File No PLC/921

April 2010

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

G-Polymer

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment, Water, Heritage and the Arts.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

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Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Mitsubishi Australia Ltd. (ABN 81 004 354 278)
Level 36, 120 Collins Street,
Melbourne, VIC 3000

NOTIFICATION CATEGORY
Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:
Chemical Identity, Molecular Weight, Polymer Constituents, Residual Monomers and impurities, and Import Volume.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
Yes

NOTIFICATION IN OTHER COUNTRIES
None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
G-Polymer

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) > 10,000 Da

REACTIVE FUNCTIONAL GROUPS
The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	White solid
Melting Point/Glass Transition Temp	160°C
Density	1,290 kg/m3 at 20°C
Water Solubility	>100 g/L and < 500 g/L at 20°C Measured in accordance with the OECD Test Guideline 105
Particle Size	0.24% <10 µm 10% <80 µm Median (d.50) = 240 µm Mass Median Aerodynamic Diameter = 272 µm
Reactivity	Stable under normal environmental conditions. Tests were conducted at pH 1.2, 4, 7 and 9. Aqueous solutions of notified polymer (1000 mg/L) were shaken at 40°C for 2 weeks (24 hours at pH 1.2) and examined for degradability by dissolved organic carbon (DOC) analysis, infrared (IR) absorption and relative molecular weight distribution. All three methods indicated no significant difference from the starting material.
Degradation Products	None under normal conditions of use

5. INTRODUCTION AND USE INFORMATION

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	<100	<100	<100	<100	<100

Use
The notified polymer will be used to manufacture pre-mixed mortar for use by tradesmen or DIY users. The notified polymer will be present at <1% in pre-mixed mortar.

Mode of Introduction and Disposal
The notified polymer will be imported in neat solid form in 20 Kg multi-walled paper bags. The notified polymer will be reformulated in Australia. It will be used in the production of emulsion acrylic polymers which will be in the form of re-dispersible powders (binder). The binder containing <10% of notified polymer will be sold in 20 kg multi-walled paper bags to downstream customers who will use it in the production of mortar premix, which will contain <1% notified polymer. The mortar premix will be packaged mostly in 20 kg multi-walled paper bags or in 1000 kg coated woven polypropylene bags.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation
No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

Occupational Health and Safety Risk Assessment

The number and category of workers that may be exposed to the notified polymer during importation, reformulation and application are broadly estimated in the following table:

Number and Category of Workers			
Category of Worker	*Number*	*Exposure Duration Hours/Day*	*Exposure Frequency weeks/annum*
Warehouse/Storage	5	2	10
Transport	5	2	10
Polymerization Plant Operators	3	8	10
Mortar Production Plant Operators	3	8	25
QA	1	1	25
Tradesman/bricklayers	>1000	8	48

Transport and warehousing
Workers are not expected to be exposed to the notified polymer, as they will be handling closed containers. Dermal, ocular and inhalation exposure is possible in the event of an accident involving damage to packaging. Warehouse and transport personnel will wear overalls and work boots.

Plant Operators -handling 100% notified polymer
Dermal, ocular, oral and inhalation exposure to the notified polymer may occur to the polymerization plant and mortar production plant workers. As the reformulation occurs in an enclosed system and supplied with dust extraction, the exposure will be limited. Workers will also wear coveralls, safety goggles, filter masks/ respirators, overalls and impervious gloves to minimise exposure in formulation plants. Control measures such as Local Exhaust Ventilation (LEV) also expected to minimise exposure to cement dust and to the notified polymer.

The level of atmospheric nuisance dust should be maintained as low as possible. The exposure standard for atmospheric dust is 10 mg/m^3 (NOHSC, 2004)

Tradesman/bricklayers –handling <1% notified polymer
End-use customers including tradesman/bricklayers and construction workers will be also involved in opening bags containing the notified polymer at <1%, manually removing the required quantity of mortar premix and will add water and mix using a shovel or trowel. A portable motorised cement mixer may also be used for larger quantities. Mixing is likely to occur in outdoor areas. Where the mortar will be applied by spray, the mixed wet mortar is poured into the hopper of the spray equipment. A hose with nozzle is used by the tradesman to direct the flow of the mortar onto the work area. The mortar can also be applied by pouring and towelling onto the work area. Workers will also be involved in rinsing and cleaning the equipment. Exposure of users to the notified polymer will be minimal as the final products contain only <1% of the notified polymer.

Once the mortar has dried and set, exposure to the notified polymer is unlikely to occur as the polymer will be trapped inside the solid matrix and likely to be hidden under tiles and bricks.

Overall, considering the exposure patterns and the low toxicity of the notified polymer no special controls are required related to the use of notified polymer.

Public Health Risk Assessment
The notified polymer may be available to the public. Public DIY users are likely to use smaller quantities of the mortar mix. The mixing process will be similar to trade use. Exposure of public to the notified polymer via dermal, ocular, oral and inhalation routes is possible during application, but will be minimal as the concentration of the notified polymer in the premix is relatively low (<1%). After application, the majority of

the polymer will be bound within the matrix of the concrete and once hardened will remain immobile and inaccessible behind tiles and bricks.

Therefore, the risk to public health from exposure to the notified polymer is not considered to be unacceptable.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation
No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

Environmental Risk Assessment
The imported notified polymer will be reformulated in Australia into binder and mortar premix. Solid wastes (up to 5% of the annual import volume of notified polymer) resulting from spills, container residues, and dust emissions during reformulation and use are expected to be collected and recycled or disposed of to landfill. Water washings from the cleaning of equipment (containing up to 1% of the annual import of notified polymer) will be reused in subsequent batches of mortar, or disposed of to soil or the sewer. Dried unused mortar and old mortar from demolition operations will be disposed of to landfill. In set mortar, the notified polymer will be trapped within the solid matrix and is expected to be immobile and bio-unavailable. The unbound notified polymer is water soluble, however, the high molecular weight of the notified polymer will reduce its mobility in soils. Bioaccumulation is not likely based on the high molecular weight of the notified polymer and its limited potential for exposure to the aquatic environment when used as proposed. Whilst the notified polymer is hydrolytically stable, it is expected to degrade very slowly to form water and oxides of carbon.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment
Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

Environmental risk assessment
Based on the reported use pattern, the notified polymer is not expected to pose a risk to the environment.

Recommendations

CONTROL MEASURES
Occupational Health and Safety

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself; however, these should be selected on the basis of all ingredients in the formulation.

- Employers should implement the following work practices to minimise occupational exposure to the notified polymer during formulation processes where dust may be generated:
    - Avoid the formation of airborne dusts
    - Ensure adequate ventilation is in place to minimise dust levels

- In the interest of occupational health and safety, the following guidelines and precautions should be observed for use of the notified polymer as introduced in powder form
    - The level of atmospheric nuisance dust should be maintained as low as possible. The ASCC exposure standard for atmospheric dust is 10 mg/m^3.

- A copy of the MSDS should be easily accessible to employees.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

  Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

Disposal

- The notified polymer should be disposed to landfill.

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

Regulatory Obligations

Secondary Notification
This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the polymer under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified polymer, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified polymer is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

(1) Under Section 64(1) of the Act; if
  - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

or

(2) Under Section 64(2) of the Act; if
  - the function or use of the notified polymer has changed from a component of pre-mixed mortar;
  - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
  - the notified polymer has begun to be manufactured in Australia;
  - additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

Material Safety Data Sheet
The MSDS of the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.