

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

POLYMER OF LOW CONCERN PUBLIC REPORT

CIM-50

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. This notification has been carried out under the signed cooperative arrangement(s) with the USA. 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**

September 2018

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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/1497 | Canon Australia Pty Ltd | CIM-50 | No | ≤ 1 tonne per annum | Component of ink for inkjet printers |

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health and 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 health of workers and the public or to the environment.

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 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 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

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
- 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 ink for inkjet printers, 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.

(Material) Safety Data Sheet

The 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

Canon Australia Pty Ltd (ABN: 66 005 002 951)
5 Talavera Road
MACQUARIE NSW 2113

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

Notification in Other Countries

USA (year 2016)

2. IDENTITY OF POLYMER

Marketing Name(s)

CIM-50

Molecular Weight

Number Average Molecular Weight (Mn) is > 1,000 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. 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 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 |

Use

The notified polymer will be a component of inks that will be used in inkjet printing on paper for commercial, office and consumer use. There will be no reformulation or repackaging of the introduced notified polymer in Australia.

5. HAZARD ASSESSMENT

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. This is supported by tests submitted on the following toxicological endpoints.

| <i>Endpoint</i> | <i>Result</i> | <i>Effects Observed</i> | <i>Test Guideline</i> |
|--|-----------------------|-------------------------|-----------------------|
| 1. Rat, acute oral* | LD50 > 2,000 mg/kg bw | no | OECD TG 420 |
| 2. Genotoxicity - bacterial reverse mutation** | non mutagenic | no | In house Method |

*Envigo (2016)
**BRC (2016)

All results were indicative of low hazard.

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.

ENVIRONMENTAL RISK ASSESSMENT

No suitable ecotoxicological data were submitted for the notified polymer.

The polymer has anionic functional groups. Anionic polymers are generally of low toxicity to fish and *Daphnia*, but are known to be moderately toxic to algae. The mode of toxic action to algae is chelation of essential nutrient elements needed for growth by these organisms. The highest toxicity is when there are acid groups on alternating carbons of the polymer backbone, leading to chelation of nutrients. However, this does not apply to the notified polymer and it is therefore not considered to be an over-chelation hazard to algae (Boethling & Nabholz, 1997).

The notified polymer has a molecular weight > 1,000 g/mol and also low water solubility; therefore it is not expected to cross biological membranes and is therefore unlikely to bioaccumulate. .

The notified polymer will be formulated overseas and imported as a pre-packaged component of ink. Accidental spills of the notified polymer during import, transport or storage are unlikely as the ink will be pre-packaged in a container that is designed to prevent leakage. Any leaks or spills estimated to be < 1% of the annual import volume that do occur during transport and storage are expected to be adsorbed onto a suitable material and collected for disposal of in accordance with local regulations. During use (copying or printing), ink will be transferred onto the paper.

At the end of its useful life printed paper is disposed of to landfill or recycled. Environmental releases could occur from sewage treatment plants (STPs) via the recycling of paper on which the ink containing the notified polymer has been used. The current Australian Waste Report estimates 60% of paper and cardboard in Australia are recycled (Pickin and Randell, 2017) over 260 working days/year. Therefore, on average 0.0023 tonnes ($1 \times 0.6/260$) will be subjected to paper recycling on each of these working days. During the recycling, waste paper is repulped using a variety of chemical agents, which, amongst other things, enhance detachment of inks from the fibres. Aqueous wastes are expected to be discharged to sewer and treated at sewage treatment plants (STP). The notified polymer is of high molecular weight and has slight water solubility. Hamilton and Sutcliffe, (1997) found that polymers with such characteristics absorb to sludge in the STP in amounts > 90%. This amount will be removed from the effluent and the resultant predicted environmental concentration (PEC) at sewage outfall on a nationwide basis is estimated as $0.047 \mu\text{g/L}$ $\{[\text{PEC}_{\text{river}} = [2.3 \text{ kg notified polymer/day} \times 0.1 \text{ (mitigation factor)}] \div [(200 \text{ L/person/day} \times 24.4 \text{ million people})]}\}$.

The notifier estimates that 5% the total annual import volume of the notified polymer may remain as residues in empty cartridges. Used cartridges are likely to be recycled into items made of low grade plastics. Ultimately these items will be also sent to landfill. Sludge containing the notified polymer may be sent to landfill for disposal or agricultural land for remediation. Based on its limited water solubility and high molecular weight, the notified polymer is expected to have low mobility in landfill

and soil (US EPA, 2013), where it is expected to degrade by biotic and abiotic processes to form water and oxides of carbon and nitrogen. The notified polymer is unlikely to bioaccumulate.

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

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