

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in BYK-1640 and BYK-1741

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 and Energy.

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**

April 2018

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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/1477 | ResChem Technologies Pty Ltd | Polymer in BYK-1640 and BYK-1741 | No | ≤ 7 tonnes per annum | A component of coatings, adhesives, inks and construction materials |

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 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 a component of coatings, adhesives, inks and construction materials, 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.

Safety Data Sheet

The SDS of the product containing the notified polymer was provided by the applicant. The accuracy of the information on the 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 name(s), structural formula, molecular weight, polymer constituents, residual monomers/impurities and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

BYK-1640 and BYK-1741 (products containing the notified polymer)

Molecular Weight

Number Average Molecular Weight (Mn) is > 1,000 g/mol.

3. PLC CRITERIA JUSTIFICATION

| <i>Criterion</i> | <i>Criterion met</i> |
|--|----------------------|
| 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 | White emulsion (product) |
| Melting Point/Glass Transition Temperature | 0 °C (product) |
| Density | 1,004 kg/m ³ at 20 °C (product) |
| Water Solubility | The notified polymer is not expected to be water soluble based on the predominantly hydrophobic chemical structure. |
| Dissociation Constant | The notified polymer does not contain dissociable functionality. |
| 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

| <i>Year</i> | <i>1</i> | <i>2</i> | <i>3</i> | <i>4</i> | <i>5</i> |
|-------------|----------|----------|----------|----------|----------|
| Tonnes | 1-3 | 1-3 | 2-4 | 2-4 | 5-7 |

Use

The notified polymer will be imported at 2.5% concentration and will be used as a component of coatings, adhesives, inks and construction materials for industrial uses at $\leq 2.5\%$ concentration. The notified polymer may have food contact applications when used in coatings and inks.

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.

The notifier has provided some information on the regulatory status of the notified polymer and/or its monomers with overseas food contact legislation in EU, Switzerland, USA and China.

As the notified polymer will be used in materials with direct food contact, the public report of this assessment will be forwarded to Food Standards Australia New Zealand (FSANZ) for their information.

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 as a component of coatings, inks, adhesives, paper coatings and construction chemicals.

The imported formulations containing the notified polymer may be blended with other additives at end-user sites. Release of the notified polymer to the environment during import, storage, transport and mixing or milling is expected to be limited to accidental spills or leaks (estimated to be up to 1% of the total annual import volume) and residues in the empty containers (estimated to be up to 1% of the total annual import volume). Wastes from container residues and accidental spills are expected to be disposed of according to local regulation or be disposed of to landfill.

During use, coatings containing the notified polymer are expected to be applied by spray techniques or rollers and brushes or chemical bath by professionals (no DIY use expected). The main release of the notified polymer is likely from overspray, and is estimated to account for up to 30% of the imported volume. The overspray will be captured in spray booths on Kraft paper or newspaper prior to landfill disposal. The equipment used to apply the coatings may be rinsed with water and a small amount of the notified polymer may be released to sewers (estimated to be up to 1% of the total annual volume). The notified polymer can be also used in coil coating systems and is expected to be re-used with no further release to the environment in this application.

Approximately 10% of the total import volume of the notified polymer will go into the printing inks and up to 5% of the total import volume may go into paper coating. The notified polymer, bound within the dried ink or paper matrix, will share the fate of the article. Therefore up to 15% of the notified polymer will be printed on substrates (paper, board or film) and incorporated within the paper product which may be recycled or end up in the landfill. Approximately 9% of the import volume of the notified polymer may enter the recycling stream based on the 60% recycling rate of the paper-based products in Australia (Department of the Environment and Energy and Blue Environment Pty Ltd, 2016). During recycling processes, waste paper is repulped using a variety of chemical agents, which, amongst other things, enhance detachment of inks from the fibres. Aqueous wastes containing these agents are expected to be sent to the sewage treatment plant (STP) for processing. With 10% (9% from recycling and 1% from equipment washing) release of the annual import volume of the notified polymer into the sewer systems and no removal within STPs, the predicted environmental concentration in sewage effluent on a nationwide basis over 260 working days per year is calculated to

be $0.55 \mu\text{g/L}$ ($0.1 \times 7,000 \text{ kg} \div (200 \text{ L per person per day} \times 24.4 \text{ million persons} \times 260 \text{ days})$) assuming the release occurs nationwide. Given the notified polymer is non-ionic and of low concern for aquatic hazard, the release of the notified polymer during reformulation and recycling processes will not lead to ecotoxicologically significant concentrations in the aquatic environment.

The majority of the notified polymer will reach landfill as a result of disposal of used articles, sludge waste from recycling and residue in empty containers containing the notified polymer. Empty import containers and residues are expected to be recycled or disposed of through licensed waste management services. The notified polymer is not expected to cross biological membranes due to high molecular weight and is therefore not expected to bioaccumulate. In landfill the notified polymer is expected to slowly degrade to water and oxides of carbon. 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.

BIBLIOGRAPHY

Department of the Environment and Energy and Blue Environment Pty Ltd (2016) Australian National Waste Report 2016. Canberra, Australia.