

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

LA-D 1420

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**

April 2013

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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/1109	Evonik (Australia) Pty Ltd	LA-D 1420	No	< 30 tonnes per annum	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 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 (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 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 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.

(Material) Safety Data Sheet

The (M)SDS of 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

Evonik Australia Pty Ltd (ABN: 31 145 739 608)
Suites 33&37, 1 Ricketts Road
MT. WAVERLY VIC 3149

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 impurities, import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

LA-D 1420 (contains ~40% notified polymer in aqueous solution)

Molecular Weight

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

3. PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met</i>
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Not applicable
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 white liquid*
Melting Point/Glass Transition Temp	Introduced as an aqueous solution
Density	1058 kg/m ³ at 25 °C*
Water Solubility	Not determined. Expected to be water soluble based on the presence of hydrophilic functional groups in the chemical structure and use in aqueous systems.
Dissociation Constant	Not determined. The notified polymer is a salt and expected to be ionised under environmental conditions.
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

* For aqueous product containing ~40% notified polymer

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	< 20	< 30	< 30	< 30	< 30

Use

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia as an aqueous solution at a concentration of ~40% that will be used in the formulation of paints. The finished paints will contain the notified polymer at up to 24% concentration. The finished paints will be applied to concrete and metal substrates by brush only; however some spray use cannot be ruled out. The finished paints will be used by professional painters only.

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 submitted on the following toxicological endpoints.

<i>Endpoint</i>	<i>Result</i>	<i>Effects Observed?</i>	<i>Test Guideline</i>
1. Rat, acute oral	LD50 > 2000 mg/kg bw	no	OECD TG 423

No signs of toxicity were observed at the highest tested dose of 2000 mg/kg bw in a rat acute oral toxicity study.

The finished paints containing the notified polymer will only be used by professional painters. Application is expected to be mainly by brush; however, application by spray may also occur. Spray

application is expected to be conducted at industrial sites in designated spray booths; hence the potential for inhalation exposure should be limited. Furthermore, the notified polymer has a molecular weight of < 10,000 Da; hence lung overloading effects are not expected if inhalation exposure were to occur.

Based on the assumed low hazard of the notified polymer and occupational settings described, the risk to workers from use of the notified polymer is not considered unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Anionic polymers 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 may not apply to the notified polymer.

The imported notified polymer may be reformulated into coating products locally. Spills (up to 0.1% of the total annual import volume) from reformulation are expected to be disposed of to landfill. Empty import containers will be recycled by a licensed contractor and the residual notified polymer (less than 1%) is expected to be washed out for proper disposal.

Coating formulations containing the notified polymer will be applied to concrete or metal substrates by brush, however, it is expected that a proportion may be applied predominantly by spray. During the application by spray techniques, it is anticipated that 20-30% of the notified polymer may be released to the environment as overspray. It is expected that the overspray will cure into inert particles and associate with soil in landfill.

Extra coating products remaining on brushes or rollers are expected to be scrubbed off with inert materials before rinsing the brushes or rollers with water. Notified polymer captured on the inert material is expected to be disposed of to landfill. Notified polymer in rinsing water is expected to be contained for reuse or disposal as solid waste after cured. Notified polymer contained in accident spills (< 1%) and residues (< 1%) in empty end-use containers is expected to be disposed of to landfill. It is estimated that approximately 1% of the notified polymer will be washed into sewers due to cleaning of application equipment. Assuming 50% of the notified polymer will be removed via absorption to sludge in the sewage treatment plant (Boethling & Nabholz, 1997), the resultant predicted environmental concentration (PEC) in river on a nationwide basis is estimated as 0.13 µg/L [$PEC_{river} = 1.15 \text{ kg notified polymer/day} \div (200 \text{ L/person/day} \times 22.613 \text{ million people}) \times 1 \text{ (dilution factor)}$]. The PEC is well below the EC50 for algae of the most toxic anionic polymers ($EC50 > 1 \text{ mg/L}$).

Most of the notified polymer will share the fate of the coated end use articles and be disposed of to landfill or recycled for metals reclamation. In landfill, the notified polymer will be present as a cured solid film and is not expected to be bioavailable. Due to its high molecular weight, the notified polymer is not expected to cross biological membranes and is therefore unlikely to bioaccumulate. The notified polymer is expected to thermally decompose during metal reclamation, or slowly degrade in landfill and water through biotic and abiotic processes to form water, oxides of carbon and nitrogen. Therefore, based on its assumed low hazard and assessed use, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

Boethling RS & Nabholz JV (1997) 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. New York, Van Nostrand Reinhold, pp 187–234.