File No PLC/767

June 2008

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in Mighty 21RS

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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FULL PUBLIC REPORT

Polymer in Mighty 21RS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Grace Australia Pty Ltd (ABN 41 080 660 117)
1126 Sydney Road Fawkner VIC 3060

NOTIFICATION CATEGORY
Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:
Chemical Name, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details, 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)
No

NOTIFICATION IN OTHER COUNTRIES
USA (2002), Canada (2004)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Mighty 21RS (solution containing notified polymer)

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) > 10000 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:	Reddish orange liquid, almost odourless (solution)
Melting Point/Glass Transition Temp	0ºC (solution) Decomposition of the polymer is expected prior to any melting point being reached
Density	1098 kg/m^3 at 20°C (solution)
Water Solubility	> 650 g/L
Dissociation Constant	The notified polymer contains anionic groups which are expected to have pKa values of 3-5.
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

Comments
The mixture containing notified polymer is manufactured *in situ* and is not isolated from solution

5. INTRODUCTION AND USE INFORMATION

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	0-30	30-100	30-100	30-100	30-100

USE
Dispersant for concrete. The notified polymer will be added to concrete at up to 0.1% at concrete formulating plants. The concrete will be used for various construction applications.

Mode of Introduction and Disposal

The polymer solution (< 50%) will be imported in 1000L intermediate bulk containers or 205L steel drums by sea via the Port Melbourne, Victoria. From the dockside the notified polymer will be transported by road to the Grace Australia site at Fawkner, Victoria. The contents of the IBCs/steel drums will be transferred to bulk liquid storage tanks. It may be despatched to concrete batching plants directly or reformulated by diluting and/or mixing it with other components to produce concrete mixtures containing up to 20% of the polymer.

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
Dermal and ocular exposure is possible during mixing of the aqueous solution of the notified polymer with other concrete components and during handling of concrete. However exposure to significant amounts of the notified polymer is not expected because personal protective equipment, overalls, gloves and protective footwear, is worn during mixing and application of the concrete. The risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer and low exposure.

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 is intended only for use in industry and as such public exposure to the notified polymer during processing is not expected. In addition the notified polymer will be incorporated into the matrix of the concrete so the public is not expected to be exposed to the notified polymer except in the case of accidental spillage of the imported material.

Considering this low likelihood of exposure and the low toxicity of the notified polymer, there is a negligible risk for the public from the use of the notified polymer.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation

Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. Whether this applies to the notified polymer is unclear. However, the toxicity to algae is likely to be further reduced due to the presence of sodium ions, which will bind to the functional groups.

Environmental Risk Assessment
There is potential for up to 4000 kg per annum of the notified polymer to be released into the environment as a consequence of spillages, drum residues and truck washing. Most of this will be used in subsequent batches, but in a worst case, assuming all of the 4000 kg of notified polymer is released Australia wide to the aquatic compartment, the calculated PEC would be 2.59 µg/L for river and 0.26 µg/L for ocean.

The notified polymer meets the PLC criteria. Therfore, given the higher molecular weight of > 10,000 and presence of only low concern RFGs, the notified polymer is not considered to pose an unacceptable risk to aquatic environment.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment
Under the conditions of the occupational settings described and when used in the proposed manner, the notified polymer is not expected to pose an unreasonable risk to workers and the public.

Environmental risk assessment
The notified polymer is not considered to pose a risk to the environment based on the reported use pattern.

Recommendations

CONTROL MEASURES
Occupational Health and Safety

- Specific engineering controls, work practices or personal protective equipment should be selected on the basis of all ingredients in the formulation.

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

- Service personnel should wear cotton or disposable gloves and ensure adequate ventilation is present when removing spent printer cartridges containing the notified polymer and during routine maintenance and repairs.

- 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.

Environment

Disposal

- The notified polymer should be disposed of to landfill.

Emergency procedures

- Spills/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 dispersant for concrete, or is likely to change significantly;
- the amount of notified polymer being introduced has increased from 100 tonne per year, or is likely to increase, significantly;
- if 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.

No additional secondary notification conditions are stipulated.

Material Safety Data Sheet
The MSDS of the product containing 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.