



# Material Safety Data Sheet


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## Section 1 - Product and Company Identification

Product name : RGB Rework( SF-R01)
Other names : RBG Rework chemical
Product use : Removing color on the color filter (Semiconductor 、 TFT-LCD Photolithography process)
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. Acute Toxicity Category I (Skin) 2. Corrosive to Metals Category I 3. Skin Corrosion/Irritation Category I 4. Serious Eye Damage/Eye Irritation Category I
The Most Important Hazards and effect Label element : Skull and Crossbones, Corrosive  <ul style="list-style-type: none"><li>■ Hazard symbol :</li><li>■ Signal word : Danger</li></ul>
Hazard statement : 1. Fatal if skin contact 2. May be corrosive to metals 3. Cause sever skin burn/eye damage
Precautionary statement : 1. If contact with eyes, flush with plenty of water. Get medical attention immediately. 2. Remove contaminated clothes immediately. 3. Wear appropriate protective gear, including clothing, gloves, chemical safety goggles and/or a full face shield.
Others Hazard : --

## Section 3 - Composition/Information On Ingredients

Mixture :

Component or impurities contributing to the hazard	Concentration or concentration range (%)	CAS No.
Potassium hydroxide	< 20%	1310-58-3
Dimethyl sulfoxide	< 20%	67-68-5
Alkanolamine	< 20%	--
Glycol ether solvent	< 20%	--



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Surfactant	< 5%	--
Water	< 60%	--

## Section 4 - First Aid Measures

<p>The First-aid Information :</p> <ul style="list-style-type: none"><li>■ Inhalation :<ol style="list-style-type: none"><li>1. Move to fresh air.</li><li>2. Get medical attention immediately.</li></ol></li><li>■ Skin Contact :<ol style="list-style-type: none"><li>1. Immediately flush contaminated areas with water for at least 20 minutes.</li><li>2. Get medical attention immediately.</li></ol></li><li>■ Eye Contact :<ol style="list-style-type: none"><li>1. Immediately flush eyes with water for at least 20 minutes.</li><li>2. Get medical attention immediately.</li></ol></li><li>■ Ingestion :<ol style="list-style-type: none"><li>1. If the patient is conscious, drink about 240~300 ml water.</li><li>2. If swallowed, don't induce vomiting.</li><li>3. Get medical attention immediately.</li><li>4. Neutralization is not suggested.</li></ol></li></ul>
<p>The Most Important Symptoms and Hazardous Effects : Irritation to the respiratory tract, skin, eyes</p>
<p>Protection of First-aiders :</p> <ol style="list-style-type: none"><li>1. Wear goggles, anticorrosive gloves, protective clothing</li><li>2. Avoid breathing vapor</li></ol>
<p>Notes to a Physician : Strong base chemicals, cause burns, pain</p>

## Section 5 - Fire Fighting Measures

<p>Extinguishing Media :</p> <ol style="list-style-type: none"><li>1. Alcohol foam, chemical powder, or water spray.</li><li>2. When fight with large fire, use foam or water spray.</li></ol>
<p>Specific Hazards when Fire-fight : --</p>
<p>Specific Fire-fighting Procedure :</p> <ol style="list-style-type: none"><li>1. Move away the containers if safe.</li><li>2. Use water spray to cool fire-exposed containers.</li><li>3. Stay away from ends of tanks.</li><li>4. For massive fire in cargo area, use unmanned holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.</li><li>5. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.</li><li>6. Let tank, tank car, or tank truck burn unless leak can be stopped; with smaller tanks or cylinders, extinguish/isolate from other flammables.</li><li>7. Isolate for ½ mile in all directions if tank, rail car, or tank truck is involved in fire.</li><li>8. Extinguish only if flow can be stopped.</li><li>9. Use water in flooding amounts as fog.</li><li>10. Cool containers with flooding amounts of water, apply from as far a distance as possible.</li></ol>



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11. Avoid breathing toxic vapors, keep upwind.
12. Consider evacuation of downwind area if material is leaking.

#### Specific Protection of Firefighters :

As in any fire, wear a self-contained breathing apparatus in pressure demand, MSHA/NIOSH (approved or equivalent), anti-dust and anti-splash goggles, protective gloves.

### Section 6 - Accidental Release Measures

#### Personal Precautions :

1. Isolate and restrict area access until clean up.
2. Ensure clean up is conducted by trained personnel only.
3. Must wear proper personal protection equipment.

Environmental Precautions : Well-ventilated the contaminated area.

#### Methods for Cleaning up :

1. Avoid contact with spills.
2. Prevent from entering sewers or confined space.
3. If safe to do so, stop or reduce spills.
4. Absorb or dike spill with sand or other inert, stable, and non-flammable materials.
5. Small amounts of residue may be flushed with plenty of water.
6. Large spills: contact the fire department, emergency management agency, or the suppliers immediately.

### Section 7 - Handling and Storage

#### Handling :

1. The staff should receive proper training and inform the risk and safety handling method.
2. Empty tanks, containers, and pipes may have hazardous residue. Never weld, cut, or drill before clean-up.
3. The inert gas could be placed in the container to reduce the possibility of the fire or the explosion.
4. Exit routes should be kept in unblocked.
5. Avoid producing vapor and mist, operating in well-ventilated area only. Handling amount of usage should be kept to a minimum. Separate the working area and storage place.
6. Wear appropriate personal protective equipments if necessary to avoid contact with the polluted chemicals.
7. Do not pour unused portion back into container - it may contaminate product.
8. Label the container, and keep the container closed while not in use.

#### Storage :

1. Store in a cool, dry, well-ventilated area away from sunshine, heat source, and incompatible substances.
2. Consider install equipment to prevent spilling.
3. Store in a cool fireproof location.
4. Install Well-ventilated system. Keep away from sources of spark, open flame, oxidizing agents. Use explosion-proof equipment and certified safety electric equipments. Use proof electrical equipment (ventilating, lighting and handling).
5. The flooring where the product is stored should be impermeable to the product.
6. 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.



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7. Clearly labeled in the entrance of the storage place, no obstacle. Only allowed trained personnel access.
8. Separate the working area and storage place. Away from the elevator and main entrance of the building/room.
9. Keep a fire extinguisher and cleaning equipment nearby.
10. All equipments should be regularly checked and maintained.
11. All containers should be regularly checked and maintained for the label and damage.
12. Control the storage in a limited amount.
13. Store in the suggested temperature. (avoid higher than 50°C) If necessary, install the temperature alarm.
14. Avoid the indoor storage in large amount. Ensure the storage in an isolated fireproof building.
15. 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

### Ventilation and engineering Controls :

Whenever possible, the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne particulate. Where utilized, exhaust inlets to the ventilation system must be positioned as close as possible to the source of airborne generation. Avoid disruption of the airflow in the area of a local exhaust inlet by equipment such as a man-cooling fan. Check ventilation equipment regularly to ensure it is functioning properly. Provide training on the use and operation of ventilation to all users. Use qualified professionals to design and install ventilation systems.

### Control parameters

TWA	STEL	Ceiling	Biological standards
2mg/m <sup>3</sup>	--	--	--

### Personal protective equipment :

#### ■ Respiratory Protection:

1. If repeated overexposure, appropriate personal respiratory protective equipment is highly recommended.
2. Different equipments are required when exposure in different concentration.
3. Confirm the warning notice before using.
4. Unknown concentration or under condition of endanger to healthy and life: Wear any NIOSH approved full-face piece self-contained breathing apparatus and positive pressure demand.

#### ■ Hand Protection : Wear chemical impervious gloves.

#### ■ Eye Protection : Safety glasses should be worn whenever working with chemicals.

Goggles or a face shield are required if there is a chance of splashing. Emergency shower and eyewash facility nearby.

#### ■ Skin and Body Protection : Wear appropriate protective clothing and boots to prevent skin contact. Emergency shower and eyewash should be nearby.

### Hygiene measures :

1. Remove contaminated clothes, clean thoroughly before reuse or disposal. Must advise the danger to the laundry worker.
2. Smoking, eating and drinking are prohibited in work area.
3. Wash hands thoroughly after handling this substance.



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4. Maintain a clean working environment.

## Section 9 - Physical & Chemical Properties

Physical state : liquid (Liquid under normal temp.)	Odor : Ammonia odor.
Colour : colorless or light yellow transparent	Melting Point: --
Flammability: --	Boiling point/boiling range : > 100°C
pH value : > 13	Flash point : > 70°C
Decomposition temp. : --	Test method : closed
Autoignition temp. : > 131°C	Explosion properties : --
Vapor pressure : < 100 mmHg	Vapor density : < 1.0
Density : 1.1 ± 0.1	Solubility : miscible in water
log Kow : -1.31	Evaporation Rate : < 1

## Section 10 - Stability & Reactivity Data

Stability : Stable under normal temperature and pressure
Possible hazardous reactions under specific conditions : --
Conditions to avoid : --
Materials to avoid : Strong oxidizer, acid, peroxide
Hazardous decomposition products : May decomposing carbon oxides (CO, CO <sub>2</sub> ).

## Section 11 - Toxicological Information

Route of exposure : skin, inhalation, eye, ingestion
Symptoms : coughing, asphyxia, burns with mucous membrane, low blood pressure, weak, quick pulse, pneumonia, pain in chest, difficulty in breathing, cyanosis, dizziness, burn in skin and eyes.
Immediate Toxicity : <ul style="list-style-type: none"><li>■ Inhalation:<ol style="list-style-type: none"><li>1. May cause respiratory irritation syndrome, include coughing, asphyxia, nose, mouse and sore throat, burn of the mucous membrane.</li><li>2. If inhalation with large amount, may develop into pulmonary edema. Incubation period is 5-72 hours. The symptoms include chest tightness, dyspnea, bubble sputum, cyanosis and dizziness. Physiological appearances include weakness; speed up pulse rate, hypotension, and blood concentrate sweat blister.</li></ol></li><li>■ Skin:<ol style="list-style-type: none"><li>1. Cause severe pain, burn and brown color dye with direct contact. Cause tissue softness, gel like and necrosis, deep tissue damage in the corrosive area.</li><li>2. Potentially cause lethal danger with skin contact.</li></ol></li><li>■ Eye:<ol style="list-style-type: none"><li>1. Cause pain and burn seriously with direct contact.</li><li>2. The injury condition depends on the concentration and the period of the contact. May cause edema, upper skin tissue damage, blurred cornea and iritis. While the injury lesser, the symptoms will be lesser.</li><li>3. Serious burning condition, the complete injury won't be appeared immediately. The</li></ol></li></ul>



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complications include edema, blood vessel form in cornea, scar, permanent blurry, staphyloma, and cataract.

■ Ingestion:

1. Ingestion of strong alkali may be followed by severe pain, vomiting, diarrhea, & collapse. The vomitus contains blood and desquamated mucosal lining.
  2. If death does not occur in the first 24 hours, the patient may improve for 2-4 days and then have a sudden onset of severe abdominal pain, boardlike abdominal rigidity, and rapid fall of blood pressure indicating delayed gastric or esophageal perforation.
  3. Damage to esophagus and stomach after ingestion may progress for 2-3 weeks.
  4. Death from peritonitis may occur as late as 1 month after ingestion.
  5. Even though the patient recovers from the immediate damage, esophageal stricture may occur in weeks, months, or even years later to make swallowing difficult.
  6. Esophageal stricture can occur weeks, months, or even years later to make swallowing difficult. Carcinoma is a risk in later life.
- LD<sub>50</sub>: --
  - LC<sub>50</sub>:--

Specific effects :

1. Effects are dependent upon concentration and duration of exposure. Repeated or prolonged exposure may cause inflammation/ulceration of mouth and bronchus, Gastrointestinal barrier, dermatitis, conjunctivitis, or similar effects to those for acute exposure.
2. Subjected to 3-6% NaOH aqueous solution on the skin of mice for 46 weeks, coal tars will form and then develop into tumors.

## Section 12 - Ecological Information

Ecotoxicology :

- LC<sub>50</sub>(fish) : 165000 µg/L@24 hour(s) (Poecilia reticulata)
- EC<sub>50</sub>(Aquatic Invertebrates) : --
- Bioconcentration factor (BCF) : --

Persistence and degradability :

- Half-Life (Air) : --
- Half-Life (Water surface) : --
- Half-Life (Groundwater) : --
- Half-Life (Soil) : --

Bioaccumulative potential : --

Mobility in soil : --

Other adverse effects : --

## Section 13 - Disposal Considerations

Methods of disposal :

Dispose of as special waste in compliance with local and national environmental laws and regulations.



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## Section 14 - MSDS Transport Information

UN classification number : 1814
Proper D.O.T Shipping Name : PR Remover
Hazard Class : 8
Packing Group : II
Marine pollution : n/a
Specific precautionary transport measures and conditions : According to the local environmental protection regulation, should examine the standard transferring equipment and certification.

## Section 15 - Regulatory Information

Regulations :
1. Regulations for Labor Safety and Health Installations
2. Regulations for Chemical Hazard Communication
3. Permissible Exposure Limits of Hazardous Substances in the Work Environment
4. Road Traffic Safety Regulations
5. Industrial Waste Storage and Disposal Regulations and Facility Standards

## Section 16 - Other Information

Literature references	1. RTECS Data Bank, TOMES PLUS, Vol. 68, 2006 2. ChemWatch Data Bank, 2006-1 3. OHS MSDS Data Bank, 2006 4. HSDB Data Bank, TOMES CPS (CD) Vol. 68 · 2006		
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Issue date	2009/8/19	Revision	3
Remarks	Symbols Explanations: "--"            No information is available at this time. "/"             Not applicable to this substance.		
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