Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
CASCOMEL MU5

PRODUCT USE
Resin for composite board.

SUPPLIER
Company: Asta Chemicals Sdn Bhd
Address:
Lot 1863 Mukim Sungai Karang Kawasan Perindustrian
Lembaga Pelabuhan Kuantan
Tanjung Gelang, Kuantan
Kuantan Pahang, 25720
Malaysia
Telephone: +60 9 583 3936
Fax: +60 9 583 3980

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th>Property</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>Low</td>
</tr>
<tr>
<td>Toxicity</td>
<td>Low</td>
</tr>
<tr>
<td>Body Contact</td>
<td>Low</td>
</tr>
<tr>
<td>Reactivity</td>
<td>High</td>
</tr>
<tr>
<td>Chronic</td>
<td>Extreme</td>
</tr>
</tbody>
</table>

SCALE: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

RISK
- Limited evidence of a carcinogenic effect.
- May cause SENSITISATION by skin contact.

SAFETY
- Do not breathe dust.
- Avoid contact with skin.
- Wear suitable protective clothing.
- Wear suitable gloves.
- To clean the floor and all objects contaminated by this material, use water.
- Keep away from food, drink and animal feeding stuffs.

continued...
Section 2 - HAZARDS IDENTIFICATION

• If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea/formaldehyde resin</td>
<td></td>
<td>&gt;90</td>
</tr>
<tr>
<td>Fortifier</td>
<td></td>
<td>1-10</td>
</tr>
<tr>
<td>Residual reactants as:</td>
<td></td>
<td>50-00-0</td>
</tr>
<tr>
<td>formaldehyde</td>
<td></td>
<td>1 max</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

SWALLOWED
• Immediately give a glass of water.
• First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

EYE
■ If this product comes in contact with eyes:
  • Wash out immediately with water.
  • If irritation continues, seek medical attention.
  • Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
■ If skin contact occurs:
  • Immediately remove all contaminated clothing, including footwear.
  • Flush skin and hair with running water (and soap if available).
  • Seek medical attention in event of irritation.

INHALED
• If fumes, aerosols or combustion products are inhaled remove from contaminated area.
• Other measures are usually unnecessary.

NOTES TO PHYSICIAN
■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
• There is no restriction on the type of extinguisher which may be used.
• Use extinguishing media suitable for surrounding area.

FIRE FIGHTING
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves in the event of a fire.
• Prevent, by any means available, spillage from entering drains or water courses.
• Use fire fighting procedures suitable for surrounding area.
• DO NOT approach containers suspected to be hot.
• Cool fire exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.
• Equipment should be thoroughly decontaminated after use.

continued...
FIRE/EXPLOSION HAZARD
- Solid which exhibits difficult combustion or is difficult to ignite.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion.
- Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust (420 micron or less) may burn rapidly and fiercely if ignited; once initiated larger particles up to 1400 microns diameter will contribute to the propagation of an explosion.
- A dust explosion may release of large quantities of gaseous products; this in turn creates a subsequent pressure rise of explosive force capable of damaging plant and buildings and injuring people.
- Usually the initial or primary explosion takes place in a confined space such as plant or machinery, and can be of sufficient force to damage or rupture the plant. If the shock wave from the primary explosion enters the surrounding area, it will disturb any settled dust layers, forming a second dust cloud, and often initiate a much larger secondary explosion. All large scale explosions have resulted from chain reactions of this type.
- Dry dust can also be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
- Build-up of electrostatic charge may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.
- All movable parts coming in contact with this material should have a speed of less than 1-metre/sec. Combustion products include: carbon monoxide (CO), carbon dioxide (CO2), nitrogen oxides (NOx), other pyrolysis products typical of burning organic material. May emit poisonous fumes. May emit corrosive fumes.

FIRE INCOMPATIBILITY
- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

HAZCHEM
None

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
- Clean up waste regularly and abnormal spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
- Dampen with water to prevent dusting before sweeping.
- Place in suitable containers for disposal.

MAJOR SPILLS
- Moderate hazard.
- CAUTION: Advise personnel in area.
- Alert Emergency Services and tell them location and nature of hazard.
- Control personal contact by wearing protective clothing.
- Prevent, by any means available, spillage from entering drains or water courses.
- Recover product wherever possible.
- IF DRY: Use dry clean up procedures and avoid generating dust. Collect residues and place in sealed plastic bags or other containers for disposal. IF WET: Vacuum/shovel up and place in labelled containers for disposal.
- ALWAYS: Wash area down with large amounts of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise Emergency Services.
PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.
- Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions).
- Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame.
- Establish good housekeeping practices.
- Minimise dry sweeping to avoid generation of dust clouds. Vacuum dust-accumulating surfaces and remove to a chemical disposal area. Vacuums with explosion-proof motors should be used.
- Control sources of static electricity. Dusts or their packages may accumulate static charges, and static discharge can be a source of ignition.
- Solids handling systems must be designed in accordance with applicable standards (e.g. NFPA including 654 and 77) and other national guidance.
- Do not empty directly into flammable solvents or in the presence of flammable vapors.
- The operator, the packaging container and all equipment must be grounded with electrical bonding and grounding systems. Plastic bags and plastics cannot be grounded, and antistatic bags do not completely protect against development of static charges.
- Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- Do NOT cut, drill, grind or weld such containers.
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

SUITABLE CONTAINER

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

- Avoid reaction with oxidising agents.
### STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

<table>
<thead>
<tr>
<th>+</th>
<th>X</th>
<th>+</th>
<th>X</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>May be stored together</td>
<td>May be stored together with specific preventions</td>
<td>Must not be stored together</td>
<td></td>
<td></td>
</tr>
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### Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

#### EXPOSURE CONTROLS

<table>
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<tr>
<th>Source</th>
<th>Material</th>
<th>TWA ppm</th>
<th>STEL ppm</th>
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<tbody>
<tr>
<td>Australia Exposure Standards</td>
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#### EMERGENCY EXPOSURE LIMITS

<table>
<thead>
<tr>
<th>Material</th>
<th>Revised IDLH Value (mg/m^3)</th>
<th>Revised IDLH Value (ppm)</th>
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</thead>
<tbody>
<tr>
<td>formaldehyde.</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

#### MATERIAL DATA

**CASCOMEL MU5:**

**FORMALDEHYDE:**

- for formaldehyde:
  - Odour Threshold Value for formaldehyde: 0.98 ppm (recognition)
  - NOTE: Detector tubes for formaldehyde, measuring in excess of 0.2 ppm are available commercially.
  - Formaldehyde vapour exposure:

  Primary irritation is dependent on duration of exposure and individual susceptibility.
  The following are typical symptoms encountered at various exposure levels.
  - 0.1 ppm - Lower level of mucous eye, nose and throat irritation
  - 0.8 ppm - Typical threshold of perception
  - 1-2 ppm - Typical threshold of irritation
  - 2-3 ppm - Irritation of eyes, nose and throat
  - 4-5 ppm - Increased irritation, tearing, headache, pungent odour
  - 10-20 ppm - Profuse tearing, severe burning, coughing
  - 50 ppm - Serious bronchial and alveolar damage
  - 100 ppm - Formaldehyde induced chemical pneumonia and death

Despite the intent of the TLV Ceiling recommendation it is believed that 0.3 ppm will not protect that portion of the workforce (up to 20%) reported to be responsive to low ambient concentrations. Because of the dose-related carcinogenic activity for rat and mouse inhalation of formaldehyde, the report of macromolecular adducts in the upper and lower respiratory tracts of nonhuman primates following inhalation of formaldehyde, the human case reports of upper respiratory tract malignant melanoma associated with formaldehyde inhalation and the suggestive epidemiologic data on human cancer risk, the TLV Committee recommends that workplace formaldehyde air concentrations be reduced to the lowest possible levels that can be achieved using engineering controls.

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*continued...*
PERSONAL PROTECTION

**Odour Safety Factor (OSF)**

OSF = 0.36 (FORMALDEHYDE).

**EYE**

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

**HANDS/FEET**

- **NOTE:**
  - The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
  - Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

  The exact breakthrough time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

  Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
  - frequency and duration of contact,
  - chemical resistance of glove material,
  - glove thickness and
  - dexterity

  Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

  - When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
  - When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
  - Contaminated gloves should be replaced.

  Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

  Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.
  - polychloroprene
  - nitrile rubber

  continued...
• butyl rubber
• fluorocaoutchouc
• polyvinyl chloride
Gloves should be examined for wear and/or degradation constantly.

RESPIRATOR
• Type BAX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)
• Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
• The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
• Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory. These may be government mandated or vendor recommended.
• Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
• Use approved positive flow mask if significant quantities of dust becomes airborne.
• Try to avoid creating dust conditions.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
Employers may need to use multiple types of controls to prevent employee overexposure.

• Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
• If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered.
Such protection might consist of:
(a): particle dust respirators, if necessary, combined with an absorption cartridge;
(b): filter respirators with absorption cartridge or canister of the right type;
(c): fresh-air hoods or masks.

APPEARANCE
White free-flowing powder with formaldehyde odour; mixes with water.

PHYSICAL PROPERTIES
Solid.
Mixes with water.

continued...
CASCOMEL MU5
Chemwatch Independent Material Safety Data Sheet
Issue Date: 19-Oct-2012

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
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<tbody>
<tr>
<td>State</td>
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<td>Melting Range (°C)</td>
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<td>Boiling Range (°C)</td>
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<tr>
<td>Flash Point (°C)</td>
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<tr>
<td>Decomposition Temp (°C)</td>
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<td>Autoignition Temp (°C)</td>
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</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
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<td>Lower Explosive Limit (%)</td>
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</tr>
<tr>
<td>Volatile Component (% vol)</td>
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<td>Molecular Weight</td>
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<td>Solubility in water (g/L)</td>
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<td>pH (1% solution)</td>
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<td>pH (as supplied)</td>
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<td>Vapour Pressure (kPa)</td>
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<td>Specific Gravity (water=1)</td>
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<td>Relative Vapour Density (air=1)</td>
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<tr>
<td>Evaporation Rate</td>
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</tr>
</tbody>
</table>

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
- The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g., liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for concern.

This substance if swallowed may cause immediate severe abdominal pain, with vomiting, nausea, passage of frequent watery stool, reduced or no urine production, dizziness, followed by unconsciousness, convulsions and may result in death. It can also cause sight problems and possible permanent blindness.

EYE
- Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.

SKIN
- The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.

Minor regular skin contact results in hardening of skin, making it feel like leather. It may also cause skin inflammation and an itchy rash especially among workers exposed to formaldehyde in hospitals, in the production of resins, textiles, shampoos and laminated furniture. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

continued...
INHALED

- The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.

Inhalation of vapour at low concentrations may cause a tingling sensation in the nose and airway. Slightly higher concentrations may cause burning sensation and headache. High vapour concentrations of formaldehyde can cause chest constriction, difficulty breathing, lung infection and difficulty in swallowing.

CHRONIC HEALTH EFFECTS

- There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment.

Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

There is some evidence that inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population.

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.

When administered by inhalation, formaldehyde induced squamous cell carcinomas of the nasal cavity in rats of both sexes. Although excess occurrence of a number of cancers has been reported in humans, the evidence for a possible involvement of formaldehyde is strongest for nasal and nasopharyngeal cancer. The occurrence of these cancers showed an exposure-response gradient in more than one study, but the numbers of exposed cases were often small and some studies did not show excesses in humans. Formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx and nasal passages.

Several investigations have concluded that specific respiratory sensitisation occurs based on positive bronchial provocation tests amongst formaldehyde-exposed workers. These studies have been criticised for methodological reasons. One large study however revealed that 5% of persons exposed to formaldehyde and had asthma-like symptoms met the study criteria for formaldehyde-induced asthma; this included a positive response on a bronchial provocation test with 2.5 mg/m3 formaldehyde. Although differential individual sensitivity has been established, the mechanism for this increased sensitivity is unknown.

There is limited evidence that formaldehyde has any adverse effect on reproduction or development in humans. An investigation of reproductive function in female workers exposed to formaldehyde in the garment industry, revealed an increased incidence of menstrual disorders, inflammatory disease of the reproductive tract, sterility, anaemia, and low birth weights amongst off-spring.

TOXICITY AND IRRITATION

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

- The following information refers to contact allergens as a group and may not be specific to this product.

Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke’s oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

continued...
FORMALDEHYDE:

TOXICITY

Oral (woman) LDLo: 108 mg/kg
Oral (man) TDLo: 643 mg/kg
Oral (rat) LD50: 100 mg/kg
Inhalation (man) TCLo: 0.3 mg/m³
Inhalation (rat) LC50: 203 mg/m³
Dermal (rabbit) LD50: 270 mg/kg

IRRITATION

Skin (human): 0.15 mg/3d - I Mild
Skin (rabbit): 2 mg/24H SEVERE
Eye (human): 4 ppm/5m
Eye (rabbit): 0.75 mg/24H SEVERE

■ The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS. Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

CARCINOGEN
formaldehyde.

International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs
formaldehyde.

Australia Exposure Standards Currently Under Review
formaldehyde.

Australia Exposure Standards
formaldehyde.

Australia Exposure Standards - Carcinogens

Group 1 Carcinogenic to humans

Carcinogen Category 2
Carcinogen Category 2
Carcinogen Category 2

SKIN
formaldehyde.

GESAMP/EHS Composite List - GESAMP Hazard Profiles
formaldehyde.

D1: skin irritation/corrosion 3

Section 12 - ECOLOGICAL INFORMATION

FORMALDEHYDE:

■ Harmful to aquatic organisms.

For Formaldehyde:

Environmental Fate: Formaldehyde is common in the environment as a contaminant of smoke and as photochemical...
smog. Concentrated solutions containing formaldehyde are unstable and oxidize slowly. In the presence of air and moisture, polymerization takes place readily in concentrated solutions at room temperature to form paraformaldehyde.

Atmospheric Fate: In the atmosphere, formaldehyde both photolysis and reacts with reactive free radicals (primarily hydroxyl radicals). Reaction with nitrate radicals, insignificant during the day, may be an important removal process at night. Air Quality Standards: <0.1 mg/m3 as a 30 min. average, indoor air, non-industrial buildings (WHO guideline).

Aquatic Fate: Due to its solubility, formaldehyde will efficiently transfer to rain and surface water and will biodegrade to low concentrations within days. Adsorption to sediment and volatilization are not expected to be significant routes of biodegradation.


Terrestrial Fate: In soil, aqueous solutions of formaldehyde leach through the soil; at high concentrations adsorption to clay minerals may occur. Although biodegradable under both aerobic and anaerobic conditions the fate of formaldehyde in soil is unclear.

Ecotoxicity: Formaldehyde does not bioconcentrate in the food chain.

DO NOT discharge into sewer or waterways.

The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1


<table>
<thead>
<tr>
<th>Ecotoxicity</th>
<th>Ingredient</th>
<th>Persistence: Water/SOIL</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
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<tbody>
<tr>
<td></td>
<td>formaldehyde.</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

**Section 13 - DISPOSAL CONSIDERATIONS**

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.
- Otherwise:
  - If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
  - Where possible retain label warnings and MSDS and observe all notices pertaining to the product.
- Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
- A Hierarchy of Controls seems to be common - the user should investigate:
  - Reduction
  - Reuse
  - Recycling
  - Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible.
- Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: burial in a land-fill specifically licenced to accept chemical and / or pharmaceutical
wastes or Incineration in a licenced apparatus (after admixture with suitable combustible material)
• Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:
None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, IATA, IMDG

Section 15 - REGULATORY INFORMATION

Indications of Danger:
Xn Harmful

POISONS SCHEDULE None

REGULATIONS

Regulations for ingredients

formaldehyde. (CAS: 50-00-0) is found on the following regulatory lists;

No data for CASCOMEL MU5 (CW: 4550-52)

Section 16 - OTHER INFORMATION

MSDS SECTION CHANGES

The following table displays the version number of and date on which each section was last changed.

<table>
<thead>
<tr>
<th>Section Name</th>
<th>Version</th>
<th>Date</th>
<th>Section Name</th>
<th>Version</th>
<th>Date</th>
<th>Section Name</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Fighter (fire incompatibility)</td>
<td>4</td>
<td>19-Oct-2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Section 16 - OTHER INFORMATION

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Date</th>
<th>Protection Type</th>
<th>Date</th>
<th>Hazard Type</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spills (major)</td>
<td>19-Oct-2012</td>
<td>Appearance</td>
<td>19-Oct-2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spills (minor)</td>
<td>19-Oct-2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handling Procedure</td>
<td>19-Oct-2012</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references. A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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Issue Date: 19-Oct-2012
Print Date: 23-Jul-2013

This is the end of the MSDS.
CASCOMEL MU6
Chemwatch Independent Material Safety Data Sheet
Issue Date: 29-Jan-2010
A317LP

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
CASCOMEL MU6

PRODUCT USE
Resin for composite board.

SUPPLIER
Company: Asta Chemicals Sdn Bhd
Address:
Lot 1863 Mukim Sungai Karang Kawasan Perindustrian
Lembaga Pelabuhan Kuantan
Tanjung Gelang, Kuantan
Kuantan Pahang, 25720
Malaysia
Telephone: +60 9 583 3936
Fax: +60 9 583 3980

Company: Asta Chemicals Sdn Bhd
Address:
Lot 2823 (101) Mukim 1, Lorong Perusahaan 2,
Kawasan Perindustrian Perai
Pulau Pinang
Perai, 13600
Malaysia
Telephone: +60 4 390 8110
Fax: +60 4 399 8087

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Toxicity</th>
<th>Body Contact</th>
<th>Reactivity</th>
<th>Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low=1</td>
<td>Low=1</td>
<td>Low=1</td>
<td>Low=1</td>
<td>Low=1</td>
</tr>
</tbody>
</table>

SCALE: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

RISK
■ Limited evidence of a carcinogenic effect.
■ May cause SENSITISATION by skin contact.

SAFETY
• Do not breathe dust.
• Avoid contact with skin.
• Wear suitable protective clothing.
• Wear suitable gloves.
• To clean the floor and all objects contaminated by this material, use water.
• Keep away from food, drink and animal feeding stuffs.

continued...
Section 2 - HAZARDS IDENTIFICATION

• If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>melamine/ urea/ formaldehyde resin</td>
<td>25036-13-9</td>
<td>&gt;90</td>
</tr>
<tr>
<td>filler</td>
<td>1,10</td>
<td></td>
</tr>
<tr>
<td>residual reactant, as formaldehyde</td>
<td>50-00-0</td>
<td>2 max.</td>
</tr>
</tbody>
</table>

NOTE: Manufacturer has supplied full ingredient information to allow CHEMWATCH assessment.

Section 4 - FIRST AID MEASURES

SWALLOWED
• If swallowed do NOT induce vomiting.
• If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
• Observe the patient carefully.
• Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
• Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
• Seek medical advice.

EYE
■ If this product comes in contact with the eyes:
• Wash out immediately with fresh running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Seek medical attention without delay; if pain persists or recurs seek medical attention.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
■ If skin contact occurs:
• Immediately remove all contaminated clothing, including footwear.
• Flush skin and hair with running water (and soap if available).
• Seek medical attention in event of irritation.

INHALED
• If dust is inhaled, remove from contaminated area.
• Encourage patient to blow nose to ensure clear breathing passages.
• Ask patient to rinse mouth with water but to not drink water.
• Seek immediate medical attention. or • If fumes or combustion products are inhaled remove from contaminated area.
• Lay patient down. Keep warm and rested.
• Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
• Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
• Transport to hospital, or doctor.

NOTES TO PHYSICIAN
■ Treat symptomatically.

continued...
Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

FIRE FIGHTING
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire containing containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
- Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).
- May emit acrid smoke.
- Mists containing combustible materials may be explosive.

Other combustion products include:
- carbon dioxide (CO2), nitrogen oxides (NOx) and aldehydes.
- Avoid creating dust - may present dust explosion hazard. Dry dust can be electrostatically charged by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by grounding.

FIRE INCOMPATIBILITY
- Avoid contamination with strong oxidising agents as ignition may result.

HAZCHEM
None

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS
- Remove all ignition sources.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Control personal contact with the substance, by using protective equipment and dust respirator.
- Prevent spillage from entering drains, sewers or water courses.
- Recover product wherever possible. Avoid generating dust.
- Sweep / shovel up.

continued...
• If required, wet with water to prevent dusting.
• Put residues in labelled plastic bags or other containers for disposal.
• Wash area down with large quantity of water and prevent runoff into drains.
• If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
■ Remove all ignition sources.
■ Limit all unnecessary personal contact.
■ Wear protective clothing when risk of exposure occurs.
■ Use in a well-ventilated area.
■ When handling DO NOT eat, drink or smoke.
■ Always wash hands with soap and water after handling.
■ Avoid physical damage to containers.
■ Use good occupational work practice.
■ Observe manufacturer's storage and handling recommendations contained within this MSDS.

SUITABLE CONTAINER
■ Plastic container.
Multi-ply woven plastic or paper bag with sealed plastic liner
NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
■ Metal can or drum
■ Packaging as recommended by manufacturer.
■ Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY
■ Avoid storage with oxidisers and strong acids.

STORAGE REQUIREMENTS
• Keep dry.
• Store in original containers.
• Keep containers securely sealed.
• No smoking, naked lights or ignition sources.
• Store in a cool, dry, well-ventilated area.
• Store away from incompatible materials and foodstuff containers.
• Protect containers against physical damage and check regularly for leaks.
• Observe manufacturer's storage and handling recommendations contained within this MSDS.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

+ X + X X +

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together
Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

<table>
<thead>
<tr>
<th>Source</th>
<th>Material</th>
<th>TWA ppm</th>
<th>STEL ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia Exposure Standards</td>
<td>formaldehyde. (Formaldehyde (h))</td>
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<td>2</td>
</tr>
</tbody>
</table>

The following materials had no OELs on our records

• melamine/urea/formaldehyde resin: CAS:25036-13-9

EMERGENCY EXPOSURE LIMITS

<table>
<thead>
<tr>
<th>Material</th>
<th>Revised IDLH Value (mg/m³)</th>
<th>Revised IDLH Value (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>formaldehyde.</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

MATERIAL DATA

FORMALDEHYDE:

MEAMINE/UREA/FORMALDEHYDE RESIN:

- for formaldehyde:
  Odour Threshold Value for formaldehyde: 0.98 ppm (recognition)
  NOTE: Detector tubes for formaldehyde, measuring in excess of 0.2 ppm are available commercially.
  Formaldehyde vapour exposure:
  Primary irritation is dependent on duration of exposure and individual susceptibility.
  The following are typical symptoms encountered at various exposure levels.
  0.1 ppm - Lower level of mucous eye, nose and throat irritation
  0.8 ppm - Typical threshold of perception
  1-2 ppm - Typical threshold of irritation
  2-3 ppm - Irritation of eyes, nose and throat
  4-5 ppm - Increased irritation, tearing, headache, pungent odour
  10-20 ppm - Profuse tearing, severe burning, coughing
  50 ppm - Serious bronchial and alveolar damage
  100 ppm - Formaldehyde induced chemical pneumonia and death

Despite the intent of the TLV Ceiling recommendation it is believed that 0.3 ppm will not protect that portion of the workforce (up to 20%) reported to be responsive to low ambient concentrations. Because of the dose-related carcinogenic activity for rat and mouse inhalation of formaldehyde, the report of macromolecular adducts in the upper and lower respiratory tracts of nonhuman primates following inhalation of formaldehyde, the human case reports of upper respiratory tract malignant melanoma associated with formaldehyde inhalation and the suggestive epidemiologic data on human cancer risk, the TLV Committee recommends that workplace formaldehyde air concentrations be reduced to the lowest possible levels that can be achieved using engineering controls.

- Odour Safety Factor(OSF)
  OSF=0.36 (FORMALDEHYDE).

CASCOMEL MU6:

- None assigned. Refer to individual constituents.

PERSONAL PROTECTION

continued...
EYE
- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

HANDS/FEET
■ Wear chemical protective gloves, e.g. PVC.
Wear safety footwear.

OTHER
- Overalls.
- Eyewash unit.

RESPIRATOR
■ Type BAX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
■ Use in a well-ventilated area.
Area where polymer is heat processed should be ventilated to remove vapour, fumes released during all stages of processing.
Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
Employers may need to use multiple types of controls to prevent employee overexposure.

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
(a): particle dust respirators, if necessary, combined with an absorption cartridge;
(b): filter respirators with absorption cartridge or canister of the right type;
(c): fresh-air hoods or masks
- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.
Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
White free-flowing powder, mixes with water. Formaldehyde odour.

PHYSICAL PROPERTIES
Solid.
Mixes with water.

<table>
<thead>
<tr>
<th>State</th>
<th>Divided solid</th>
<th>Molecular Weight</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting Range (°C)</td>
<td>Not available</td>
<td>Viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Range (°C)</td>
<td>Not available</td>
<td>Solubility in water (g/L)</td>
<td>Miscible</td>
</tr>
<tr>
<td>Flash Point (°C)</td>
<td>Not applicable</td>
<td>pH (1% solution)</td>
<td>Not available</td>
</tr>
<tr>
<td>Decomposition Temp (°C)</td>
<td>Not available</td>
<td>pH (as supplied)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Autoignition Temp (°C)</td>
<td>Not available</td>
<td>Vapour Pressure (kPa)</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not available</td>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
<td>Not available</td>
<td>Relative Vapour Density (air=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Volatile Component (%vol)</td>
<td>Not available</td>
<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY
• Presence of incompatible materials.
• Product is considered stable.
• Hazardous polymerisation will not occur.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Considered an unlikely route of entry in commercial/industrial environments.
The material is discomforting to the gastro-intestinal tract. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

EYE
■ Generated dust may be discomforting and abrasive to the eyes.
The material contains residues of formaldehyde which may irritate the eyes and mucous membranes and produce an allergic response if used in confined spaces or heated. Symptoms include slight burning of the eyes and weeping but this usually stops after a few minutes in fresh air.

SKIN
■ The material may be slightly discomforting to the skin.
if exposure is prolonged.
Generated dust may be discomforting and may cause allergic skin reactions which may lead to dermatitis. Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.

continued...
INHALED
■ Not normally a hazard due to non-volatile nature of product.
Generated dust may be discomforting to the upper respiratory tract if inhaled.

CHRONIC HEALTH EFFECTS
■ Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.
As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

TOXICITY AND IRRITATION
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

■ The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke’s oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

CASCOMEL MU6:
■ Not available. Refer to individual constituents.

MELAMINE/UREA/ FORMALDEHYDE RESIN:
TOXICITY
Oral (rat) LD50: >5000 mg/kg

IRRITATION
Nil Reported [Manufacturer]

FORMALDEHYDE:
TOXICITY
Oral (woman) LDLo: 108 mg/kg
Oral (man) TDL0: 643 mg/kg
Oral (rat) LD50: 100 mg/kg
Inhalation (man) TCLo: 0.3 mg/m³
Inhalation (rat) LC50: 203 mg/m³
Dermal (rabbit) LD50: 270 mg/kg

IRRITATION
Skin (human): 0.15 mg/3d- I Mild
Skin (rabbit): 2 mg/24H SEVERE
Eye (human): 4 ppm/5m
Eye (rabbit): 0.75 mg/24H SEVERE

■ The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS.
Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

continued...
### Section 11 - TOXICOLOGICAL INFORMATION

#### CARCINOGEN

**formaldehyde.**

<table>
<thead>
<tr>
<th>International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs</th>
<th>Group</th>
<th>Carcinogenic to humans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**formaldehyde.**  
Australia Exposure Standards Currently Under Review  
Carcinogen Category  
2  

**formaldehyde.**  
Australia Exposure Standards - Carcinogens  
Carcinogen Category  
2  

#### SKIN

**formaldehyde.**

GESAMP/EHS Composite List - GESAMP Hazard Profiles  
D1: skin irritation/corrosion  
3

---

### Section 12 - ECOLOGICAL INFORMATION

**FORMALDEHYDE.**

**MELAMINE/UREA/FORMALDEHYDE RESIN:**

- **DO NOT** discharge into sewer or waterways.
- **For Formaldehyde:**  
  Environmental Fate: Formaldehyde is common in the environment as a contaminant of smoke and as photochemical smog. Concentrated solutions containing formaldehyde are unstable and oxidize slowly. In the presence of air and moisture, polymerization takes place readily in concentrated solutions at room temperature to form paraformaldehyde.  
  Atmospheric Fate: In the atmosphere, formaldehyde both photolysis and reacts with reactive free radicals (primarily hydroxyl radicals). Reaction with nitrate radicals, insignificant during the day, may be an important removal process at night. Air Quality Standards: <0.1 mg/m³ as a 30 min. average, indoor air, non-industrial buildings (WHO guideline).  
  Aquatic Fate: Due to its solubility, formaldehyde will efficiently transfer to rain and surface water and will biodegrade to low concentrations within days. Adsorption to sediment and volatilization are not expected to be significant routes of biodegradation.  
  Terrestrial Fate: In soil, aqueous solutions of formaldehyde leach through the soil; at high concentrations adsorption to clay minerals may occur. Although biodegradable under both aerobic and anaerobic conditions the fate of formaldehyde in soil is unclear.  
  Ecotoxicity: Formaldehyde does not bioconcentrate in the food chain.

**MELAMINE/UREA/FORMALDEHYDE RESIN:**

- Urea-formaldehyde (UF) resins cannot be made free of residual formaldehyde. Under ambient conditions and during curing, uncured resins can release free formaldehyde, at rates gradually decreasing over time (Formaldehyde Institute, 1984). In pressed wood products, under high load conditions, even traces of residual, unreacted formaldehyde from the UF resin can result in measurable off-gassing, causing discernible formaldehyde levels in indoor air. High temperatures and humidity, which hydrolyze formaldehyde, promote the release; they can triple or quadruple the rate of release.  
  Urea also strongly affects the release rate because of an equilibrium reaction in which hydrolysed formaldehyde is consumed, yielding monomethylol urea. Building materials, such as composition boards (e.g., particleboard), which consist of UF resins, can emit formaldehyde for several years after manufacture.

**FORMALDEHYDE.**

- Continued...
Harmful to aquatic organisms.
The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>melamine/urea/formaldehyde</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>resin</td>
<td>Available</td>
<td>Available</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>formaldehyde</td>
<td>LOW</td>
<td>LOW</td>
<td>LOW</td>
<td>HIGH</td>
</tr>
</tbody>
</table>

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, IATA, IMDG

Section 15 - REGULATORY INFORMATION

Indications of Danger:
Xn Harmful

POISONS SCHEDULE None

REGULATIONS

Regulations for ingredients

melamine/urea/formaldehyde resin (CAS: 25036-13-9) is found on the following regulatory lists;
- "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory"

formaldehyde. (CAS: 50-00-0) is found on the following regulatory lists;
No data for CASCOMEL MU6 (CW: 4550-53)

Section 16 - OTHER INFORMATION

MSDS SECTION CHANGES

The following table displays the version number of and date on which each section was last changed.

<table>
<thead>
<tr>
<th>Section Name</th>
<th>Version</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>4</td>
<td>29-Jan-2010</td>
</tr>
</tbody>
</table>

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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Issue Date: 29-Jan-2010
Print Date: 23-Jul-2013

This is the end of the MSDS.
**Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT NAME**
CASCOMEL MU7

**PRODUCT USE**
Resin for composite board.

**SUPPLIER**
Company: Asta Chemicals Sdn Bhd  
Address:  
Lot 1863 Mukim Sungai Karang Kawasan Perindustrian  
Lembaga Pelabuhan Kuantan  
Tanjung Gelang, Kuantan  
Kuantan Pahang, 25720  
Malaysia  
Telephone: +60 9 583 3936  
Fax: +60 9 583 3980

Company: Asta Chemicals Sdn Bhd  
Address:  
Lot 2823 (101) Mukim 1, Lorong Perusahaan 2,  
Kawasan Perindustrian Perai  
Pulau Pinang  
Perai, 13600  
Malaysia  
Telephone: +60 4 390 8110  
Fax: +60 4 399 8087

---

**Section 2 - HAZARDS IDENTIFICATION**

**STATEMENT OF HAZARDOUS NATURE**
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

**CHEMWATCH HAZARD RATINGS**

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Toxicity</th>
<th>Body Contact</th>
<th>Reactivity</th>
<th>Chronic</th>
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</thead>
<tbody>
<tr>
<td>Low=1</td>
<td>Low=1</td>
<td>Moderate=2</td>
<td>Low=1</td>
<td></td>
</tr>
</tbody>
</table>

**RISK**
- Limited evidence of a carcinogenic effect.  
- May cause SENSITISATION by skin contact.

**SAFETY**
- Do not breathe dust.  
- Avoid contact with skin.  
- Wear suitable protective clothing.  
- Wear suitable gloves.  
- To clean the floor and all objects contaminated by this material, use water.  
- Keep away from food, drink and animal feeding stuffs.

continued...
Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>melamine/ urea/ formaldehyde resin</td>
<td>25036-13-9</td>
<td>&gt;90</td>
</tr>
<tr>
<td>filler</td>
<td></td>
<td>1-10</td>
</tr>
</tbody>
</table>
| residual reactant, as formaldehyde. | 50-00-0      | 2 max.

NOTE: Manufacturer has supplied full ingredient information to allow CHEMWATCH assessment.

Section 4 - FIRST AID MEASURES

SWALLOWED
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

EYE
- If this product comes in contact with the eyes:
  - Wash out immediately with fresh running water.
  - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
  - Seek medical attention without delay; if pain persists or recurs seek medical attention.
  - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
- If skin contact occurs:
  - Immediately remove all contaminated clothing, including footwear.
  - Flush skin and hair with running water (and soap if available).
  - Seek medical attention in event of irritation.

INHALED
- If dust is inhaled, remove from contaminated area.
- Encourage patient to blow nose to ensure clear breathing passages.
- Ask patient to rinse mouth with water but to not drink water.
- Seek immediate medical attention. or • If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN
- Treat symptomatically.
Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
• Water spray or fog.
• Foam.
• Dry chemical powder.
• BCF (where regulations permit).
• Carbon dioxide.

FIRE FIGHTING
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or water courses.
• Use water delivered as a fine spray to control fire and cool adjacent area.
• DO NOT approach containers suspected to be hot.
• Cool fire exposed containers with water spray from a protected location.
• If safe to do so, remove containers from path of fire.
• Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD
• Combustible.
• Slight fire hazard when exposed to heat or flame.
• Heating may cause expansion or decomposition leading to violent rupture of containers.
• On combustion, may emit toxic fumes of carbon monoxide (CO).
• May emit acrid smoke.
• Mists containing combustible materials may be explosive.
Other combustion products include: carbon dioxide (CO2), nitrogen oxides (NOx) and aldehydes.
Avoid creating dust - may present dust explosion hazard. Dry dust can be electrostatically charged by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport. Build-up of electrostatic charge may be prevented by grounding.

FIRE INCOMPATIBILITY
■ Avoid contamination with strong oxidising agents as ignition may result.

HAZCHEM
None

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
• Remove all ignition sources.
• Clean up all spills immediately.
• Avoid contact with skin and eyes.
• Control personal contact with the substance, by using protective equipment.
• Use dry clean up procedures and avoid generating dust.
• Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS
■ Remove all ignition sources.
• Clear area of personnel and move upwind.
• Alert Fire Brigade and tell them location and nature of hazard.
• Control personal contact with the substance, by using protective equipment and dust respirator.
• Prevent spillage from entering drains, sewers or water courses.
• Recover product wherever possible. Avoid generating dust.
• Sweep / shovel up.

continued...
Section 6 - ACCIDENTAL RELEASE MEASURES

- If required, wet with water to prevent dusting.
- Put residues in labelled plastic bags or other containers for disposal.
- Wash area down with large quantity of water and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
- Remove all ignition sources.
- Limit all unnecessary personal contact.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- When handling DO NOT eat, drink or smoke.
- Always wash hands with soap and water after handling.
- Avoid physical damage to containers.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.

SUITABLE CONTAINER
- Plastic container.
- Multi-ply woven plastic or paper bag with sealed plastic liner

NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.
- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY
- Avoid storage with oxidisers and strong acids.

STORAGE REQUIREMENTS
- Keep dry.
- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

```
+  X  +  X  X  +
```

+ : May be stored together
O : May be stored together with specific preventions
X : Must not be stored together
Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

<table>
<thead>
<tr>
<th>Source</th>
<th>Material</th>
<th>TWA ppm</th>
<th>STEL ppm</th>
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</thead>
<tbody>
<tr>
<td>Australia Exposure Standards</td>
<td>formaldehyde. (Formaldehyde (h))</td>
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<td>_______</td>
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</table>

The following materials had no OELs on our records

- melamine/ urea/ formaldehyde resin: CAS: 25036-13-9

EMERGENCY EXPOSURE LIMITS

<table>
<thead>
<tr>
<th>Material</th>
<th>Revised IDLH Value (mg/m³)</th>
<th>Revised IDLH Value (ppm)</th>
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</thead>
<tbody>
<tr>
<td>formaldehyde.</td>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

MATERIAL DATA

FORMALDEHYDE:

MELAMINE/ UREA/ FORMALDEHYDE RESIN:

- for formaldehyde:
  - Odour Threshold Value for formaldehyde: 0.98 ppm (recognition)
  - NOTE: Detector tubes for formaldehyde, measuring in excess of 0.2 ppm are available commercially.
  - Formaldehyde vapour exposure:
    - Primary irritation is dependent on duration of exposure and individual susceptibility.
    - The following are typical symptoms encountered at various exposure levels.
      - 0.1 ppm - Lower level of mucous eye, nose and throat irritation
      - 0.8 ppm - Typical threshold of perception
      - 1-2 ppm - Typical threshold of irritation
      - 2-3 ppm - Irritation of eyes, nose and throat
      - 4-5 ppm - Increased irritation, tearing, headache, pungent odour
      - 10-20 ppm - Profuse tearing, severe burning, coughing
      - 50 ppm - Serious bronchial and alveolar damage
      - 100 ppm - Formaldehyde induced chemical pneumonia and death

- Despite the intent of the TLV Ceiling recommendation it is believed that 0.3 ppm will not protect that portion of the workforce (up to 20%) reported to be responsive to low ambient concentrations. Because of the dose-related carcinogenic activity for rat and mouse inhalation of formaldehyde, the report of macromolecular adducts in the upper and lower respiratory tracts of nonhuman primates following inhalation of formaldehyde, the human case reports of upper respiratory tract malignant melanoma associated with formaldehyde inhalation and the suggestive epidemiologic data on human cancer risk, the TLV Committee recommends that workplace formaldehyde air concentrations be reduced to the lowest possible levels that can be achieved using engineering controls.
  - Odour Safety Factor (OSF)
  - OSF = 0.36 (FORMALDEHYDE).

CASCOMEL MU7:

- None assigned. Refer to individual constituents.

PERSONAL PROTECTION

[Images of gloves, glasses, and respirator]
**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION**

**EYE**
- Safety glasses with side shields; or as required,
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

**HANDS/FEET**
- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear.

**OTHER**
- Overalls.
- Eyewash unit.

**RESPIRATOR**
- Type BAX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

**ENGINEERING CONTROLS**
- Use in a well-ventilated area.
- Area where polymer is heat processed should be ventilated to remove vapour, fumes released during all stages of processing.
- Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
- The basic types of engineering controls are:
  - Process controls which involve changing the way a job activity or process is done to reduce the risk.
  - Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
  - Employers may need to use multiple types of controls to prevent employee overexposure.

- Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
- Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
- If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
  - (a): particle dust respirators, if necessary, combined with an absorption cartridge;
  - (b): filter respirators with absorption cartridge or canister of the right type;
  - (c): fresh-air hoods or masks
- Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

continued...
Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Brown free-flowing powder, mixes with water. Formaldehyde odour.

PHYSICAL PROPERTIES
Solid.
Mixes with water.

<table>
<thead>
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<th>State</th>
<th>Divided solid</th>
<th>Molecular Weight</th>
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<tr>
<td>Melting Range (°C)</td>
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<td>Viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Range (°C)</td>
<td>Not available</td>
<td>Solubility in water (g/L)</td>
<td>Miscible</td>
</tr>
<tr>
<td>Flash Point (°C)</td>
<td>Not applicable</td>
<td>pH (1% solution)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition Temp (°C)</td>
<td>Not available</td>
<td>pH (as supplied)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Autoignition Temp (°C)</td>
<td>Not available</td>
<td>Vapour Pressure (kPa)</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not available</td>
<td>Specific Gravity (water=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosive Limit (%)</td>
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<td>Relative Vapour Density (air=1)</td>
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</tr>
<tr>
<td>Volatile Component (%vol)</td>
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<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY
• Presence of incompatible materials.
• Product is considered stable.
• Hazardous polymerisation will not occur.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Considered an unlikely route of entry in commercial/industrial environments.
The material is discomforting to the gastro-intestinal tract. Ingestion may result in nausea, abdominal irritation, pain and vomiting.

EYE
■ Generated dust may be discomforting and abrasive to the eyes.
The material contains residues of formaldehyde which may irritate the eyes and mucous membranes and produce an allergic response if used in confined spaces or heated. Symptoms include slight burning of the eyes and weeping but this usually stops after a few minutes in fresh air.

SKIN
■ The material may be slightly discomforting to the skin.
if exposure is prolonged.
Generated dust may be discomforting and may cause allergic skin reactions which may lead to dermatitis. Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.

continued...
INHALED
■ Not normally a hazard due to non-volatile nature of product.
Generated dust may be discomforting to the upper respiratory tract if inhaled.

CHRONIC HEALTH EFFECTS
■ Principal routes of exposure are by accidental skin and eye contact and inhalation of generated dusts.
As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

TOXICITY AND IRRITATION
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested.

CASCOMEL MU7:
■ Not available. Refer to individual constituents.

MELAMINE/UREA/ FORMALDEHYDE RESIN:
TOXICITY
Oral (rat) LD50: >5000 mg/kg

IRRITATION
Nil Reported [Manufacturer]

FORMALDEHYDE:
TOXICITY
Oral (woman) LDLo: 108 mg/kg
Oral (man) TDLo: 643 mg/kg
Oral (rat) LD50: 100 mg/kg
Inhalation (man) TCLo: 0.3 mg/m³
Inhalation (rat) LC50: 203 mg/m³
Dermal (rabbit) LD50: 270 mg/kg

IRRITATION
Skin (human): 0.15 mg/3d - I Mild
Skin (rabbit): 2 mg/24H SEVERE
Eye (human): 4 ppm/5m
Eye (rabbit): 0.75 mg/24H SEVERE

■ The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.
Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.
WARNING: This substance has been classified by the IARC as Group 1: CARCINOGENIC TO HUMANS. Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

continued...
Section 11 - TOXICOLOGICAL INFORMATION

**CARCINOGEN**

<table>
<thead>
<tr>
<th>formaldehyde.</th>
<th>International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs</th>
<th>Group</th>
<th>1</th>
<th>Carcinogenic to humans</th>
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</thead>
<tbody>
<tr>
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<td>Australia Exposure Standards Currently Under Review</td>
<td>Carcinogen Category</td>
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<td></td>
</tr>
<tr>
<td>formaldehyde.</td>
<td>Australia Exposure Standards - Carcinogens</td>
<td>Carcinogen Category</td>
<td>2</td>
<td></td>
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<tr>
<td>formaldehyde.</td>
<td>Australia Exposure Standards - Carcinogens</td>
<td>Carcinogen Category</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**SKIN**

| formaldehyde. | GESAMP/EHS Composite List - GESAMP Hazard Profiles | D1: skin irritation/corrosion | 3 |

---

## Section 12 - ECOLOGICAL INFORMATION

**FORMALDEHYDE:**

**MELAMINE/ UREA/ FORMALDEHYDE RESIN:**

- **DO NOT discharge into sewer or waterways.**
- **For Formaldehyde:**

  Environmental Fate: Formaldehyde is common in the environment as a contaminant of smoke and as photochemical smog. Concentrated solutions containing formaldehyde are unstable and oxidize slowly. In the presence of air and moisture, polymerization takes place readily in concentrated solutions at room temperature to form paraformaldehyde.

  Atmospheric Fate: In the atmosphere, formaldehyde both photolysis and reacts with reactive free radicals (primarily hydroxyl radicals). Reaction with nitrate radicals, insignificant during the day, may be an important removal process at night. Air Quality Standards: <0.1 mg/m³ as a 30 min. average, indoor air, non-industrial buildings (WHO guideline).

  Aquatic Fate: Due to its solubility, formaldehyde will efficiently transfer to rain and surface water and will biodegrade to low concentrations within days. Adsorption to sediment and volatilization are not expected to be significant routes of biodegradation.


  Terrestrial Fate: In soil, aqueous solutions of formaldehyde leach through the soil; at high concentrations adsorption to clay minerals may occur. Although biodegradable under both aerobic and anaerobic conditions the fate of formaldehyde in soil is unclear.

  Ecotoxicity: Formaldehyde does not bioconcentrate in the food chain.

**MELAMINE/ UREA/ FORMALDEHYDE RESIN:**

- Urea-formaldehyde (UF) resins cannot be made free of residual formaldehyde. Under ambient conditions and during curing, uncured resins can release free formaldehyde, at rates gradually decreasing over time (Formaldehyde Institute, 1984). In pressed wood products, under high load conditions, even traces of residual, unreacted formaldehyde from the UF resin can result in measurable off-gassing, causing discernible formaldehyde levels in indoor air. High temperatures and humidity, which hydrolyze formaldehyde, promote the release; they can triple or quadruple the rate of release.

  Urea also strongly affects the release rate because of an equilibrium reaction in which hydrolysed formaldehyde is consumed, yielding monomethylol urea. Building materials, such as composition boards (e.g., particleboard), which consist of UF resins, can emit formaldehyde for several years after manufacture.

---

continued...
Section 12 - ECOLOGICAL INFORMATION

- Harmful to aquatic organisms.
  The material is classified as an ecotoxin* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l
* Classification of Substances as Ecotoxic (Dangerous to the Environment)
Appendix 8, Table 1

Ecotoxicity

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>melamine/urea/formaldehyde resin</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>formaldehyde</td>
<td>Available</td>
<td>Available</td>
<td>Available</td>
<td>Available</td>
</tr>
</tbody>
</table>

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:
None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, IATA, IMDG

Section 15 - REGULATORY INFORMATION

Indications of Danger:
Xn Harmful

POISONS SCHEDULE None

REGULATIONS

Regulations for ingredients

melamine/urea/formaldehyde resin (CAS: 25036-13-9) is found on the following regulatory lists;
"Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory"

formaldehyde. (CAS: 50-00-0) is found on the following regulatory lists:
No data for CASCOMEL MU7 (CW: 4550-54)

Section 16 - OTHER INFORMATION

MSDS SECTION CHANGES

The following table displays the version number of and date on which each section was last changed.

<table>
<thead>
<tr>
<th>Section Name</th>
<th>Version</th>
<th>Date</th>
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<td>Appearance</td>
<td>3</td>
<td>29-Jan-2010</td>
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Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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Issue Date: 29-Jan-2010
Print Date: 23-Jul-2013

This is the end of the MSDS.