

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Resydrol SF 8000 Series

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

This Public Report is 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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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/1502	Allnex Resins Australia Pty Ltd	Polymer in Resydrol SF 8000 Series	No	≤ 200 tonnes per annum	Component of coatings and inks

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 SDS 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 of 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.

Disposal

- Where reuse or recycling are not appropriate, dispose of the notified polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

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 component of coatings and inks, 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.

Safety Data Sheet

The SDSs of products containing the notified polymer were provided by the applicant. The accuracy of the information on the SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

Allnex Resins 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, CAS number, molecular and structural formulae, molecular weight, polymer constituents, residual monomers/impurities, use details and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

Resydrol SF 8000w/50WA, Resydrol SF 8010w/50WA, Resydrol SF 8011w/50WA (products containing the notified polymer)

Molecular Weight

Number Average Molecular Weight (Mn) is > 1,000 g/mol

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	Colourless to beige liquid*
Melting Point/Glass Transition Temperature	Not determined
Density	1050 kg/m ³ *
Water Solubility	Miscible
Dissociation Constant	Not determined
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

*For products containing the notified polymer at ≤ 55%.

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	≤ 200	≤ 200	≤ 200	≤ 200	≤ 200

Use

The notified polymer will be imported at 40-55% concentration. It will be reformulated into inks containing the notified polymer at $\leq 55\%$ for industrial uses or into coatings containing the notified polymer at 15-55% for retail sale. The coatings will be used by professional and amateur painters and will be applied by brush and roller.

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.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted for the notified polymer. The polymer has anionic functional groups. Anionic polymers are generally of low toxicity to fish and *Daphnia*, but are known to be moderately toxic to algae. The mode of toxic action to algae is chelation of essential nutrient elements needed for growth by these organisms. The highest toxicity is when there are acid groups on alternating carbons of the polymer backbone, leading to chelation of nutrients. However, this does not apply to the notified polymer and it is therefore not considered to be an over-chelation hazard to algae (Boethling & Nabholz, 1997).

The notified polymer is to be used for both coatings and inks. It is assumed that 50% of the polymer is used for each of these uses (100 tonnes per annum for each use).

Most of the notified polymer in coatings will be irreversibly incorporated within wood coatings and paints, its final environmental fate being to landfill, where it is expected to remain associated with the substrate to which it has been applied. Washings from brushes and rollers, and any other application equipment, will likewise be disposed of to landfill. When disposed of to landfill, the notified polymer is expected to eventually degrade to form water and oxides of carbon. There should be no significant release to the aquatic compartment, and due to its relatively high molecular weight it is not expected to bioaccumulate.

As a worst case scenario, it is assumed that up to 5% of the coatings containing the notified polymer used by DIY users may be incorrectly disposed of to the sewer, drains, or ground from waste and washing of application equipment. For coatings, assuming these releases occur nationwide and equally over the entire year. Therefore daily release is estimated as 13.7 kg/day ($0.05 \times 100,000$ kg per annum $\div 365$ days/year).

With respect to its use as an ink, it is assumed that 100% is used on paper. At the end of its useful life printed paper is disposed of to landfill or recycled. Environmental releases could occur from sewage treatment plants (STPs) via the recycling of paper containing the notified polymer. The current Australian Waste Report estimates 60% of paper and cardboard in Australia are recycled (Pickin and Randell, 2017) over 260 working days/year. Therefore the maximum daily release is estimated as 231 kg/day ($0.6 \times 100,000$ kg per annum $\div 260$ working days/year).

Therefore, the total maximum release of notified chemical on a daily basis is 245 kg/day. A worst-case predicted environmental concentration (PEC) from the combined use at sewage outfall, assuming no removal in the STP on a nationwide basis is estimated as 50 $\mu\text{g/L}$ [$(245 \text{ kg/day}) \div (200 \text{ L/person/day} \times 24.4 \text{ million people})$].

This PEC value indicates that the release of the notified polymer is unlikely to lead to ecotoxicologically significant concentrations in the aquatic environment.

Therefore, based on its assumed low hazard and reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

Boethling, RS, Nabholz VJ (1997) Chapter 10 Environmental Assessment of Polymers under the U.S. Toxic Substances Control Act. In: Hamilton, JD Sutcliffe R ed. Ecological Assessment of Polymers: Strategies for Product Stewardship and Regulatory Programs, 1st ed. New York, Van Nostrand Reinhold, pp 187-234.

Pickin, J. and P. Randell (2017). Australian National Waste Report 2016, A report prepared for the Department of the Environment and Energy: 1-84.