File No: SAPLC/177

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Plasdic FXE-001M

This Self Assessment has been compiled by the applicant and adopted by NICNAS 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), administered by the Department of Health and the Department of the Environment, has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

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

August 2015

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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
SAPLC/177	DIC Australia Pty Ltd	Polymer in Plasdic FXE-001M	No	≤ 100 tonnes per annum	Component of inks

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 of 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.

Disposal

- Where reuse or recycling are not appropriate, dispose of the polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

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 inks, 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)SDSs of products containing the notified polymer were provided by the applicant. The accuracy of the information on the (M)SDSs remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
DIC Australia Pty Ltd (ABN: 12 000 079 550)
56 Cochranes Road
MOORABBIN VIC 3189

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 and use details.

2. IDENTITY OF POLYMER

Marketing Name(s)
Plasdic FXE-001M (product containing the notified polymer)

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

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	Light yellow solid
Melting Point	72-74 °C
Density	1200 -1400 kg/m^3 at 25 °C
Water Solubility	Insoluble (SDS data for the product Plasdic FXE-001M)
Dissociation Constant	The notified polymer contains potential anionic functionalities which are expected to be ionised in the environmental pH range (4-9). However, this is not considered to be a concern due to its limited water solubility.
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	10	50	50	100	100

Use
The notified polymer will be imported as a component of digital printer toner cartridge inks contained in sealed cartridges used for commercial printing. No reformulation or repackaging of the notified polymer will occur in Australia.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were available. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. 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

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE
The notified polymer will be imported as a component of toner products contained in sealed cartridges. No reformulation or repackaging of the notified polymer will occur in Australia.

Due to the packaging, any environmental release of the notified polymer from the toner cartridge during import, transport, storage or use is unlikely. Accidental release due to transport accidents is the mostly likely cause of environmental release, in such a case the individual cartridge design and capacity would limit release. Each cartridge is designed to prevent leakage and contains only 30-40 grams of the toner. Should any release occur, any spilt toner will be collected and sent to landfill.

Used cartridges may contain up to 2% toner and will be sent to landfill (estimated to be up to 600 kg per annum). Residues contained in empty cartridges are expected to remain within their cartridges, although release could occur from damage or deterioration of the cartridge while in the landfill. Alternatively the used empty toner cartridges will be collected and sent for recycling.

Papers printed with the toner (containing the notified polymer) may be sent directly to landfill or alternatively sent for recycling. During the recycling process, waste printed paper will be ‘repulped’ using a variety of alkaline dispersing and wetting agents, water emulsifiable organic solvents and bleaches. These agents enhance fibre separation, toner detachment from fibres, pulp brightness and the whiteness of the paper. Under a worst case scenario it will be assumed that 50% of the notified polymer will be washed into sewers. Assuming 0% of the notified polymer will be removed via absorption to sludge in the sewage treatment plant, the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated as 42.52 µg/L [PECriver = 192.31 kg notified polymer/day ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)]. The PEC is well below the EC50 for algae of the most toxic anionic polymers (EC50 > 1 mg/L). In sewage treatment plants, most of the notified polymer is expected to partition to sludge and sediments as it is an anionic polymer and has high molecular weight.

The notified polymer is expected to be stable under normal conditions. Due to the notified polymer’s very low water solubility it is not expected to be mobile in soils and is unlikely to enter leachates. Any release from disposal is expected to be widespread and diffuse. The notified polymer is not readily biodegradable, but due to its high molecular weight is not expected to bioaccumulate. Incineration of the notified polymer will result in water vapour and oxides of carbon.

ENVIRONMENTAL FATE
No significant release of the notified polymer to the water compartment is expected based on the reported use pattern. During accidental spills or leaks, the notified polymer is not expected to bioaccumulate in aquatic organisms due to its high molecular weight. Once the notified polymer, as a component of the ink, has been cured it is expected to be hydrolytically stable and not to be readily biodegradable. Due to the notified polymer's low water solubility

it is not expected to be mobile in soils and is unlikely to enter leachates. Any release from disposal is expected to be widespread and diffuse and hence unlikely to support bioaccumulation.

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. However, this is unlikely to apply to the notified polymer.

7.3. Environmental Risk Assessment

Based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.