File No PLC/1336

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in BYK-3560

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 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

May 2016

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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/1336	Reschem Technologies Pty Ltd	Polymer in BYK-3560	No	≤ 15 tonnes per annum	Component of industrial 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, limited aquatic exposure 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, 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 industrial 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 a 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
Reschem Technologies Pty Ltd (ABN: 90 315 656 219)
Suite 1103
4 Daydream Street
WARRIEWOOD NSW 2102

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 and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)
BYK-3560 (product containing the notified polymer at up to 100%)

Molecular Weight (MW)
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

*Although the notified polymer has potentially biodegradable functionality, and thus biodegradability and stability concerns, it has been assessed as a PLC. This is because environmental exposure is expected to be negligible based on its use in industrial paints and coatings.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa	Light yellow liquid
Melting Point/Glass Transition Temp	Not determined
Density	1,062 kg/m^3 at 20 °C
Water Solubility	Expected to have high water solubility based on the hydrophilic chemical structure
Dissociation Constant	Expected to be ionised under environmental conditions (pH 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	3-5	4-6	7-9	10-12	13-15

Use
The notified polymer will not be manufactured in Australia. It will be imported into Australia at up to 100% for reformulation into paints and coatings or in reformulated pigment concentrates, paints and coatings. Paints and coatings containing the notified polymer at 0.1-2% concentration will be applied by brush, roller and spray in industrial 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. 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

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, which may apply to the notified polymer. However, the toxicity to algae is likely to be reduced due to the presence of calcium ions in environmental waters, which will bind to the functional groups.

The notified polymer will be imported neat into Australia for reformulation into industrial paints and coatings, or as a component of finished industrial paints and coatings for a variety of substrates. During reformulation, the product containing the notified polymer will be blended with other ingredients at industrial sites. Release of the notified polymer to the environment during import, reformulation, storage, and transport is expected to be limited to accidental spills or leaks and residue in import packaging. Spills or accidental release of the products containing the notified polymer are expected to be collected with adsorbents and disposed of to landfill in accordance with local government regulations.

Products containing the notified polymer will be used by professional users in predominantly industrial settings. During use, paints and coatings containing the notified polymer are expected to be applied by brush, roller and spray techniques. It is estimated by the notifier that the majority of the paints and coatings will be applied by spray application, and a small amount will be applied by brush or roller. It is expected some of the coating product will be in the form of overspray during spraying operations, and will typically entail disposal to landfill after being collected by spray booth filters or with adsorbents. During use the notified polymer may also be released to the environment as accidental spills and container residues. It is estimated by the notifier that < 2% of the total import volume (or up to 300 kg) may be released as a result of spills and container residue. Solid wastes from spills and container residue are expected to be collected and disposed of to landfill in accordance with local government regulations.

Residues containing the notified polymer on brushes, rollers, and in spray equipment are expected to be rinsed and wastewater released to the sewer. It is estimated that up to 1% of the total import volume of the notified polymer (or up to 150 kg) may be incorrectly disposed of to the sewer from cleaning of application equipment. However, based on its high molecular weight and anionic properties, up to 50% of the notified polymer is expected to adsorb to sludge and sediment during sewage treatment plant (STP) processes (Boethling and Nabholz, 1997), with sludge eventually disposed of to landfill or re-used for soil remediation. Therefore, the notified polymer is not expected to be released to surface waters at ecotoxicologically significant concentrations.

The notified polymer in industrial paints and coatings cured on the substrate will share the fate of the coated article, which ultimately is expected to be disposed of to landfill, or undergo thermal decomposition during substrate recycling. In landfill, the notified polymer will be present as cured solids, which will be neither mobile nor bioavailable. Based on its high molecular weight the notified polymer is not expected to cross biological membranes, and is therefore not expected to be bioaccumulative. In landfill and during substrate recycling, the notified polymer is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon.

Therefore, based on its assumed low hazard, limited expected aquatic exposure and assessed use pattern in industrial paints and coatings, 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 US Toxic Substances Control Act", in: Hamilton, JD, Sutcliffe, R (ed). Ecological Assessment of Polymers: Strategies for product stewardship and regulatory programs. Van Nostrand Reinhold, New York.