File No PLC/769

Day June 2008

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

# FULL PUBLIC REPORT

## Polymer in Toner for DQ-TU24D, DQ-TU35D

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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### 1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Panasonic Australia Pty Limited (ABN 83 001 592 187)
Austlink Corporate Park
1 Garigal Road
BELROSE NSW 2085

NOTIFICATION CATEGORY
Polymer of Low Concern

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, 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)
Previously notified in Australia.

NOTIFICATION IN OTHER COUNTRIES
USA

### 2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
DQ-TU24D, DQ-TU35D

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) >1000 Da

REACTIVE FUNCTIONAL GROUPS
The notified polymer contains only low concern functional groups.

### 3. PLC CRITERIA JUSTIFICATION

| *Criterion* | *Criterion met* |
|---|---|
| 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 yellow-coloured pellets |
| Melting Point/Glass Transition Temp | 62°C |
| Density | 1250 kg/m$^3$ |
| Water Solubility | < 10 mg/L at 20°C based on limited laboratory testing. No test report available. |
| Dissociation Constant | Not determined. The notified polymer contains low amount of carboxylic acid functionality and expected to have typical acidity (pKa ~ 5.00). |
| Particle Size | Mean particle size = 607.4 µm (0.18% <100 µm) |
| 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

| *Year* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| Tonnes | 1-5 | 1-5 | 1-5 | 1-5 | 1-5 |

USE

The notified polymer will be used as a component of photocopier toner.

**Mode of Introduction and Disposal**

The notified polymer will be imported in purpose-built sealed toner cartridges (typically, ~800 g, ~1230 g) at <90% for use in photocopying equipment. The sealed cartridges will be handled by service technicians or office workers replacing the spent cartridges in the photocopier as required.

## 6. HUMAN HEALTH IMPLICATIONS

**Hazard Characterisation**

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be assumed to be of low hazard. The following toxicological information was found on a toner product containing an analogous polymer (70% concentration).

| *Endpoint* | *Result* | *Classified?* | *Effects Observed?* | *Test Guideline* |
|---|---|---|---|---|
| 1. Rat, acute oral | LD50 >2000 mg/kg bw | no | yes | OECD TG 401<br>OECD TG 423 |
| 2. Rabbit, skin irritation | non-irritating | no | no | OECD TG 404 |
| 3. Rabbit, eye irritation | slightly irritating | no | yes | OECD TG 405 |
| 4. Bacterial reverse mutation | non-mutagenic | no | no | OECD TG 471 |

All results were indicative of low hazard.

**Occupational Health and Safety Risk Assessment**

Dermal and inhalation exposure to the notified polymer may occur when refilling/replacing spent cartridges. However, the design of the cartridges is such that exposure to the notified polymer should be low. Once the ink dries, the chemical would be trapped in the printed paper, and therefore dermal exposure to the notified chemical from contact with the dried ink is not expected.

Dermal and inhalation exposure of office workers and maintenance engineers to the notified polymer could potentially occur when replacing spent cartridges and clearing paper jams from the printer or photocopier. Once the ink dries, the chemical would be trapped in the printed paper, 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 the assumed low hazard of the polymer.

**Public Health Risk Assessment**

Members of the public may be exposed to the notified chemical during home use of photocopiers, these

exposures are expected to be similar to those for office workers. However, it is expected that the public will be using the photocopier less often than workers.

The risk to public health presented by the notified polymer is expected to be low due to its assumed low toxicity, low concentration in toner and low potential for exposure.

## 7. ENVIRONMENTAL IMPLICATIONS

**Hazard Characterisation**
No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

**Environmental Risk Assessment**
While environmental exposure is limited during toner use, the total import volume of the notified polymer will ultimately be disposed of in either landfill or be incinerated. The widespread use pattern indicates that landfills throughout Australia would receive the notified polymer bound into the toner matrix within cartridges and on paper products. The used toner would be expected to remain within the container unless breached. On paper the notified polymer will interact with other components to form a stable polymer matrix and, is expected to be immobile and pose little risk to the environment.

During recycling processes, waste paper is repulped using a variety of alkaline, dispersing and wetting agents, water emulsifiable organic solvents and bleaches. These agents enhance fibre separation, toner detachment from the fibres, pulp brightness and the whiteness of paper. These aqueous wastes are expected to go to sewer. Very little of the notified polymer is expected to partition to the supernatant water which is released to the sewer. Sludge generated during the washing process is dried and incinerated or sent to landfill for disposal.

The notified polymer is not likely to present a risk to the environment when it is stored, transported, used, recycled and disposed of in the proposed manner.

## 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 considered 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.

- 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 *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.

Storage

- Store in a cool, well-ventilated place away from flame and spark-producing equipment.

Emergency procedures

- Sweep up or vacuum spilled toner containing the notified polymer and carefully transfer into sealed waste container.

**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 component photocopier toner or is likely to change significantly;
  - the amount of notified polymer being introduced has increased from 5 tonnes, or is likely to increase, significantly;
  - if 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.

No additional secondary notification conditions are stipulated.

*Material Safety Data Sheet*
The MSDS for products containing the notified polymer provided by the notifier were reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.