

File No: PLC/396

20 October 2003

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

**FULL PUBLIC REPORT**

**Polymer in SPRC-10Be**

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**Director  
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**FULL PUBLIC REPORT****Polymer in SPRC-10Be****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

Ricoh Australia Pty Ltd (ABN 30 000 593 171)  
8 Rodborough Rd, Frenchs Forest, NSW, 2086.

Lanier Australia Pty Ltd (ABN 39 001 568 958)  
854 Lorimer St, Port Melbourne, Victoria, 3207

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name,  
Other name,  
CAS number,  
Molecular formula,  
Structural formula,  
Molecular weights,  
Charge density,  
Polymer constituents,  
Residual monomers and impurities,  
Purity  
Spectral data,  
Information on purities & impurities,  
Import volumes.

## 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)

None

## NOTIFICATION IN OTHER COUNTRIES

Japan in 2002

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

SPRC-10Be

**3. COMPOSITION**

## DEGREE OF PURITY

High

## RESIDUAL MONOMERS

All residual monomers are below the relevant cut-offs for classification of the notified polymer as a hazardous substance.

## PLC CRITERIA JUSTIFICATION

Reactive Functional Groups	No high or moderate concern reactive functional groups are present.
Charge Density	The notified polymer has low charge density.
Elemental Criteria	The notified polymer contains only approved elements.
Degradability	The notified polymer is not biodegradable.
Water Absorbing	The notified polymer is not a water-absorbing polymer.
Residual Monomers	All residual monomers are below the relevant cut-off.
Hazard Category	The notified polymer is not classified as a hazardous substance.

The notified polymer meets the PLC criteria.

#### 4. INTRODUCTION AND USE INFORMATION

##### MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The combined import volume for the notified polymer will be less than 10 tonnes per annum in the first year and in the range of 10 to 100 tonnes per annum thereafter.

##### USE

The notified polymer is imported in ready-to-use cartridges as a component of a photocopier toner containing <80% notified polymer. The notified polymer acts as a binding agent in the toner.

#### 5. PROCESS AND RELEASE INFORMATION

##### 5.1. Distribution, Transport and Storage

###### IDENTITY OF MANUFACTURER/RECIPIENTS

Ricoh Australia Pty Ltd & Lanier Australia Pty Ltd. The toner will be supplied to various customer outlets around Australia.

###### TRANSPORTATION AND PACKAGING

The notified polymer will be imported, as a component of photocopier toners, in purpose-designed cartridges, which will be packed in cardboard cartons (6 cartridges per carton). The cartons will be transported from the dockside to the local notifier's warehouse, where they will be stored until distribution to customer outlets around Australia. Transport and storage workers will load and unload cartons for either storage or distribution to customers.

##### 5.2. Operation Description

The notified polymer will be imported in ready-to-use cartridges, as a component of photocopier toners. Following importation, the product will be stored in the local notifier's warehouse before being transported to various customer outlets. The photocopier service engineers will change the toner cartridge and remove the used cartridge.

##### 5.3. Occupational exposure

###### *Number and Category of Workers*

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Transport & Storage	6-8	2-3 hours/day	10-15 days/year
Customer Service Engineers	200	5-20 minutes/day	200 days/year

###### *Exposure Details*

###### Transport and Storage

Exposure to the notified polymer is not expected during the importation, warehousing or transportation of the product except in cases where the packaging is accidentally breached. The notifier has not indicated whether these workers would be wearing any protective clothing.

###### Customer Service Engineers

Occupational exposure to the notified polymer will primarily concern copier service engineers, as they

will be changing the toner cartridge. The toner in the new cartridge remains sealed until the sealing tape is removed just prior to installation. The used cartridge is removed from the machine and replaced with the new cartridge without direct contact with the toner contained in the cartridge. Customer service engineers handling the imported products will be required to wear cotton gloves. No other personal protective clothing is recommended.

Inhalation and dermal exposure to the toner powder may occur during toner replacement in the event of a container leak or spill. Some exposure may occur as a result of contact with toner particles remaining in the machine and disturbance of toner dust leading to inhalation exposure. However, the risk of exposure is expected to be minimal from these sources.

#### **5.4. Release**

##### **RELEASE OF CHEMICAL DURING TRANSPORTATION AND STORAGE**

Environmental release is unlikely during importation, storage and transportation, and spillage during a transport accident is the most likely reason for environmental release. Individual container capacity and container specifications would limit the extent of release.

##### **RELEASE OF CHEMICAL AT SITES OF USE**

Release of the toner to the environment is not expected under the normal use pattern. Each toner cartridge, containing less than 1 kg of toner, is designed to prevent leakage. However, if leakage does occur, the toner will be collected and sent to landfill for disposal.

Used cartridges will also be sent to landfill for disposal (up to 10% of toner; estimated up to <10000 kg/annum). Residues contained in the empty bottles/cartridges are expected to remain within these containers, although release could occur from deterioration of the cartridge while in the landfill waste.

##### **RELEASE OF CHEMICAL FOLLOWING USE**

Toner containing the notified polymer will be applied to paper products. Waste paper may be disposed of directly to landfill with the notified polymer strongly bound to the paper. In addition, some of the printed paper will enter the paper recycling process. During such 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. Aqueous wastes from this process 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. In landfill, the notified polymer in solid wastes is expected to be immobile, and eventually it will degrade through biotic and abiotic processes, and consequently, should not pose a significant exposure hazard to the environment. Incineration of waste paper will destroy the compound with the generation of water vapour and oxides of carbon.

#### **5.5. Disposal**

The total import volume of the notified polymer will ultimately be disposed of in either landfill or be incinerated.

#### **5.6. Public exposure**

The notified polymer will not be sold to the general public and is only to be used for commercial purposes. Exposure is only possible in the event of accidents during transport. Exposure will be minimal as the notified polymer is contained within the enclosed toner cartridge. Once printed onto the paper, the notified polymer is fixed and the risk of exposure to the public via this route is considered low.

## **6. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance at 20°C and 101.3 kPa</b>	Pale yellow powder or granule
<b>Melting Point</b>	>65°C
<b>Density</b>	1180 kg/m <sup>3</sup> at 20°C
<b>Water Solubility</b>	Insoluble in water. Determined analytically by shake-flask method.
<b>Particle Size</b>	23.8% of the particles are <75 µm in diameter and 68.7% of the particles are <150 µm in diameter. The size distribution of the imported toner may differ from the notified polymer as produced.
<b>Degradation Products</b>	The notified polymer is considered to be stable under normal conditions of use and storage. Hazardous decomposition and polymerisation will not occur at room temperature.
<b>Loss of monomers, other reactants, additives impurities</b>	Once the polymer is bound to paper, no leaching is expected to occur.

## 7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted.

## 8. ECOTOXICOLOGICAL INVESTIGATIONS

No ecotoxicological data were submitted.

## 9. RISK ASSESSMENT

### 9.1. Environment

#### 9.1.1. Environment – risk characterisation

The notified polymer will interact with other components to form a stable polymer matrix and, once dry, is expected to be immobile and pose little risk to the environment. The notified polymer is not likely to present a hazard to the environment when it is stored, transported, used, recycled and disposed of in the proposed manner.

### 9.2. Human health

#### 9.2.1. Occupational health and safety – exposure assessment

Dermal and inhalation exposure of office workers to the notified polymer will potentially occur when replacing spent cartridges and clearing paper jams from the photocopier.

Dermal and inhalation exposure of maintenance workers to the notified polymer is possible during routine maintenance. Due to the probable fine nature of the toner, skin, eye and respiratory exposure should be avoided. The national exposure standard for nuisance dusts is 10 mg/m<sup>3</sup> TWA (NOHSC, 1995). Australia has no exposure standard for respirable dust, however, the ACGIH TLV of 3 mg/m<sup>3</sup> TWA is recommended (ACGIH, 2001). The predicted airborne concentration of toner dust in the vicinity of a photocopier is <0.1 mg/m<sup>3</sup> (EASE, 1997). Due to their frequent exposure to toners, maintenance personnel should wear cotton or disposable gloves. However, the design of the cartridges is such that exposure to the notified polymer should be low.

#### 9.2.2. Public health – exposure assessment

The notified polymer as a photocopier toner will not be available to the public. Members of the public may come into contact with paper printed with the notified polymer.

#### **9.2.3. Human health - effects assessment**

The notified polymer meets the PLC criteria and therefore low hazard is expected due to the lack of reactive groups and the inability of the polymer to penetrate biological membranes.

#### **9.2.4. Occupational health and safety – risk characterisation**

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999), workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

#### **9.2.5. Public health – risk characterisation**

The notified polymer will not be available to the public. Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is bound within a matrix and unlikely to be bioavailable.

### **10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS**

#### **10.1. Hazard classification**

Based on the available data the notified polymer is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999).

#### **10.2. Environmental risk assessment**

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

#### **10.3. Human health risk assessment**

##### **10.3.1. Occupational health and safety**

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

##### **10.3.2. Public health**

There is Negligible Concern to public health when used as a photocopier toner.

### **11. MATERIAL SAFETY DATA SHEET**

#### **11.1. Material Safety Data Sheet**

The MSDS of the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

#### **11.2. Label**

The labels for the products containing the notified polymer provided by the notifier were in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace*

*Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

## 12. 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 and office staff should wear cotton or disposable gloves and ensure adequate ventilation is present when removing spent 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

- Wastes containing the notified polymer should be sent to landfill for disposal in accordance with local jurisdiction waste management guidance.

#### Emergency procedures

- Spills/release of the notified polymer should be handled by sweeping, shovelling, or vacuum and placement into a sealed container for disposal.

### 12.1. 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 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 any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.

## 13. BIBLIOGRAPHY



ACGIH, (2001); The American Conference of Governmental Industrial Hygienists (ACGIH): Threshold Limit Values for Chemical Substances and Physical Agents and Biological Indices 2001; ACGIH Cincinnati, Ohio.

NOHSC (1994a) National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1994b) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1995) Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)] & [NOHSC:1003(1995)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1999) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

EASE for Windows Version 2.0, August (1997). *A system for the Estimation and Assessment of Substance Exposure (EASE)*. The Health and Safety Executive, UK.