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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME
(NICNAS)**

FULL PUBLIC REPORT

Polymer 1 in Vinnapas LL 5014

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Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888.
Website:	www.nicnas.gov.au

**Director
NICNAS**

TABLE OF CONTENTS

FULL PUBLIC REPORT	3
1. APPLICANT AND NOTIFICATION DETAILS	3
2. IDENTITY OF CHEMICAL	3
3. COMPOSITION.....	3
4. INTRODUCTION AND USE INFORMATION	4
5. PROCESS AND RELEASE INFORMATION	4
5.1. Operation Description	4
6. EXPOSURE INFORMATION	4
6.1. Summary of Occupational Exposure.....	4
6.2. Summary of Public Exposure.....	4
6.3. Summary of Environmental Exposure	4
6.3.1. Environmental Release.....	4
6.3.2. Environmental Fate	5
7. PHYSICAL AND CHEMICAL PROPERTIES	5
8. HUMAN HEALTH IMPLICATIONS	5
8.1. Toxicology	5
8.2. Human Health Hazard Assessment	5
9. ENVIRONMENTAL HAZARDS.....	6
9.1. Ecotoxicology	6
9.2. Environmental Hazard Assessment	6
10. RISK ASSESSMENT.....	6
10.1. Environment.....	6
10.2. Occupational Health and Safety.....	6
10.3. Public Health	6
11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS	6
11.1. Environmental Risk Assessment	6
11.2. Human Health Risk Assessment	7
11.2.1. Occupational health and safety.....	7
11.2.2. Public health.....	7
12. MATERIAL SAFETY DATA SHEET	7
12.1. Material Safety Data Sheet	7
13. RECOMMENDATIONS.....	7
13.1. Secondary Notification	8

FULL PUBLIC REPORT

Polymer 1 in Vinnapas LL 5014

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Wacker Chemicals Australia Pty. Ltd. (ABN: 005712489)
Unit 18/20 Duerdin St
Clayton North
VIC 3168

NOTIFICATION CATEGORY

Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:
Chemical Identity, Residual Monomers/Impurities, Manufacture or Import Volume, Purity.

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)

None.

NOTIFICATION IN OTHER COUNTRIES

US EPA 2004

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Vinnapas LL 5014 (contains 10-30% notified polymer)

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

The notified polymer contains only low concern functional groups.

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
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. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
Imported as a 10-30% component of the powder Vinnapas LL 5014.

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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	<10	<10	<10	<10	<10

USE

The product Vinnapas LL 5014 containing the notified polymer will be used at up to 1.5% in cement-based formulations. Formulations will be used as self-levelling floor compounds.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The product containing 10-30% notified polymer is shipped via sea-freight and taken to a warehouse for repackaging, and then transported to 3-10 reformulation sites.

At these sites, the product is added to blending vessels, either with a trowel or by emptying whole bags into holding vessels from which the required amount is dosed. Batch sizes are > 500 kg, and contain up to 1.5% Vinnapas LL 5014 (final concentration is <0.45% notified polymer). Packing of the powdered cement based formulation is done with automatic bagging machines, with the bag fitted manually and tightly around an exit tube, and the 20 kg bags filled pneumatically.

The dry cement based formulation is sold to industrial customers where it is mixed with other components to produce liquid concrete, which is used in applications such as self-levelling flooring.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

Workers may have dermal, ocular or inhalation exposure to dust particles generated when adding the product containing the notified chemical to the blending vessels. In some cases exhaust ventilation is used to limit exposure to airborne dusts. It would be expected that ocular and inhalation exposure would be limited with PPE or engineering controls, due to the potential of mechanical irritation from the dust.

Construction workers may have inhalation and dermal exposure to the dry mortar containing < 0.45% notified polymer. This product is further diluted when the liquid product is produced.

6.2. Summary of Public Exposure

The notified polymer is intended only for use in industry. Members of the public may come into contact with solid floors containing the notified polymer, however exposure will be negligible as the notified polymer will not be bioavailable.

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

The notified polymer is imported in powder form in 25 kg bags. It is expected that less than 1% of the formulated product will remain as residue in the import bags. Therefore, up to 100 kg of the notified polymer will remain in the bags, which are expected to be disposed of to landfill.

The formulated product, containing the notified polymer, is then further formulated with other ingredients to produce industrial cement products that are typically packaged in paper bags containing approximately 20-25 kg of the end use formulated product, and of which consist of <1.5% w/w of the notified polymer containing product (Vinnapas LL5014).

The end use of the notified polymer is in industrial construction cement, and will be bound up in the hardened matrix of cement. Possible environmental release will be in the form of wind dispersal of the dry cement product during container opening and transfer. Due to the low concentration of the notified polymer within the end-use product, this is unlikely to be a significant route of environmental exposure.

There are <15 sites within Australia where the product is likely to be stored or handled in any significant quantity or concentration and therefore there is minimal risk of environment exposure from these sources if spillage procedures are followed.

6.3.2. Environmental Fate

The ultimate fate of the notified polymer will be linked to the disposal of construction materials from building demolition which is usually direct to landfill where the notified polymer is expected to associate with the soil matrix and sediments and slowly degrade through abiotic and biotic processes to water vapour, oxides of carbon and sulphur and sodium salts. The notified polymer is not expected to cross biological membranes due to its high molecular weight and water solubility and is therefore not expected to bioaccumulate.

7. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Clear solution in water (formulation).
Melting Point/Glass Transition Temp	Not determined.
Density	Not determined.
Water Solubility	>500 g/L at 20°C
Dissociation Constant	Contains a very strong acid that will remain ionised throughout the pH range.
Particle Size (for Vinnapas LL 5014)	54% < 100µm 7.4% < 10µm
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use
Hydrolysis	While relevant functionality is present, test results indicate insignificant hydrolysis (by GPC/SEC) in the environmental pH range of 4-9 following 14 days at 40°C.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

The following toxicological end-points were submitted for a close analogue of the notified chemical:

<i>Endpoint</i>	<i>Result</i>	<i>Classified?</i>	<i>Effects Observed?</i>
Rat, acute oral LD50 >2000 mg/kg bw	low toxicity	no	no
Rabbit, skin irritation	non-irritating	no	no
Rabbit, eye irritation	non-irritating	no	no

All results were indicative of low hazard.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The absence of any observed effects in the toxicity testing confirms the low hazard.

The particle size distribution of Vinnapas LL 5014, containing the notified chemical at 10-30%, is such that up to 54% of the particles are inspirable (<100 µm), and up to 7.4% are respirable (<10 µm).

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

The following toxicological studies were submitted for a close analogue of the notified chemical:

<i>Endpoint</i>	<i>Result and Conclusion</i>
Daphnia Toxicity	EC50 >1000 mg/L

In addition, the notified polymer is not expected to cross biological membranes due to its high molecular weight and water solubility and is therefore not expected to bioaccumulate.

9.2. Environmental Hazard Assessment

Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation 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.

10. RISK ASSESSMENT

10.1. Environment

The notified polymer is used in industrial construction cement, and will be bound up in the hardened matrix of cement. Release to the environment is expected to be minimal. While it may be possible to determine the Predicted No-Effect Concentration (PNEC) based on the single aquatic invertebrate result, it is not possible to predict the Predicted Environmental Concentration (PEC), and therefore, a PEC/PNEC calculation cannot be undertaken. However, based on exposure arguments the PEC will be very low, and the unlikely hazardous nature of the notified polymer to the aquatic environment, the risk of use of this notified polymer is expected to be acceptable.

10.2. Occupational Health and Safety

Although there is potential for workers to be exposed to dust containing the notified polymer, it is expected to be at low concentration, and present a low hazard, and therefore the OHS risk presented by the notified polymer is expected to be low. It is recommended that workers wear dust masks in situations where there may be inhalation exposure to fine dust.

The notified polymer may be present in formulations containing hazardous ingredients. If these formulations are classified as hazardous to health in accordance with the NOHSC Approved Criteria for Classifying Hazardous Substances, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

The product containing the notified polymer contains particles of inspirable and respirable size. The level of atmospheric nuisance dust should be maintained as low as possible. The NOHSC exposure standard for atmospheric dust is 10 mg/m³.

10.3. Public Health

The notified polymer will not be available to the public. Members of the public may make dermal contact with articles containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is present at low concentrations and bound within a matrix and unlikely to be bioavailable.

11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

11.1. Environmental Risk Assessment

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

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

11.2.2. Public health

There is No Significant Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS for the product containing the notified chemical as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement safe work practices to minimise occupational exposure to atmospheric dust containing the notified polymer. The NOHSC exposure standard for atmospheric dust is 10 mg/m³.
- 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.
 - Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.
- 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 NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

- Prevent uncontrolled release to the environment.

Disposal

- Product: Excess product containing the notified chemical should be collected and allowed to harden prior to disposal to landfill.
- Packaging: Packaging which cannot be reused or recycled should be disposed of to landfill or in accordance with local regulations.

Storage

- While in the moderately soluble form of the product Vinnapas LL 5014, the product should be stored away from sources of moisture.

13.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under subsection 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 subsection 64(2) of the Act:
 - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.