

File No PLC/720

20 August 2007

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

**FULL PUBLIC REPORT**

**NEJI-19**

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 Water Resources.

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****NEJI-19****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

EPSON Australia Pty. Ltd. (ABN 91-002-625-783)  
3 Talavera Road, 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, Polymer Constituents, Residual Monomers/Impurities, Use Details and 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)

No

## NOTIFICATION IN OTHER COUNTRIES

No

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

NEJI-19

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >10000

## REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

**3. PLC CRITERIA JUSTIFICATION**

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</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

4.1	<b>Appearance at 20°C and 101.3 kPa</b>	Yellow Solid
4.2	<b>Melting Point/Glass Transition Temp</b>	95 °C
4.3	<b>Density</b>	1080 kg/m <sup>3</sup> at 20°C
4.4	<b>Water Solubility</b>	The notified polymer was found to have negligible water solubility by total organic carbon (TOC) measurement during stability testing..
4.5	<b>Dissociation Constant</b>	The notified polymer contains anionic functionality with typical acidity.
4.6	<b>Particle Size</b>	N/A as imported in solution.
4.7	<b>Reactivity</b>	The polymer is stable under the conditions in which it is used. The notified polymer did not hydrolyse after 24 h at pH 1.2 or after 2 weeks at pH 4, 7 and 9, both at 40°C.
4.8	<b>Degradation Products</b>	None under normal conditions of use

#### 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>
<i>Tonnes</i>	< 1	< 1	< 1	< 1	< 1

##### USE AND MODE OF INTRODUCTION AND DISPOSAL

###### **Mode of Introduction**

The notified polymer will be imported to Sydney by ship and then transported within Australia by truck. The notified polymer is imported in concentrations of < 10 % and within printer cartridges.

###### **Reformulation/manufacture processes**

The notified polymer will not be manufactured or reformulated in Australia.

###### **Use**

The notified polymer will be used as an ink additive in printer cartridges at concentrations < 10 %.

## **6. HUMAN HEALTH IMPLICATIONS**

### **6.1. Exposure Assessment**

#### OCCUPATIONAL EXPOSURE

Dermal and inhalation exposure of office workers and maintenance engineers to the notified chemical could potentially occur when replacing spent cartridges and clearing paper jams from the printer. 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.

#### PUBLIC EXPOSURE

The scenarios by which the public may be exposed to the notified polymer 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 often than workers.

### **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.

### **6.3. Human Health Risk Assessment**

#### OCCUPATIONAL HEALTH AND SAFETY

Although exposure to the notified polymer could occur replacing spent cartridges and clearing paper jams from the printer, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer and low expected exposure.

#### PUBLIC HEALTH

Although exposure to the notified polymer could occur while replacing spent cartridges and clearing paper jams from the printer, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer and low expected exposure.

## **7. ENVIRONMENTAL IMPLICATIONS**

### **7.1. Exposure Assessment**

#### ENVIRONMENTAL RELEASE

The notified polymer will be imported in sealed cartridges. There will be no release to the environment due to reformulation or repackaging. The ink cartridges are designed to prevent leakage and will not be opened during transport, use, installation or replacement. Therefore, release of ink containing the notified polymer to the environment is not expected under normal conditions. These will be changed by office workers and the public. However, if leakage or spillage does occur, the ink will be contained with absorbent material, which will presumably be disposed of in landfill in the normal office garbage along with the empty cartridges and print heads.

The sealed cartridges are contained within the printer until they are removed for disposal. Residual ink (< 5%) left in empty cartridges will most likely be disposed of to landfill.

Most of the notified polymer will be bound to printer paper, which will be disposed of to landfill, recycled or incinerated. Recycling of treated paper may result in the release of a proportion of the notified polymer to the aquatic compartment. Waste paper is repulped using a variety of polymer treatments, which result in fibre separation and ink detachment from the fibres. The wastes are expected to go to trade waste sewers. Due to the low percentage of notified polymer in the ink and the widespread use, release to the aquatic compartment will be highly diluted. The notified polymer adsorbed to sludge during the recycling process will be disposed of to landfill.

Empty cartridges which contained the ink preparation will be disposed of by landfill.

#### ENVIRONMENTAL FATE

Notified polymer disposed of to landfill is expected to associate with soil and organic material and should be relatively immobile within the landfill environment. Over time, the notified polymer is expected to degrade by biotic and abiotic means to form simple organic compounds.

Notified polymer on printed paper sent for recycling, which is not removed during recycling is expected to be released via the trade sewer where a major proportion may be absorbed to sludge due to low solubility. Any remaining polymer that enters the aquatic environment is expected to eventually associate with soil and sediments, and overtime degrade via biotic and abiotic processes to form simple organic compounds.

### **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 reduced due to the presence of calcium ions, which will bind to the functional groups.

### **7.3. Environmental Risk Assessment**

The notified polymer is imported into Australia in recyclable print cartridges. During recycling, it is expected that up to 10% residual notified polymer will be destroyed by incineration. Following use, printed paper may be disposed of directly to landfill, or recycled. Assuming that all printed paper is sent for recycling, up to 60% of the total volume of notified polymer may be released to the aquatic environment via the trade sewer. The

remainder is expected to be disposed of to landfill.

As no ecotoxicity data are available, a PNEC and resultant Risk Quotient (Q) are unable to be calculated. However, given the likely low ecotoxicity together with the low volume and diffuse release pattern, there should be an adequate safety margin and the overall environmental risk is expected to be acceptable.

## 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 Negligible 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 *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 by incineration or to landfill.

**Emergency procedures**

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

**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.