

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

### POLYMER OF LOW CONCERN PUBLIC REPORT

#### NEJI-34

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government Department of Sustainability, Environment, Water, Population and Communities.

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:

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**Director  
NICNAS**

**March 2013**

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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/1111	Epson Australia Pty Ltd	NEJI-34	No	≤ 1 tonnes per annum	Component of inkjet printer ink

## 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.

### **Environmental Recommendations**

- No specific control measures are required to minimise release of the notified polymer to the environment.

### **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 inkjet printer ink, 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 (M)SDS of a product containing 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**

Epson Australia Pty Ltd (ABN: 91 002 625 783)  
3 Talavera Road  
North Ryde 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, reactive functional groups, polymer constituents and import volume.

### **2. IDENTITY OF POLYMER**

**Marketing Name(s)**

NEJI-34

**Molecular Weight**

Number Average Molecular Weight (Mn) is > 1,000 Da

**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	White-pale yellow powder
Glass Transition Temp	~90 °C
Density	1.0 kg/m <sup>3</sup> at 25 °C
Water Extractability	0% at 25 °C. A sample of test substance (2 g/L) was constantly stirred at 25 °C for 24 hours. Insoluble matter was determined by gravimetric analysis after separation from the filtrate by filtration. The amount of total dissolved organic carbon (DOC) in the filtrate was determined by total organic carbon analysis. The results from both gravimetric and DOC analysis indicated that the test substance was insoluble in water.
Dissociation Constant	Not determined. The notified polymer contains dissociable functionalities which may be ionised under environmental conditions. However, limited ionisation is expected due to the low water solubility of the notified polymer.
Particle Size	0.1 – 5.0 mm
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**

<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 imported into Australia as a component of inkjet printer ink in sealed cartridges at a concentration of ≤ 2%. No further reformulation of the ink containing the notified polymer will occur. The ink containing the notified polymer will be used in inkjet printers in commercial and household settings.

**6. HUMAN HEALTH RISK ASSESSMENT**

The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. This is supported by the results of a bacterial reverse mutation test conducted on the notified polymer (*S. typhimurium*: TA98 and TA100; presence and absence of metabolic activation; full study report not

provided), which indicated that the notified polymer was not mutagenic to bacteria under the conditions of the test.

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.

## **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. However this is unlikely to 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 ink in sealed cartridges, which will be distributed to customers for direct use for paper printing. Most of the notified polymer will reach landfill as a result of disposal of used paper or sludge waste from paper recycling. Residual inks in empty cartridges, containing up to 2% of the total annual import volume of the notified polymer, will be disposed of to landfill along with the used cartridges. It is assumed that 50% of the printed paper will end up in landfill and the rest will undergo paper recycling processes. During recycling processes, waste paper is repulped using a variety of chemical agents, which, amongst other things, enhance detachment of inks from the fibres. The notified polymer is an anionic polymer with a high molecular weight and is insoluble in water. Therefore, the majority of the notified polymer is expected to partition to sludge during on-site waste water treatment at paper recycling facilities and sewage treatment plants. Small quantities of the polymer may be released to surface waters as a result of the de-inking processes. However, the notified polymer is expected to be low hazard to aquatic organisms and it is not expected to be released at ecotoxicologically relevant concentrations. Due to its high molecular weight, the notified polymer is not expected to cross biological membranes and is therefore not likely to bioaccumulate. In landfill and soil, the notified polymer will be slowly degraded, eventually forming water and oxides of carbon and nitrogen. 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.