

File No PLC/933

July 2010

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT
SCHEME
(NICNAS)**

FULL PUBLIC REPORT

Polymer ALTU2-15

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the 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 Department of the Environment, Water, Heritage and the Arts.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full 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**

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FULL PUBLIC REPORT**Polymer ALTU2-15****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)
Canon Australia Pty Ltd
1 Thomas Holt Drive
North Ryde NSW 2113

NOTIFICATION CATEGORY
Polymer of Low Concern

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, Reactive Functional Groups, Charge Density, Polymer Constituents, Residual Monomers/Impurities and Manufacture/Import Volume.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
Japan

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
ALTU2-15

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) > 10,000 Da

The notified polymer contains only low concern functional groups.

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 colourless solid
Melting Point/Glass Transition Temp	197°C
Density	1110 kg/m ³ at 20 °C
Water Solubility	>795 g/L at 20°C Flask method (Modification of OECD Method 105)
Dissociation Constant	Not determined. The notified polymer is estimated to have a pKa ~ 4 which is consistent with its functional groups.
Particle Size	Not determined (the substance was a clear colourless sheet)
Reactivity	Stable under normal conditions of use
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
Kilograms	<1	<1	<5	<5	<5

Use

The notified chemical is a component of ink in sealed cartridges at <2% for inkjet printers.

Mode of Introduction and Disposal

The notified polymer is imported as a component of inkjet printer ink contained within sealed cartridges at less than 2%. The polymer is not manufactured or reformulated in Australia.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

Occupational Health and Safety Risk Assessment

The notified polymer in ink will be imported in sealed cartridges at <2%. It will not be manufactured or formulated in Australia.

Exposure to workers during transport and storage is possible only in the event of an accident where packaging is damaged or breached.

Dermal and ocular exposure of office workers, small office and home office users to the notified polymer could occur during replacement of cartridges in printers. However, this will be negligible due to the very low concentration of the notified polymer present in the ink cartridges (<2%). Instructions on how to replace the cartridges safely are also included with the inkjet printer and the packaging of the cartridge.

Dermal exposure to the notified polymer from contact to printed materials could occur. Once the ink dries, the polymer would be trapped in the print matrix, and therefore dermal exposure to the notified chemical from contact with the dried ink is not expected.

Overall, the OHS risk presented by the notified polymer is expected to be low, based on the minimal exposure to workers and assumed low intrinsic hazard of the polymer.

Public Health Risk Assessment

The general public could potentially be exposed to the notified polymer during use of the inkjet ink cartridges.

The scenarios by which the public may be exposed to the notified chemical would involve home use of printers, and are similar to those for office workers. However, it is expected that the public will be using the printer less frequently than workers and exposure is also expected to be lower.

Overall, the risk to the public presented by the notified polymer is not considered to be unacceptable, based on the expected minimal exposure of the public and the assumed low hazard of the notified polymer.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation

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, which does not apply to the notified polymer.

Environmental Risk Assessment

The notified polymer will be imported as a component of printer ink in ready-to-use cartridges. Printing cartridges are designed to prevent release of its contents during transport, installation and removal. Accidental spills are expected to be contained and disposed of to landfill. The ink will be used on paper articles, and notified polymer bound within the dried ink matrix will share the fate of the article. It is anticipated that approximately half of these articles will be disposed of to landfill and the remainder will be recycled at the end of their useful lifetime. During the recycling process, waste paper will be 'repulped' using a variety of alkaline dispersing and wetting agents, water emulsifiable organic solvents and bleaches. Aqueous wastes containing these agents are expected to be sent to the municipal sewage treatment plants (STPs) for processing. Due to the notified polymer's water solubility, some release of it to the water column is expected. Calculations indicate that the predicted environmental concentration, at worst, will be <1 µg/L, based on 100% of the notified polymer being released to the sewer and the water consumption of the Australian population. Toxicity to algae from nutrient over-chelation is not expected due to the lack of alternating acids on the notified polymer's carbon backbone, and the presence of calcium ions in the water that bind with chelating functional groups to further reduce toxicity. Due to its high molecular weight, the notified polymer will not readily cross biological membranes, and a low potential for bioaccumulation is predicted. Notified polymer adsorbed to STP sludge will be disposed of to landfill where it is expected to slowly degrade to form water and oxides of carbon and nitrogen.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

Environmental risk assessment

Based on the reported use pattern, the notified polymer is not expected to pose a risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- 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 MSDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Disposal

- The notified polymer should be disposed of to landfill.

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe removal.

Regulatory Obligations

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 printing ink in sealed cartridges;
 - 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 chemical 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 MSDS of the product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.