File No PLC/664

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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in TAKELAC W-5661

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 and Heritage.

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Director
NICNAS

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Ricoh Australia Pty Ltd (ABN: 30 000 593 171) of 8 Rodborough Rd, Frenchs Forest, NSW 2086
and
Lanier Australia Pty Ltd (ABN: 39 001 568 958) of 854 Lorimar Street, Port Melbourne, VIC 3207

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, Means of Identification, Molecular Weight, Reactive Functional Groups, Charge Density, Polymer Constituents, Residual Monomers/Impurities, Use Details, Percentage of Notified polymer in Final Product and Import Volumes

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)
No

NOTIFICATION IN OTHER COUNTRIES
No

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
TAKELAC W-5661

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met (yes/no/not applicable)*
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	Slightly milky white liquid (emulsion of notified polymer)
Melting Point/Glass Transition Temp	Not determined.
Specific Gravity	Approximately 1.0
Water Solubility	Emulsifiable with water. The polymer should not be water soluble as the predominance of hydrophobic groups will outweigh the effects of the relatively small proportion of hydrophilic functionality.
Dissociation Constant	pKa = expected to be 4 (contains carboxylate group))
Particle Size	Liquid, therefore not applicable
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

Quantity	*1*	*2*	*3*	*4*	*5*
Tonnes	≤ 1	≤ 1	≤ 1	≤ 1	≤ 1

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will be imported as a component of ink in sealed inkjet printer cartridges (< 30 g capacity) at a concentration of < 1%.

Reformulation/manufacture processes

No manufacture or reformulation of the notified polymer occurs in Australia. The sealed inkjet cartridges (containing the notified polymer) are delivered to the end-user in their original packaging.

Use

As a component of inks for use in inkjet printer cartridges.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Number and Category of Workers			
Category of Worker	*Number*	*Exposure Duration Hours/Day*	*Exposure Frequency (Days/Year)*
Transport and storage	10-20	4-8	200
Service Technicians	200	8	200
Office Staff	>5000	0.1	5
Retail	>1000	8	200

Transport and warehousing
During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

Retail Workers
Retail workers will be involved in opening cardboard cartons, removing cartridges contained in the outer cardboard box and stacking the individual boxes onto shelves. The workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

End Use

Service Technicians
Service technicians may be exposed to the notified polymer during printer performance. The job includes replacing empty and defective cartridges with a new one and cleaning. The most likely routes of exposure are via dermal and inhalation. The notified polymer is of high molecular weight, expected to have negligible vapour pressure and the formation of mist is unlikely. The concentration of the notified polymer in the toner is low and the design of the cartridges is such that exposure to the notified polymer would be limited to a very small amount.

Workers will wear cotton disposable gloves and use the replacement procedures recommended by the manufacturer.

Office Workers
Users of the printers may also be exposed to the notified polymer while replacing toner cartridges and handling of printed papers. The cartridges are sealed and as such poses a low risk of exposure. The notified polymer is bound to the paper matrix and not expected to be readily bioavailable except if the paper or other substrate is handled before the ink is dried.

PUBLIC EXPOSURE
Members of the public may make dermal contact with inks containing the notified polymer during changing cartridges and before the printed papers are adequately dried. However, the risk to public health will be negligible because the notified polymer is present at low concentrations. The polymer is unlikely to be bioavailable, once incorporated into a printed paper.

6.2. Toxicological Hazard Characterisation

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

An MSDS for the notified polymer in a more concentrated form states that it can cause some eye irritation, and cause skin irritation after prolonged exposure. However, it is not classified as a hazardous substance.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

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

PUBLIC HEALTH

Members of the public may make dermal contact with the ink containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is predicted to be of low hazard, present at low concentrations in the ink and is unlikely to be bioavailable once the ink has dried.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

The notified polymer will not be manufactured in Australia. It will be imported in sealed purpose built cartridges which are designed to prevent leakage, therefore any release due to transport accident or mishandling will be low. If leakage or accidental spills occur, the ink (including the notified polymer) is expected to be contained using absorbent material and then disposed of to landfill.

Direct release to the aquatic environment of the formulation, containing the notified polymer, is considered unlikely. After drying the notified polymer is likely to be stable within an inert matrix on printed paper products.

Emptied ink cartridges containing any residue of notified chemical will be sent to landfill for disposal.

The printed paper will either be disposed of to landfill or it may be recycled.

ENVIRONMENTAL FATE

No data for the biodegradation of the notified polymer were submitted. However, based on the chemical structure, the notified polymer is not expected to be readily biodegradable. Due to its low water solubility, any notified polymer disposed of to landfill is expected to associate with soil and organic material and should be immobile within the landfill environment due to the presence of anionic functionality. Over time, the notified polymer is expected to degrade by biotic and abiotic means to form simple organic compounds. If disposed of by incineration, the notified polymer is expected to be thermally decomposed to form simple salts and molecules.

In the paper recycling process, most of the notified polymer present, as part of the ink matrix, is likely to be destroyed or become part of the resultant sludge, which goes to landfill. Some may go to sewer in the effluent and a minor proportion may go to the aquatic compartment where the notified polymer may either remain in the water column or become associated with organic matter or the sediments, and over time degrade via biotic and abiotic processes to form simple organic compounds.

The large molecular weight of the notified polymer indicates it will not readily cross biological membranes, and a low potential for bioaccumulation is predicted.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This is unlikely to apply to the notified polymer. Further, the toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups.

7.3. Environmental Risk Assessment

While the recycling of printed paper may result in some of the notified polymer being released into the aquatic environment, the initial concentration of the notified polymer on the paper is low (< 5% of the

ink), and the paper recycling centres are located throughout Australia, the release to the aquatic environment will be at low levels and in a diffuse manner.

No ecotoxicity data are available, however, based on the exposure levels and use pattern, the notified polymer is unlikely to pose an unacceptable risk to the environment

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

8.2. Level of Concern for Public Health

There is No Significant Concern to public health when used in the proposed manner.

8.3. Level of Concern for the Environment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

9. MATERIAL SAFETY DATA SHEET

9.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

10. 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.

- Service personnel should wear cotton or disposable gloves and ensure adequate ventilation is present when removing spent printer cartridges containing the notified polymer and during routine maintenance and repairs.

- 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 NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

- Do not allow material or contaminated packaging to enter drains, sewers or water courses

Disposal

- The notified polymer should be disposed of in landfill.

Emergency procedures

- Spills/release of the notified polymer should be contained and absorbed with sand or absorbent material. The used absorbent material, containing the notified polymer, should be placed in a labelled, sealable container ready for disposal to landfill.

10.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

(1) Under subsection 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 subsection 64(2) of the Act:
  - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.