

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

### POLYMER OF LOW CONCERN PUBLIC REPORT

#### Polymer in Basoplast PX 7305 X ap/Basoplast 8903 ap

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**

April 2012

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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/1037	Chemiplas Australia Pty Ltd	Polymer in Basoplast PX 7305 X ap/ Basoplast 8903 ap	No	≤ 1000 tonnes per annum	Component in the manufacture of paper

## 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 expected 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.

- 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.

### 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 of to landfill.

### Storage

- The following precautions should be taken by workers regarding storage of the notified polymer:
  - Store in a segregated and approved area.
  - Store in original container protected from direct sunlight in a dry, cool and well ventilated area, away from incompatible materials (oxidising substances, strong acids, strong bases).

## Emergency Procedures

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
- 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.
- (2) Under Section 64(2) of the Act; if
  - the function or use of the notified polymer has changed from a component in the manufacture of paper, 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 MSDS of the notified products containing the notified polymer were provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.

## ASSESSMENT DETAILS

### 1. APPLICANT AND NOTIFICATION DETAILS

#### Applicants

Chemiplas Australia Pty Ltd (ABN 29 003 056 808)  
Level 3, 112 Wellington Parade  
East Melbourne VIC 3002

#### 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 and import volume.

## 2. IDENTITY OF POLYMER

### Molecular Weight

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

### Reactive Functional Groups

The notified polymer contains only low concern functional groups.

## 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 to yellow / amber liquid*
Melting Point/Glass Transition Temp	0 °C *
Density	Approx. 1020 kg/m <sup>3</sup> at 20°C *
Water Solubility	Not determined. Expected to be dispersible in water based on experience in use.
Reactivity	Stable under normal environmental conditions. The notified polymer contains functional groups that are expected to hydrolyse very slowly in the environmental pH range (4-9).
Degradation Products	None under normal conditions of use

\* For imported product containing the notified polymer at ~20 % in aqueous solution.

## 5. INTRODUCTION AND USE INFORMATION

### Maximum Introduction Volume of Notified Polymer (100%) Over Next 5 Years

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Tonnes	100-1000	100-1000	100-1000	100-1000	100-1000

### Use

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia as an aqueous solution at a concentration of 20%. Products containing the notified polymer will not be reformulated in Australia. The notified polymer will be used as a sizing agent in the paper making industry and will comprise < 0.2% by weight in the finished paper.

## 6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed 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.

Although not considered in this risk assessment, NICNAS notes that the notified polymer contains residual monomers that are classified as hazardous according to the *Approved Criteria for Classifying*

*Hazardous Substances* [NOHSC: 1008 (2004)]. These are not present in the notified polymer as introduced above the cut off concentrations for classification.

### Public Health and Safety Risk Assessment

The public may be exposed during use of paper products containing the notified polymer at < 0.2%. However, given the assumed low hazard, the risk posed by exposure to the notified polymer is not considered unreasonable.

## 7. ENVIRONMENTAL RISK ASSESSMENT

### Hazard characterisation

Polymers without significant ionic functionality are generally of low concern to the environment. This is supported by environmental endpoints observed in testing conducted on an analogue of the notified polymer.

<i>Endpoint</i>	<i>Result</i>	<i>Assessment Conclusion</i>
Fish toxicity	LC50 > 100 mg/L	Not harmful
Daphnia	EC50 > 100 mg/L	Not harmful
Algal Toxicity	ErC50 > 100 mg/L	Not harmful
Inhibition of Bacterial Respiration	IC50 > 1000 mg/L	Not inhibitory to bacterial respiration

In this case, as three acute endpoints are available, an assessment factor of 100 is considered suitable, and the resultant Predicted No Effect Concentration (PNEC) is > 1 mg/L.

### Environmental Risk Assessment

Product containing the notified polymer is added into a starch solution which is applied to the surface of paperboard. Small quantities of the notified polymer may be released (up to 1.4% of total imported notified polymer) due to spills or leaks during transfer of the solution to the paper machine. The releases are expected to be absorbed into an inert material and be disposed of to landfill. The starch slurry is continually recycled and topped up with fresh starch as it is applied to the paperboard surface. The starch slurry is expected to enter an on-site waste water treatment system when the paper machine stops operation or is dumped due to quality issues. The starch slurry containing the notified polymer will then pass through the various water clarification stages of on-site waste water treatment plants for either reuse on the paper machine or for discharge according to State/Territory regulations. Small quantities of the notified polymer (up to 2.8%) are expected to remain as residues in empty intermediate bulk containers and bulk storage tanks. The polymer is expected to be recovered in waste sludge during washing of the containers and tanks and expected to be disposed of to landfill. The majority of the notified polymer is expected to be chemically bound to cellulose fibres in paper.

The majority of notified polymer is expected to be disposed of to landfill as a component of paper products and as sludge collected from paper recycling processes. Up to 50% of the notified polymer is anticipated to be released to the aquatic environment due to the recycling of paper products containing the notified polymer. During recycling processes, waste paper is repulped using a variety of chemical agents, which, amongst other things, enhance detachment of inks and coatings from the fibres. The notified polymer released from paper pulp during recycling may partition to the aqueous phase due to the expected dispersibility of the polymer.

The notified polymer is expected to be hydrolytically stable in the environmental pH range and is not expected to be readily biodegradable based on its chemical structure and high molecular weight. The notified polymer is not expected to cross biological membranes due to its high molecular weight and thus it is unlikely to bioaccumulate. The notified polymer is expected to be miscible in water, however due to its non-ionic nature, the majority of notified polymer is likely to dissipate to sediment via adsorption onto soil/sediment particles in the aquatic environment. It is expected to disperse and

eventually degrade through biotic and abiotic processes to form water and oxides of carbon and nitrogen.

It is assumed that 50% of the notified polymer will be washed into sewers due to paper recycling over 260 days per annum into the total Australian effluent volume. This corresponds to release from recycling processes only on working days, based on a 5 day work week. Assuming 90% of the notified polymer will be removed via absorption to sludge in sewage treatment plants (STPs) (Boethling & Nabholz, 1997), the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated as 42.52 µg/L [ $PEC_{river} = 1,923.08 \text{ kg notified polymer/day} \div (200 \text{ L/person/day} \times 22.613 \text{ million people}) \times 10\%$  (due to 90% removal in STPs)]. The PEC is well below the PNEC estimated for the notified polymer. The notified polymer is therefore not expected to pose an unacceptable risk to the environment based on its assessed use pattern.

### **Bibliography**

Boethling RS & Nabholz JV (1997) Environmental Assessment of Polymers under the U.S. Toxic Substances Control Act. In: Hamilton JD & Sutcliffe R, ed. Ecological Assessment of Polymers; Strategies for product stewardship and regulatory programs. New York, Van Nostrand Reinhold, pp 187–234.