

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in PXL-3

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.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This 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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX:	+ 61 2 8577 8888
Website:	www.nicnas.gov.au

**Director
NICNAS**

April 2014

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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/1192	RICOH Australia Pty Ltd	Polymer in PXL-3	No	≤ 5 tonnes per annum	Component of printer toner

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.

- Service personnel should wear 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 (M)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 for the 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

- The notified polymer should be disposed to landfill.

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 printer toner, or is likely to change significantly;
 - the amount of notified polymer being introduced has increased to more than 5 tonnes per annum, 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.

(Material) Safety Data Sheet

The (M)SDS of the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

RICOH Australia Pty Ltd (ABN: 30 000 593 171)
8 Rodborough Rd
FRENCHS FOREST NSW 2086

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, polymer constituents, residual monomers/impurities, use details and manufacture/import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

PXL-3
HIMER PXL3
HIMER EXL-502

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	Pale yellow powder
Glass Transition Temp	63.8 °C
Density	1.2 kg/m ³ at 25 °C
Water Solubility	0.0215 g/L at 20 °C (Based on OECD TG 105: Flask Method)
Dissociation Constant	Not determined. The notified polymer contains ionisable functionalities and has potential to ionised under environmental conditions (pH 4–9).
Particle Size	d90 ~730 µm* d50 ~340 µm* Inhalable fraction 10% < 100 µm 0% < 10 µm
Reactivity	Stable under normal environmental conditions
Degradation Products	None anticipated under normal conditions of use
* d50 is the median of the particle size distribution, d90 is the 90 th percentile of the particle size distribution.	

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	<5	<5	<5	<5

Use

The notified polymer will be a component of industrial toner products contained in sealed cartridges. No reformulation or repackaging of the notified polymer will occur in Australia. The product containing the notified polymer will be used in inkjet printers in commercial settings only.

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.

Occupational Health and Safety Risk Assessment

Transport and warehousing

Workers are not expected to be exposed to the notified chemical as they will be handling closed containers. Exposure is possible in the event of an accident where the packaging is breached.

Service technicians and printer operators

Workers with highest potential for exposure to products containing the notified polymer (at <15% concentration) include service technicians and printer operators.

Technicians will come into contact with the sealed toner cartridges during printer maintenance. Any empty or defective cartridges will be replaced with new ones. The mostly likely route of exposure will occur via the dermal route when changing ink cartridges or when handling printed pages prior to the ink drying. Service technicians may wear gloves when handling printer cartridges, though printer operators are unlikely to do so. After application to paper substrate and cured, the toner containing the notified polymer is cured into an inert print matrix and will not be bioavailable.

Inhalation exposure is unlikely as the notified polymer is expected to have negligible vapour pressure and the formation of dust is unlikely. The particle size of the notified polymer indicates that 10% may be inhalable (< 100 µm), although none of the particles are of a respirable size (< 10 µm). The notified polymer has a molecular weight > 1,000 Da and low water solubility. Therefore, if inhaled it is likely to be rapidly cleared from the upper respiratory tract through mucociliary action. The notifier states that good ventilation should be used in areas where the printers are located.

Public Health and Safety Risk Assessment

The toner cartridges containing the notified polymer (at ≤90% concentration) are intended for use in industrial settings and will not be sold to the public. The public may come into contact with the inks containing the notified polymer after application to substrates. However, once the inks are cured and dried, the notified polymer will be reacted and bound within a polymer matrix and will not be bioavailable. Hence, public exposure to the notified polymer is not expected, and the risk to health of the public is not considered to be unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

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. 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 into Australia as an ingredient of finished toner products used in office equipment. Approximately 50% of the paper on which the products will be printed will be recycled. Most of the notified polymer will reach landfill as a result of disposal of used paper, empty cartridges and bottles, or sludge waste from paper recycling processes. In landfill the notified polymer is expected to be immobile due to its low solubility in water and will likely undergo slow biotic and abiotic degradation processes to form water and oxides of carbon. The notified polymer is not expected to cross biological membranes due to its high molecular weight and is thus not likely to bioaccumulate. 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.