

File No SAPLC/61

16 March 2007

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

FULL PUBLIC REPORT

EPG1267

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**Director
NICNAS**

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EPG1267**1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Epson Australia Pty Limited (ABN 91-002-625-783)
3 Talavera Road, North Ryde, NSW, Australia, 2113

NOTIFICATION CATEGORY

Self Assessment: Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name

Other name(s)

CAS number

Molecular formula

Structural formula

Molecular weight

Polymer constituents

Details of use

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

USA, 2004

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

EPG1267

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

Appearance at 20°C and 101.3 kPa	White solid
Melting Point/Glass Transition Temp	80°C
Density	1.0-1.2 kg/m ³ at 25°C
Water Solubility	Not soluble, due to the lack of significant hydrophilic functionality and very high molecular weight, forms a dispersed emulsion.
Dissociation Constant	pKa = ca 5 as a polymethacrylic acid
Particle Size	40-50 nm
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use
Comments	pH 7.5-8.5 (as emulsion)

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>	0.1	0.2	0.2	0.3	0.3

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer is synthesized in Japan and formulated into ink for use in printers. It will be imported into Australia as an aqueous emulsion ink containing up to 2% of the notified polymer. The ink will be imported in 200 L polyethylene drums.

Reformulation/manufacture processes

The ink containing the notified polymer is repackaged into cartridges in Australia. The operation of the packaging machine is an automated process and is monitored by one or two workers who wear standard protective equipment such as gloves, masks, goggles and protective suits. The operation sites are equipped with local air ventilation system. Worker exposure to the notified substance is negligible.

After packaging the cartridges are distributed for sale into commercial and retail market.

Use

Component of ink for use in printer cartridges

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Dermal and ocular exposure may potentially occur during repackaging ink containing the notified polymer. However, exposure to significant amounts of the notified polymer is limited because of the fully automated processes, and the engineering controls and personal protective equipment worn by workers.

Dermal and inhalation exposure to the notified polymer may occur when refilling/replacing spent cartridges. However, the concentration of the notified polymer in the ink is <15%, and the design of the cartridges is such that exposure to the notified polymer is low. Once the ink dries, the chemical would be trapped in the printed paper, and therefore dermal exposure to the notified chemical 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 thus further reducing exposure

6.2. Toxicological Hazard Characterisation

The following toxicological studies were reported:

<i>Endpoint</i>	<i>Result</i>	<i>Classified?</i>	<i>Effects Observed?</i>	<i>Test Guideline</i>
1. Rat, acute oral	LD50 > 2000 mg/kg bw	no	no	OECD TG 423
2. Rat, acute dermal	LD50 > 2000 mg/kg bw	no	no	OECD TG 402
3. Rabbit, skin irritation	non-irritating	no	no	OECD TG 404
4. Rabbit, eye irritation	non-irritating	no	no	OECD TG 405
5. Skin sensitisation - Guinea pig	non-sensitising	no	no	OECD TG 406
6. Genotoxicity - bacterial reverse mutation	non mutagenic	no	no	OECD TG 471

All results were indicative of low hazard.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

The OHS risk presented by the notified polymer is expected to be low, based on low hazard and low exposure to workers.

PUBLIC HEALTH

The risk to public health by the notified polymer is expected to be low due to its intrinsic low toxicity, low concentration in printer cartridges and low potential for exposure. However, skin, eye and respiratory exposure should be avoided. Printers should be located in well-ventilated areas.

7. ENVIRONMENTAL IMPLICATIONS**7.1. Exposure Assessment**

ENVIRONMENTAL RELEASE

The notified polymer will be imported in formulated inks. The ink is imported in polyethylene drums. A licensed industrial waste contractor disposes of the used drums (containing 1-2% residue) and the sludge remaining in the drums is incinerated.

The formulated ink is packaged into ink cartridges which are ready for use in printers. From here it will be bound within the cured coating matrix adhering to printing inks. Once within this cured coating it is likely to share the fate of the substrate, which will involve recycling or landfill.

ENVIRONMENTAL FATE

The notified polymer contains groups that could hydrolyse under severe conditions, but is expected to be stable under normal environmental conditions. The polymer is not water soluble, forming a dispersed emulsion in water. Due to its low water solubility, the notified polymer in solid wastes is expected to remain bound within the soils and sediments of landfills and eventually degrade through biotic and abiotic processes. If spilt on land, the notified polymer is expected to bind to soil and become immobilised in the soil layer. If spilt to water, it is not expected to dissolve but rather disperse or settle to sediment.

It is not expected to be readily biodegradable but due to its high molecular weight, it is not expected to bioaccumulate. Incineration of the notified polymer will result in the formation of water vapour and oxides of carbon and nitrogen

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 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 is unlikely to apply to the notified polymer. However, the toxicity to algae is likely to be further reduced due to the presence of calcium ions in water, which will bind to the functional groups.

7.3. Environmental Risk Assessment

The notified chemical will be used as a component of ink used in printer cartridges. Once this ink is used on paper it is expected to remain within the product matrices. And so the majority of the notified chemical will share the fate of the articles into which it is incorporated. It is anticipated that these will be disposed of to landfill or incinerated at the end of their useful lifetime. It is expected that the notified polymer will remain immobile within the soil at landfill site.

Printed paper may be recycled, during which 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 will go to sewer. However 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.

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 Low Concern to public health when used as recommended

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 NOHSC *Approved Criteria for Classifying Hazardous Substances*, 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 approved incineration or in approved waste facility.

Storage

- The ink containing the notified polymer should be protected from direct sunlight.

Emergency procedures

- Spills/release of the notified polymer should be handled by covering the spillage with a non-combustible material e.g. sand and transferring to sealable containers.

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.