

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

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in NeoRez R-1010

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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, 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**

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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/1016	Reschem Technologies Pty Ltd	Polymer in NeoRez R-1010	No	≤ 25 tonnes per annum	A component of 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 the assumed low hazard and the 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.

- 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 *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 of 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 a component of coatings, or is likely to change significantly;
 - 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 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 a product containing 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

Applicants

Reschem Technologies Pty Ltd (ABN 90 315 656 219)
5/56 Kalang Road
ELANORA HEIGHTS NSW 2101

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, reactive functional groups, polymer constituents, residual monomers/impurities, use details.

2. IDENTITY OF POLYMER

Marketing Name(s)

NeoRez R-1010 (contains approximately 32% notified polymer)

Molecular Weight

Number Average Molecular Weight (Mn) is > 10,000 Da

3. PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met</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. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa	Opaque white liquid*
Melting Point/Glass Transition Temp	Liquid at room temperature*
Density	1040 kg/m ³ at 20 °C*
Water Solubility	Not determined. The notified polymer is expected to be water dispersible based on the presence of polar functionalities and the use pattern in aqueous products.
Dissociation Constant	Not determined. The notified polymer contains dissociable functionalities with expected pKa ~4 and pKa ~9.
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use
* Aqueous product containing the notified chemical at approximately 32% concentration.	

5. INTRODUCTION AND USE INFORMATION

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>
Tonnes	25	25	25	25	25

Use

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia at a concentration of approximately 32%. Products containing the notified polymer will be reformulated in Australia in closed systems under exhaust ventilation. The notified polymer will be used as a component of overprint varnishes and barrier coatings for packaging; products containing the notified polymer will not be used by the public. The public will have dermal contact with articles that have been coated with products containing the notified polymer. However, once the coating dries, the notified polymer would be trapped in the printed paper, and therefore dermal exposure to the notified polymer from contact with the dried coating is not expected.

6. HUMAN HEALTH RISK ASSESSMENT

The notified polymer has a high molecular weight ($M_n > 10,000$ Da) and expected low water solubility and will be manufactured as an aqueous dispersion. As such, the notified polymer may present a concern for potential lung damage following respiration of particles. Delivery in the nanoform through biological membranes is not expected as the notified polymer will lose its nanostructure upon contact and collapse into a film.

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.

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 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. This does not apply to the notified polymer and it is therefore not considered to be an over-chelation hazard to algae. The notified polymer also contains potentially cationic functionality, however the cationic charge density is low and the notified polymer is therefore not expected to be of concern to the aquatic environment.

The notified polymer will be reformulated locally into products for use in overprint varnishes and barrier coating. It is estimated that up to 1% of the notified polymers may be spilt during reformulation. Any accident spills occurring during reformulation will be contained within bunding and disposed of by a licensed waste contractor, which is expected to be eventually disposed of to landfill. It is estimated that <1% of notified polymer will be present in washes after equipment cleaning, which will undergo a process of flocculation and be disposed of to landfill. Residues in empty imported containers are estimated to be less than 1%, and be directly sent to landfill with the containers.

Following its use in commercial printing and coating, most of the notified polymer will be bound within the polymeric matrix adhering paper or plastic substrates. Most of the notified polymer is expected to share the fate of article and be disposed of to landfill or recycled. The majority of notified polymer is expected to be removed in sludge during waste water treatment at paper recycling facilities and sewage treatment plants. Small quantities of the notified polymer may be released to surface waters. However, the notified polymer is expected to be of low hazard to aquatic organisms. The notified polymer in sludge is expected to be disposed of to landfill or applied to agricultural soils. In landfill and soils, the notified polymer expected to eventually degrade to form water and oxides of carbon, silicon and nitrogen. The notified polymer is expected to be hydrolytically stable and is not expected to be readily biodegradable. However, due to its high molecular weight it is not expected to cross biological membranes and is therefore unlikely to bioaccumulate. 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.