File No PLC/1080

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Plioway EC-T

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:

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Director
NICNAS

August 2012

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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/1080	Brenntag Australia Pty Ltd	Plioway EC-T	No	≤20 tonnes per annum	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

- Employers should implement the following safe work practices to minimise occupational exposure while handling the notified chemical during reformulation processes:
  - Use of low-dust handling techniques
  - Ensuring that relevant exposure standards (e.g. for atmospheric dust) are observed

- Employers should ensure that the following engineering controls and personal protective equipment are used by workers to minimise occupational exposure to the notified polymer:
  - Enclosed, automated processes, where possible during reformulation processes
  - Adequate ventilation during reformulation processes and spray application
  - Respiratory protection during reformulation processes and during spray application

  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.

- Spray application should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)].

- If the notified polymer is proposed for use in coatings to be sprayed by the public, precautions to reduce inhalation exposure should be recommended as part of the directions for use.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Disposal

- The notified polymer should be disposed of to landfill.

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 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
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: structural formulae, molecular weight, polymer constituents, residual monomers/impurities, use details and identities of analogue polymers.

2. IDENTITY OF POLYMER

Marketing Name(s)
Plioway EC-T

Chemical Name
2-Propenoic acid, 2-methyl-, 1,1'-(1,2-ethanediyl) ester, polymer with 1-ethenyl-4-methylbenzene, 2-ethylhexyl 2-propenoate and 2-methylpropyl 2-methyl-2-propenoate

CAS Number
118922-87-5

Other Name(s)
Substituted styrene acrylate copolymer (pre-crosslinked)

Molecular Formula
$(C_{11}H_{20}O_2.C_{10}H_{14}O_4.C_9H_{10}.C_8H_{14}O_2)_x$

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	Off- white solid granules
Melting Point/Glass Transition Temp	51-61 °C
Density	1030 kg/m^3 at 25 °C
Water Solubility	Not determined. The notified polymer is expected to be insoluble in water based on its predominately hydrophobic structure.
Particle Size	17.4%: <125 µm 12%: 125-200 µm 18.4%: 200-315 µm 27.8%: 315-500 µm 13.8%: 500-630 µm 10.3%: 630-1000 µm 0.2%: >1000µm
Reactivity	Stable under normal environmental conditions. The notified polymer contains hydrolysable functionality. However, due to its water insolubility, it is expected to be hydrolytically stable in the environmental pH range of 4-9.
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	20	20	20	20	20

Use
The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia at a concentration of 100%. Products containing the notified polymer will be reformulated in Australia. The notified polymer will be used as a component of industrial coatings at a concentration of ≤ 50%. The coatings will be used by professionals only and will generally be applied by spray (though brush or roller may also be used). Spray application is expected to occur in both indoor and outdoor environments.

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 conducted on suitable analogue polymers and submitted for the following toxicological endpoints.

Endpoint	*Result*	*Test Guideline*
Rat, acute oral *	LD50 > 5000 mg/kg bw	OECD TG 401
Rabbit, skin irritation*	no significant irritation	OECD TG 404
Skin sensitisation - adjuvant test*	no evidence of sensitisation.	OECD TG 406

*Study summary only provided.

All results were indicative of low hazard.

The notified polymer has a high molecular weight (Mn>10,000 Da) and expected low water solubility and will be introduced in a solid (granule) form. As such, the notified polymer may present a concern for lung damage following respiration of particles (dusts). While the notified polymer has 17.4% particles < 125 μm in size, the portion in the respirable size range is not specified. Therefore, although there may only be a small portion of particles in the respirable size range, steps should be taken to avoid exposure to the notified polymer via the inhalation route.

At reformulation sites, the product containing the notified polymer at 100% concentration will be blended with other materials to produce the finished coatings containing the notified polymer at ≤50% concentration. Exposure of workers to the notified polymer should be minimised through the use of personal protective equipment (PPE; particularly respiratory protection), automated reformulation processes (where possible) and the conduct of reformulation activities in ventilated environments.

The formulated coatings (containing ≤50% notified polymer) will be applied by professionals, mostly by spray application, although brush and roller application may also occur. While inhalation exposure to the notified polymer may occur during spray application, it is expected to be minimised by the use of PPE (i.e. respiratory protection). Additionally, the use of exhaust ventilation (or other sources of ventilation) will further reduce exposure.

Provided that measures are in place to reduce exposure of workers to the notified polymer (including use of ventilated environments, PPE and automated processes) during reformulation tasks and spray application, the risk to the health of workers and the public is not considered to be unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Polymers without significant ionic functionality are generally of low concern to the environment.

The notified polymer will be imported into Australia and will be further reformulated to form industrial coatings. Environmental releases of the imported notified polymer during reformulation arising from accidental spills, equipment cleaning and residues within import containers are estimated to be about 2% of the import volume. This is expected to be disposed of by a licensed waste contractor to landfill. During use as a component of coatings, the notified polymer will be applied primarily by spray, but also by roller and brush in both indoor and outdoor settings. The loss from overspray is estimated to be up to 40% of the applied notified polymer. Release of the notified polymer to the aquatic environment during use is not expected as all the overspray loss, residues in equipment washings and storage containers are expected to be collected for disposal to landfill. Once applied and the formulated coating cures, the notified polymer will be physically entrapped within the cured coating matrix, and will share the fate of the substrate, most likely to landfill. The notified polymer is not expected to be readily biodegradable. Bioaccumulation is not likely based on its high molecular weight. When disposed of to landfill, the notified polymer is expected to eventually degrade to form water and oxides of carbon. Based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.