File No PLC/1101

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Viscopol 8222

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government Department of Sustainability, Environment, Water, Population and Communities.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This 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

January 2013

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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette:*

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1101	Nuplex Industries (Australia) Pty. Ltd.	Polymer in Viscopol 8222	No	≤ 300 tonnes per annum	Ingredient of metal or coil coatings

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental Risk Assessment
Based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- 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.

- If aerosols are formed during the use of the notified polymer, engineering controls and respiratory protection should be used to prevent inhalation exposure.

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

- Spray application should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)].

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Environmental Recommendations

- No specific control measures are required to minimise release of the notified polymer to the environment.

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.

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 ingredient of metal or coil coatings, or is likely to change significantly;
- the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
- the method of manufacture of the notified polymer in Australia has changed, or is likely to change, in a way that may result in an increased risk of an adverse effect of the notified polymer on occupational health and safety, public health, or the environment;
- additional information has become available to the person as to an adverse effect of the notified polymer 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 was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicant

Nuplex Industries (Australia) Pty Ltd (ABN: 25 000 045 572)
49-61 Stephen Road
BOTANY NSW 2019

Exempt Information (Section 75 of the Act)

Data items and details claimed exempt from publication: chemical name, other names, CAS number, molecular and structural formulae, molecular weight, reactive functional groups, polymer constituents, residual monomers/impurities, use details and manufacture/import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)
Polymer in Viscopol 8222

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	Clear, colourless film (when cured) Milky, white liquid (in formulated product)
Density	1.04 kg/m^3 at 20 °C
Water Solubility	Not determined. Expected to be water dispersible due to the combination of hydrophilic end groups on a hydrophobic backbone and its use in aqueous products.
Dissociation Constant	Not determined. The notified polymer is a salt which is expected to be ionised under environmental conditions.
Reactivity	Stable under normal environmental conditions. The notified polymer contains hydrolysable functionalities. However, no significant hydrolysis is expected to occur in the environmental pH range of 4-9.
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	30-100	30-100	100-300	100-300	100-300

Use
The notified polymer will be manufactured in Australia and will also be imported into Australia at a concentration of 50%. Products containing the notified polymer will be reformulated in Australia. The notified polymer will be used at a maximum concentration of 50%.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. The risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

Public Health and Safety Risk Assessment
The public may come into contact with coatings containing the notified polymer after application to substrates (metal or coils). However, once the polymer is cured and dried, the notified polymer will be bound within a polymer matrix and will not be bioavailable. Given the assumed low hazard, the risk posed by exposure to the notified polymer is not considered unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. 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. This does not apply to the notified polymer. Anionic polymers are generally of low hazard to fish and aquatic invertebrates.

The notified polymer will be manufactured/reformulated in Australia to produce a water-based product used in metal or coil coatings. During manufacturing and reformulation processes, wastes containing the notified polymer (8% of the annual import volume) are expected to be collected and be disposed of to landfill. Release of the notified polymer (approximately 2%) in wastewater from manufacturing/reformulation and application equipment cleaning is expected to be pumped into trade waste treatment plants. In the waste treatment plants, wastewater is expected to be treated by biological oxidation and polymer flocculation before being released to sewer. During application of the coating, releases of the notified polymer from accidental spills (1%), residues in empty containers (1%) and overspray (10%) are expected to be captured and be disposed of to landfill. Following its use, most of the notified polymer will be bound within the inert coating polymer matrix on metal or coil surfaces. It will share the fate of the article to which it has been applied and is expected to be eventually disposed of to landfill or subjected to recycling processes for metal reclamation.

For a worst case scenario, the predicted environmental concentration (PEC) is calculated assuming that the release of the notified polymer from wastewater used for equipment cleaning is a one point-source release. It is assumed that manufacturing/reformulation and application activities occur 200 days per year and at one geographic location. The wastewater containing the notified polymer is assumed to be released into one moderate-sized sewage treatment plant (STP) with a daily flow of 54 ML/day. It is also assumed that none of the notified polymer is removed from effluent by on-site trade waste treatment or via STP processes given that the notified polymer is an anionic polymer with a molecular weight less than 5000 Da. The daily release of the notified polymer will be 30 kg/day (2% × 300,000 kg/200 days) based on 2% of annual import volume released to sewer. The PEC will be 0.56 mg/L for river if the daily release (30 kg/day) is diluted by the daily effluent production (54 ML/day).

The worst case PEC for the notified polymer is below the EC50 for algae for comparable anionic polymers (EC50 > 100 mg/L), and the notified polymer is not expected to reach ecotoxicolgically significant concentrations. The notified polymer is not expected to be readily biodegradable; however, bioaccumulation is not expected due to its high molecular weight. In landfill and the aquatic compartment, the notified polymer is expected to eventually degrade biotically and abiotically to form water, oxides of carbon and nitrogen, and inorganic salts. Therefore, based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.