

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Alberdingk® AC 3660

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**

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Table of Contents

SUMMARY	2
CONCLUSIONS AND REGULATORY OBLIGATIONS.....	2
ASSESSMENT DETAILS.....	4
1. APPLICANT AND NOTIFICATION DETAILS.....	4
2. IDENTITY OF POLYMER	4
3. PLC CRITERIA JUSTIFICATION	4
4. PHYSICAL AND CHEMICAL PROPERTIES.....	4
5. INTRODUCTION AND USE INFORMATION	5
6. HUMAN HEALTH RISK ASSESSMENT.....	5
7. ENVIRONMENTAL RISK ASSESSMENT	5
BIBLIOGRAPHY	6

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/1476	Scott Chemicals Australia Pty Ltd	Polymer in Alberdingk® AC 3660	No	< 15 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)

Alberdingk® AC 3660 (product containing the notified polymer at ~41% concentration)

Molecular Weight

Number Average Molecular Weight (Mn) is > 10,000 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	Clear liquid*
Melting Point/Glass Transition Temperature	~ 0 °C*
Density	1,000 – 1,100 kg/m ³ at 20 °C*
Water Solubility	Expected to be water dispersible based on predominantly hydrophilic chemical structure
Dissociation Constant	Contains dissociable functionalities and expected to be ionised in the environmental pH range (4-9)
Particle Size	Imported in aqueous dispersions
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use
* Properties of Alberdingk® AC 3660, the aqueous dispersion containing the notified polymer at ~41% concentration	

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	< 5	< 10	< 12	< 13	< 15

Use

The notified polymer will be used as a component of coatings for furniture and floors, primarily for items with wooden surfaces.

No manufacturing of the notified polymer will be carried out in Australia. It will be imported at ~41% 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 ~36% of the notified polymer by dry weight.

Application of finished coating products containing the notified polymer will be 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, is expected.

The finished end-use coating products will not be available for public DIY use. Members of the public will only come into contact with furniture and parquet coated with products containing the notified polymer. However, once the coatings are cured, the notified polymer will be bound into inert matrix and will not be bioavailable for exposure.

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 notified polymer is a high molecular weight ($M_n > 10,000$ g/mol) polymer with certain fractions of the molecules $> 70,000$ g/mol. The notified polymer is water dispersible and therefore if inhaled at low levels is likely to be cleared from the upper respiratory tract readily through mucociliary action. Small proportions of the notified polymer may reach the lower respiratory tract, but it should still be cleared from the lungs unless high levels are inhaled. When large quantities of the notified polymer are inhaled, it is likely to be cleared from the lungs, but this may be slow and temporary respiratory impairment is possible. The expected use of respiratory protection and automated reformulation processes, and the presence of adequate general or local ventilations when handling products containing the notified polymer by workers should reduce inhalation exposure levels and hence lower the potential for temporary lung overloading.

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 the nutrient needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone leading to chelation of essential nutrients. The notified polymer contains functionality that dilutes the chelating effect, resulting in significantly reduced toxicity to algae (Boethling & Nahbolz, 1997).

The notified polymer will be imported into Australia as a component of coatings primarily for wooden surfaces but may be applied to plastic, concrete and metal surfaces. Release of the notified polymer to the environment during import, storage, transport, reformulation and repackaging is expected to be

limited to accidental spills or leaks and residue in waste containers. These releases are expected to be collected and sent to a licensed waste facility for disposal in accordance with State/Territory regulations.

During use, coatings containing the notified polymer are expected to be applied by spray, brush, and roller techniques by professionals. Waste material will be collected and sent to a licensed waste facility for disposal in accordance with State/Territory regulations.

Most of the notified polymer will be irreversible incorporated within the coating of the exterior of the articles. Upon curing the polymer is incorporated into the polymer matrix where it will become inert. The coating cured on the substrate will share the fate of the coated article, which ultimately is expected to be sent to landfill or to metal reclamation. Therefore, the release of the notified polymer to the aquatic environment is not expected.

In landfill, the notified polymer will be present as cured solids which will be neither bioavailable nor mobile. Bioaccumulation is not expected based on the high molecular weight of the notified polymer and low potential for exposure. When disposed of to landfill, the notified polymer is expected to eventually degrade in the environment to form oxides of carbon, sulfur and nitrogen, and water by abiotic and biotic processes. During metal recycling, the notified polymer is expected to be thermally decomposed in the metal furnace.

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

Boethling, RS and Nabholz VJ (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, 1st ed. New York, Van Nostrand Reinhold, pp 187-234.

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>.