from leakage, and shall be surrounded by a fluid-protective dike capable of carrying the entire volume of storage.

### Section 8 - Exposure Controls & Personal Protection

#### Engineering measures :

1. Whenever possible, the use of local exhaust ventilation or other engineering controls (e.g. isolating operation place) is the preferred method of controlling exposure to airborne particulate.
2. Avoid disruption of the airflow in the area of a local exhaust inlet by equipment such as a man-cooling fan.

#### Control parameters

TWA	STEL	Ceiling	Biological standards
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## Personal protective equipment :

### ■ Respiratory Protection :

1. Below 50ppm: Wear continuous-flow mode respirator with oxygen contained breathing apparatus, a full-face organic vapor respirator or chemical cartridge respirator. Wear a NIOSH approved full-face piece self-contained breathing apparatus.
2. Unknown concentration: Portable pressured gas mask, Portable pressured gas mask with air provider.
3. Escape: mask with organic filter can, portable protective breathing gear.

### ■ Hand Protection :

Wear impermeable rubber gloves made of butyl rubber, chloroprene rubber, nitrile rubber, Saranex, Viton, 4H.

### ■ Eye Protection: Wear chemical splash goggles and face shield. Eyewash should be nearby.

### ■ Skin and Body Protection : Wear appropriate protective clothing, protective boots. Emergency shower should be nearby.

## Hygiene measures :

1. After work, remove the contaminated clothes as quickly as possible. Throw away or wash clothes thoroughly before wearing again. Notify the laundry personnel of the danger of the contaminated clothes.
2. Smoking and eating is strictly prohibited in the work site.
3. Wash hands thoroughly after handling this substance.
4. Keep the work area clean.

## Section 9 - Physical & Chemical Properties

Appearance : Liquid. Clear	Odor : Ammonia odor.
Colour : Colorless.	Melting Point:--
pH value : <13	Boiling point/boiling range : 171°C~180°C
Flammability: --	Flash point : 92°C
Decomposition temp : n/a	Test method : ASTM D 3828
Autoignition temp : 204°C	Explosion properties : 0.85%~24.6%
Vapor pressure : 3.8mmHg @25°C	Vapor density : --
Density : 0.97 @25°C	Solubility : Soluble in water.
log Kow : --	Evaporation Rate : --

## Section 10 - Stability & Reactivity Data

Stability : stable under ordinary conditions of use and storage.
Possible hazardous reactions under specific conditions :
Oxidizer (strong): may cause fire or explosion.
Conditions to avoid : sunlight, other sources of ignition.
Materials to avoid : strong oxidizer, alkali metal, hydride, nitrate, halide, perchlorate, chlorate, nonmetal
Hazardous decomposition products : --



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## Section 11 - Toxicological Information

Route of exposure : Eye 、 Skin 、 Ingestion 、 Inhalation
Symptoms : irritation, burn, dizziness, nausea
Immediate Toxicity : <ul style="list-style-type: none"><li>■ Skin:<ol style="list-style-type: none"><li>1. Prolonged or repeated exposure can cause skin skin.</li></ol></li><li>■ Eyes:<ol style="list-style-type: none"><li>1. Vapor may cause eye irritant.</li><li>2. Liquid may cause irritation, pain, redness, and cornea damage for several days.</li></ol></li><li>■ Inhalation:<ol style="list-style-type: none"><li>1. May cause irritation to nose, pharynx, and respiratory tract when exposed to high concentration. It may also cause headache, nausea, vomiting, chest pain and other symptoms.</li><li>2. If exposed seriously, it may cause unconsciousness and serious damage to lung, liver and kidney.</li></ol></li><li>■ Ingestion:<ol style="list-style-type: none"><li>1. Similar symptoms caused by inhalation.<ul style="list-style-type: none"><li>● LD<sub>50</sub>:--</li><li>● LC<sub>50</sub>:--</li></ul></li></ol></li></ul>
Specific effects : Chronic Effects on Humans: <ol style="list-style-type: none"><li>1. Repeated or prolonged skin contact may cause chronic dermatitis.</li><li>2. If over time inhaled, may cause asthma, bronchitis and upper respiratory tract infection.</li></ol>

## Section 12 - Ecological Information

Ecotoxicology : <ul style="list-style-type: none"><li>■ LC<sub>50</sub>(fish) : --</li><li>■ EC<sub>50</sub>(Aquatic Invertebrates) : --</li><li>■ Bioconcentration factor (BCF) : --</li></ul>
Persistence and degradability : <ol style="list-style-type: none"><li>1. Can't decompose in water.</li><li>2. Low biological cumulative hazards.</li><li>3. Carefully handle with this substance; avoid arising ecological problems.</li></ol> <ul style="list-style-type: none"><li>■ Half-Life (Air) : --</li><li>■ Half-Life (Water surface) : --</li><li>■ Half-Life (Groundwater) : --</li><li>■ Half-Life (Soil) : --</li></ul>
Bioaccumulative potential : --
Mobility in soil : --
Other adverse effects : --

## Section 13 - Disposal Considerations

Methods of disposal : <ol style="list-style-type: none"><li>1. Refer to the relevant laws and regulations for handling.</li></ol>
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| 2. Follow the warehouse conditions in storing waste substances waiting for disposal. |
| 3. Dispose according to special incinerating or hygienic landfill laws.              |

## Section 14 - MSDS Transport Information

UN classification number : 2491 (MEA)
Proper D.O.T Shipping Name: --
Hazard Class: 8 (Corrosive)
Packing Group : III (MEA)
Marine pollution : no
Specific precautionary transport measures and conditions : --

## Section 15 - Regulatory Information

Regulations :
1. Labor Safety and Health Facilities Regulations
2. Toxic Chemical Substances Labeling and Safety Date Regulations
3. Ordinance on Prevention of Organic Solvent Poisoning.
4. Permissible Exposure Limits of Hazardous Substances in the Work Environment
5. Road Traffic Safety Regulations
6. Industrial Waste Storage and Disposal Regulations
7. Public Hazardous Substances & Flammable Pressurized Gases Establishment Standards & Safety Control Procedures

## Section 16 - Other Information

Literature references	GHS SDS Database		
Prepared by	Supplier : San Fu Chemical Co., Ltd. Shan Hua Plant		
	Address : 340 Hsiao Hsin Li, Shan Hua, Tainan Hsien, Taiwan, R.O.C.		
	TEL : 06-5837608		FAX : 06-5839498
	Name : Chunfel Chang		
Issue date	2009/3/20	Revision	2
Remarks	Symbols Explanations: "--" No information is available at this time. "/" Not applicable to this substance.		

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