File No PLC/1468

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Acronal EDGE 4750

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

March 2018

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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/1468	BASF Australia Ltd	Polymer in Acronal EDGE 4750	No	≤ 1500 tonnes per annum	A component of paints

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 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

- A person conducting a business or undertaking at a workplace should implement the following controls to minimise occupational exposure during reformulation of products, where aerosols may be generated:
  - Ventilation system
  - Avoid inhalation of aerosols
  - Use respiratory protection if ventilation is inadequate

  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.

- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (Safe Work Australia, 2015) or relevant State or Territory Code of Practice.

- 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 a component of paints, 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 SDS of the product containing the notified polymer was 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
BASF Australia Ltd (ABN: 62 008 437 867)
Level 12, 28 Freshwater Place
SOUTHBANK VIC 3006

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, polymer constituents, residual monomers/impurities, use details and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)
Acronal EDGE 4750 (containing the notified polymer at ≤ 60% concentration)

Molecular Weight
Number Average Molecular Weight (Mn) is > 10,000 g/mol

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	White liquid*
Melting Point/Glass Transition Temperature	0 °C*
Density	~1000 kg/m^3 at 25 °C*
Water Solubility	Partly soluble and miscible in water (SDS)
Dissociation Constant	Not determined. The notified polymer contains anionic functionalities and is likely to be ionised in the environmental pH range (4 - 9)
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

*Product containing the notified polymer at < 30%

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	500-1500	500-1500	500-1500	500-1500	500-1500

Use
The notified polymer will not be manufactured in Australia. It will be imported into Australia at concentrations up to 60% for reformulation into finished products. The finished products containing the notified polymer at < 30% concentration will be used as water-based interior or exterior gloss paints. Paints containing the notified polymer will be used by trade painters and domestic DIY painters and will be applied by roller, brush or spray.

6. HUMAN HEALTH RISK ASSESSMENT

the notified polymer is a low solubility high molecular weight polymer with Mn > 70,000 Da. Inhalation of water-insoluble polymers with molecular weights > 70,000 Da has been linked with irreversible lung damage due to lung overloading and impaired clearance of particles from the lung, particularly following repeated exposure (US EPA, 2017). If the notified polymer is inhaled at low levels and/or infrequently, it is assumed that it will be cleared from the lungs. However, high level and/or frequent exposure may result in lung overloading effects, though the level of exposure in humans that would result in any effects, as well as the severity of the effects, are uncertain.

End-use paints containing the notified polymer will be used by professionals and appropriate personal protective equipment (PPE) is expected to be used during applications. DIY users may use paints containing the notified polymer via spray with or without the use of PPE. However, the risk is not considered to be unreasonable given the low frequency and low intensity of DIY applications. Once dried and cured, the polymer is bound in the solid coating matrix and will not be bioavailable.

Overall, 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

The notified polymer will be imported into Australia at a component of a formulation for reformulation into water-based interior or exterior gloss paints. The reformulation processes involve blending the formulation containing the notified polymer with other ingredients in an enclosed system, followed by automatic filling of the finished products into end-use containers. Accidental spills of the notified polymer during reformulation, transport and storage are expected to be collected for disposal in accordance with local government regulations.

The notified polymer meets the PLC criteria and can therefore be assumed to be of low hazard. This is supported by environmental endpoints observed in testing conducted on the product Acronal EDGE 4750 containing up to 60% of the notified polymer.

Endpoint	*Result**	*Assessment Conclusion*
Fish Toxicity	96 h EC50 > 100 mg/L	Not harmful to fish
Daphnia Toxicity	48 h EC50 > 100 mg/L	Not harmful to aquatic invertebrates
Algal Toxicity	72 h EC50 > 100 mg/L	Not harmful to algae
Inhibition of Bacterial Respiration	0.5 h IC50 > 100 mg/L	Does not inhibit microbial activity in wastewater treatment plant

* Full study reports were not provided by the notifier

All ecotoxicological testing results above were indicative of low hazard.

As estimated by the notifier, about 30% of the paints containing the notified polymer will be used by trade painters and the other 70% will be used by domestic Do It Yourself (DIY) painters during renovation of houses or construction of new houses. During use, the paints containing the notified polymer are expected to be applied by brush, roller, and spray techniques. It is expected that some of the paints will be in the form of overspray during spraying operations, and will typically entail

disposal to landfill after being collected and cured. The liquid waste from cleaning of the application equipment from professional use is expected to be collected, and be disposed of in accordance with local government regulations and guidelines. During use, the notified polymer may also be released to the environment as accidental spills. These releases are expected to be collected and disposed of to landfill in accordance with local government regulations.

Based on the notifier's assumption that up to 70% of the total annual import volume of notified polymer is used by DIY users, environmental exposure from the following worst-case scenario, is calculated. Up to 5% of the amount used by DIY users may be incorrectly disposed of to the sewer, drains, or ground from waste and washing of application equipment. Assuming the releases occur nationwide over the entire year and there is no removal of the notified polymer during wastewater treatment, the predicted environmental concentration (PEC) is estimated to be 30 µg/L [0.7 × 0.05 × 1 500 000 kg/year ÷ 365 days/year ÷ (24.386 million persons × 200 L/person/day)]. As the notified polymer is not considered to be harmful to aquatic organisms, a predicted no-effect concentration (PNEC) for the aquatic compartment has not been calculated. Release of the notified polymer from the assessed use pattern is not expected to lead to ecotoxicologically significant concentrations in the aquatic environment.

Most of the notified polymer is expected to share the fate of the painted articles on which it is applied. That is disposal of to landfill at the end of their useful life. A small proportion of the notified polymer may remain as residues in empty import and end-use containers. These residues are expected to be cured and disposed of to landfill along with the containers in accordance with local regulations. In landfill, the notified polymer will be present as cured solids and will be neither bioavailable nor mobile. The notified polymer is not expected to bioaccumulate due to its high molecular weight. The notified polymer in landfill and water is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon and nitrogen.

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

BIBLIOGRAPHY

Safe Work Australia (2015) Code of Practice: Spray Painting and Powder Coating, Safe Work Australia, https://www.safeworkaustralia.gov.au/doc/model-code-practice-spray-painting-and-powder-coating.

USA EPA (2017) United States Environmental Protection Agency, reviewing New Chemicals under the Toxic Substances Control Act (TSCA), High Molecular Weight Polymers in the New Chemicals Program. 2017, https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/high-molecular-weight-polymers-new