File No PLC/1446

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Alberdingk® U 9700

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

November 2017

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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/1446	Scott Chemicals Australia Pty Ltd	Polymer in Alberdingk® U 9700	No	≤ 20 tonnes per annum	Component of furniture and floor 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

- If aerosols are formed during the use of the notified polymer, engineering controls and respiratory protection should be used to prevent inhalation exposure.

  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.

- 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 furniture and floor 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.

Safety Data Sheet
The SDS of the products 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
Scott Chemicals Australia Pty Ltd (ABN: 51 099 105 941)
Suite 21, 296 Bay Road
CHELTENHAM VIC 3192

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

2. IDENTITY OF POLYMER

Marketing Name(s)
Polymer in Alberdingk® U 9700

Other Name(s)
Alberdingk® U 9700 (aqueous dispersion containing the notified polymer at ~ 28% concentration)

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	Whitish liquid*
Melting Point/Glass Transition Temp	~ 0 °C*
Density	1,000 – 1,100 kg/m^3 at 20 °C*
Water Solubility	Not determined; expected to be miscible in water
Dissociation Constant	Not determined; containing anionic functionalities with a typical pKa ~ 4 and expected to dissociate in the environmental pH range (4 - 9)
Particle Size	Imported in water dispersions
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

* Properties of Alberdingk® U 9700, the aqueous dispersion containing the notified polymer at ~ 28% concentration

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	2 – 5	5 – 10	8 – 12	10 – 15	15 – 20

Use
The notified polymer will be used as a component of floor and furniture coatings.

No manufacturing of the notified polymer will be carried out in Australia. It will be imported at ~ 28% concentration as an aqueous dispersion in 120 kg drums and reformulated with other ingredients in low speed mixers. Finished coating products will be packed in 1 – 20 L drums for distribution and contain ~ 25% of the notified polymer by dry weight.

Application of finished coating products containing the notified polymer will be generally undertaken by professional workers such as flooring contractors. The method of application will be by brush, roller or spray. Use of appropriate personal protective equipment (PPE) as suggested by the notifier in the application will minimise the potential for exposure. The coating products containing the notified polymer may be accessible to do-it-yourself (DIY) users in low frequency and small quantity.

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.

Although not considered in this risk assessment, NICNAS notes that the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia.

The notified polymer is a high molecular weight (Mn > 10,000 Da) polymer with certain fractions of the molecules > 70,000 Da. Inhalation of water-insoluble polymers with molecular weights > 70,000 Da has been linked with irreversible lung damage due to lung overloading and impaired clearance of particles from the lung, particularly following repeated exposure (US EPA, https://www.epa.gov/reviewing-new-chemicals-under-toxic-substances-control-act-tsca/high-molecular-weight-polymers-new, accessed on 15 September 2017). However, based on assessed use patterns, significant inhalation of the polymer is not expected during normal use unless large quantities of aerosols are formed and respiratory protection is inadequate.

7. ENVIRONMENTAL RISK ASSESSMENT

No eco-toxicological data were submitted. Anionic polymers are generally of low toxicity to fish and daphnia, however they can 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. However, this does not apply to the notified polymer, and it is therefore not considered to be an over-chelation hazard to algae.

The notified polymer will be imported in water based dispersion for reformulation into end-use furniture coatings in enclosed equipment with exhaust ventilation. Accidental spills of the notified polymer during import, transport, reformulation or storage are expected to be adsorbed onto a suitable material and collected for disposal in accordance with local government regulations.

The coating products containing the notified polymer will primarily be used by professionals and, to a less extent, by DIY users. During use, the coatings containing the notified polymer are expected to be

applied by brush, roller, and spray techniques. It is expected that some of the coating products will be in the form of overspray during spraying operations, and will typically entail disposal to landfill after being collected and cured. The liquid waste from cleaning of the application equipment is expected to be collected by a licensed waste contractor for safe disposal. During use the notified polymer may also be released to the environment as accidental spills. These releases are expected to be collected and disposed of to landfill in accordance with local government regulations. As the worst case scenario, it is assumed that up to 5% of the total annual import volume of 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 the releases occur nationwide over the entire year and there is no removal of the notified polymer during wastewater treatment, the predicted environmental concentration (PEC) is estimated to be 0.39 µg/L. The most toxic anionic polymers to algae known, have EC50 values of > 1 mg/L. As this is likely to be the most sensitive species an assessment factor of 100 is used to estimate the PNEC. Therefore the PNEC is likely to be > 10 µg/L and hence the release of the notified polymer during the DIY use will not lead to ecotoxicologically significant concentrations in the aquatic environment.

Most of the notified polymer is expected to share the fate of the coating articles on which it has been applied to, to be disposed of to landfill at the end of their useful life. A small proportion of the notified polymer may remain as residues in empty import and end-use containers. These residues are expected to be cured and disposed of to landfill along with the containers in accordance with local regulations. In landfill, the notified polymer will be present as cured solids and will be neither bioavailable nor mobile. The notified polymer is not expected to bioaccumulate due to its high molecular weight. The notified polymer in landfill and water is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon and nitrogen.

Therefore, based on its assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

Safe Work Australia (2015) Code of Practice: Spray Painting and Powder Coating, Safe Work Australia, https://www.safeworkaustralia.gov.au/doc/model-code-practice-spray-painting-and-powder-coating.