File No PLC/1221

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Rheolate 475

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.

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

August 2014

Table of Contents

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/1221	Brenntag Australia Pty Ltd	Polymer in Rheolate 475	No	≤ 100 tonnes per annum	Rheology/thickening agent in paints and 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

- In the interest of occupational health and safety, the following precautions should be observed for spray application of coatings containing the notified polymer:
    - Coatings to be applied in well ventilated areas.
    - Respiratory protection to be used where significant inhalation exposure may occur.

  Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- A copy of the (M)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, 2012) 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 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.

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 component of paints and 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 (M)SDS of the product containing the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Brenntag Australia Pty Ltd (ABN: 84 117 996 595)
262 Highett Road,
Highett VIC 3190

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)
Polymer in Rheolate 475

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

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	Milky liquid (product)
Melting Point/Glass Transition Temp	Notified polymer is not isolated from liquid
Density	1060 kg/m^3 at 25 °C (product)
Water Solubility	Not determined. Expected to have limited water solubility based on high molecular weight. However, the notified polymer may be water dispersible based on the presence of hydrophilic functionalities and its use in aqueous products.
Dissociation Constant	Not determined. The notified polymer contains ionisable functionalities and has potential to be ionised under normal environmental conditions (pH 4-9).
Particle Size	Notified polymer is not isolated from liquid
Reactivity	Stable under normal environmental conditions
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	≤ 30	≤ 30	≤ 100	≤ 100

Use
The notified polymer will not be manufactured in Australia. It will be imported into Australia in aqueous dispersion or as a component of paint and coating products. The notified polymer will be used as a rheology/thickening agent in paint and coating products at < 5%. The paints and coatings will be used by workers and public and are expected to be applied by brush, roller or spray applications.

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. However the notified polymer has some characteristics of high molecular weight water insoluble polymers, which may cause lung overloading in respirable form. Data on the polymer's water solubility is not available, and based on its structure, it is likely to have limited solubility. Workers carrying out spray application of coatings containing the notified polymer may have frequent and/or prolonged inhalation exposure. The risk of lung overloading would be reduced by good ventilation and use of respiratory protection. The risk to DIY consumers during spray application of coatings is considered low, because of the low frequency and duration of exposure.

Although not considered in this risk assessment, NICNAS notes that the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia. These are not present in the notified polymer as introduced above the cut off concentrations for classification.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Anionic polymers are generally of low toxicity to fish and daphnia, however they 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 is may apply to the notified polymer. However, the toxicity to algae is likely to be reduced due to the presence of calcium ions in the aquatic compartment which will bind to the acid functional groups.

During reformulation of paints and coatings, the notified polymer may be released to the environment as spills, container residues, washings from equipment cleaning, and waste material. These releases are expected to be collected, and sent to a licensed waste facility.

The notified polymer in products will be used by both professional painters and Do-It-Yourself (DIY) users. During use, paints and coatings containing the notified polymer are expected to be applied by brush, roller and spray techniques. It is expected some of the coating product will be in the form of overspray during spraying operations and will typically entail landfill disposal, after being collected. Residues containing the notified polymer on brushes and rollers are expected to be rinsed into containers and then allowed to cure along with the container residues before disposal, as solid wastes, to landfill.

For a worst case release scenario it is assumed that up to 5% of the notified polymer, used by DIY users, could be incorrectly disposed of to sewer, drains or ground from waste and washing of

application equipment. Assuming these releases occur nationwide and equally over the entire year, the predicted environmental concentration (PEC) is estimated to be 3.03 µg/L. [PEC_{river} = 13.7 kg notified polymer/day ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)]. This PEC is well below the EC50 for algae of the most toxic anionic polymers (EC50 > 1 mg/L). Therefore, the notified polymer is not expected to be released to surface waters at ecotoxicologically significant concentrations.

The fate of the coating cured on the substrate will be shared with the fate of the coated article, which ultimately is expected to be sent to landfill. In landfill, the notified polymer will be present as cured solids which will be neither bioavailable nor mobile. Furthermore, the notified polymer is not expected to bioaccumulate due to its high molecular weight. It is expected to eventually degrade in the environment to form oxides of carbon and water vapour. 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.