File No PLC/1308

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Rheotech 2000

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.

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

December 2015

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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/1308	Arkema Pty Ltd, Interchem Pty Ltd Tenaru Timber & Finishes Pty Ltd	Polymer in Rheotech 2000	No	≤ 40 tonnes per annum	Paint additive

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 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.

- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer during formulation:
  - Avoid contact with skin and eyes

- A person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer during formulation:
  - Eye protection
  - Impermeable gloves

  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.

- 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 paint additive, 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
Arkema Pty Ltd (ABN: 44 000 330 772)
313 Canterbury Road,
Canterbury VIC 3126

Interchem Pty Ltd (ABN: 74 057 313 630)
20 Harper Street,
Abbotsford VIC 3067

Tenaru Timber & Finishes Pty Ltd (ABN: 25 000 588 358)
184-186 Campbell Street,
Darlinghurst NSW 2010

Exempt Information (Section 75 of the Act)
Data items and details claimed exempt from publication: chemical name, molecular and structural formulae, molecular weight, polymer constituents, residual monomers/impurities and use details.

2. IDENTITY OF POLYMER

Marketing Name(s)
Rheotech 2000 (contains 30% of the notified polymer)

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

Criterion
The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa	White to blueish liquid (product)
Melting Point/Glass Transition Temp	90 °C
Density	1060 kg/m^3 at 20 °C
Water Solubility	Expected to be insoluble at pH < 6.5. > 100 g/L at 20°C if pH > 6.5 (information provided by the notifier).
Dissociation Constant	The notified polymer contains ionisable functionalities, and is expected to be ionised under normal environmental conditions (pH 4 – 9).
Particle Size	Dispersion in water

Reactivity	Expected to be 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	20	30	30	40	40

Use
The notified polymer will be used as an additive in water-based paints

The notified polymer will not be manufactured in Australia. It will be imported into Australia as an aqueous dispersion at 30% concentration. The dispersion containing the notified polymer will be used as an additive to prepare water-based paints at < 3% concentrations of the notified polymer. The notified polymer will be pumped and transferred into a tank where it will be mechanically mixed /blended with other ingredients of the paint. The paint may be applied by brush or roller.

6. HUMAN HEALTH RISK ASSESSMENT

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. This is supported by tests on a product containing 30% of the notified polymer, submitted for the following toxicological endpoints, noting that some irritation effects were seen:

Endpoint	*Result*	*Effects Observed?*	*Test Guideline*
1. Rat, acute oral	LD50> 2000 mg/kg bw	no	OECD TG 401 OECD TG 423
2. Rabbit, skin irritation	Slightly irritating*	yes	OECD TG 404
3. Rabbit, eye irritation	Slightly irritating**	yes	OECD TG 405

*In the skin irritation study, slight erythema occurred, which was still evident in 3/6 animals at the 72 h observation. No oedema was seen.

**In the eye irritation study, slight conjunctival effects had resolved by the 72 h observation. Slight iridial effects persisted at the 72 h observation. Slight corneal effects were seen only at the 1 h observation

The severity of the effects was not sufficient for classification under the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)*, however they indicated that the notified polymer will have some irritation potential, particularly to eyes.

Occupational Health and Safety Risk Assessment

The imported product containing 30% of the notified polymer was a slight skin and eye irritant. The use of personal protective equipment such as goggles and gloves during formulation would reduce the risk of irritation effects to workers. The irritation potential of the final paint containing <3% notified polymer is considered to be low, due to the low concentration of use.

Overall, given the expected low hazard profile, the risk to workers posed by exposure to the notified polymer is not considered unreasonable.

Public Health and Safety Risk Assessment
The public may be exposed to the notified polymer at <3% during use of paint products containing the notified polymer. However, given the expected low hazard profile and the low concentration of use, the risk posed by exposure to the notified polymer is not considered unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

The following ecotoxicological data were submitted for the notified polymer. The endpoints are summarised in the table below.

Endpoint	*Result*	*Assessment Conclusion*
Fish Toxicity	EC50 > 1000 mg/L	Not harmful to fish
Daphnia Toxicity	EC50 > 1000 mg/L	Not harmful to aquatic invertebrates
Algal Toxicity	EC50 > 100 mg/L	Not harmful to algae

Based on the provided acute ecotoxicity data, the notified polymer is not harmful to fish, daphnia and algae. Therefore, the notified polymer is regarded as low concern to the environment.

Reformulation of the notified polymer is expected to be conducted in a semi-automated system. During reformulation, a limited amount of the notified polymer is likely to be released to the environment as spills. There is potential for release of the notified polymer to sewer from equipment cleaning. Empty containers containing the notified polymer are expected to be disposed of accordance with local regulations or landfill.

The paint application will be by rollers and brushes. Approximately 5% of 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. Assuming these releases occur nationwide and equally over the entire year, the predicted environmental concentration (PEC) for rivers is estimated to be 1.21 µg/L. [PECriver = 5.48 kg notified polymer/day ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)]. This PEC is well below the end point of the test species (fish and daphnia, LC/EC50 > 1000 mg/L; algae, E_rC50 > 100 mg/L). Therefore, the notified polymer is not expected to be released to surface waters at ecotoxicologically significant concentrations.

Most of the notified polymer is expected to be bound within the inert paint polymer matrix. It will share the fate of the substrate to which it has been applied and is expected to be eventually disposed of to landfill. The notified polymer, from residues in empty containers, is expected to be disposed of to landfill. The notified polymer is not readily biodegradable based on its biodegradation study. However, due to its high molecular weight, it is not expected to cross biological membranes and it is therefore not expected to bioaccumulate. In landfills and in the aquatic compartment, the notified polymer is expected to eventually degrade biotically and abiotically to form water and oxides of carbon and nitrogen. Therefore, based on its low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.