

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

**POLYMER OF LOW CONCERN PUBLIC REPORT**

**Polyurethane Resin PUD-003**

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.

This Public Report is 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 2016

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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/191	DIC Australia Pty Ltd	Polyurethane Resin PUD-003	No	≤ 30 tonnes per annum	Component of industrial printing 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.

- 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 notified 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 industrial printing 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)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

DIC Australia Pty Ltd (ABN: 12 000 079 550)  
323 Chisholm Road  
AUBURN NSW 2144

#### 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 and residual monomers/impurities.

### 2. IDENTITY OF POLYMER

#### Marketing Name(s)

Polyurethane Resin PUD-003  
HYDRAN Exp. WLS-210k (contains 40% notified polymer in water)

#### 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	Colourless solid
Melting Point/Glass Transition Temp	Not determined; The notified polymer is supplied as a dispersion in water.
Density	Not determined
Water Solubility	30 g/L at 20 °C
Dissociation Constant	Not determined. The notified polymer contains anionic functionality which is expected to be ionised in the environmental pH range (4 - 9).
Particle Size	Not determined; The notified polymer is supplied as a dispersion in water.
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	4.5	10	15	20	30

#### Mode of Introduction and Use

The notified polymer will not be manufactured in Australia. It will be imported into Australia at 40% concentration in water for reformulation into water-based flexographic inks. The finished inks containing the notified polymer will be used under industrial settings only and will be applied to paper and plastic packaging films. Some uses will be for the exterior of food packaging.

## 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, the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia. These are not present in the notified polymer as introduced above the cut off concentrations for classification according to the provided MSDS.

As some uses will be for the exterior of food packaging, it is possible that indirect food contact may occur. The public report of this assessment will be forwarded to Food Standards Australia New Zealand (FSANZ) for their information.

## 7. ENVIRONMENTAL RISK ASSESSMENT

### 7.1. Exposure Assessment

#### ENVIRONMENTAL RELEASE

The notified polymer will not be manufactured in Australia. However, it will be reformulated in Australia as a component of inks for paper, plastic and the exterior of food packaging, applied by flexographic printing. Release to the environment during shipping, transport and warehousing will only occur through accidental spills or leaks to the metal packaging containers. Blending activities are expected to occur in a closed system and release to atmosphere is expected to be negligible. During blending activities approximately 1% of the notified polymer is expected to remain as residue in the empty containers. A further 1% may be lost as result of spills and equipment leaks. Material lost due to spills and leaks will be collected and disposed of in accordance with local regulations.

Once the ink has been printed and dried, the polymer will be locked into the ink matrix and it is likely to share the fate of the substrate to which it has been applied. Majority of the substrate to which the notified polymer has been applied is expected to be disposed of to landfill or recycled.

Residues remaining in the import containers (1-2%) will be disposed through the standard recycling practices for metal containers of the printing industry.

#### 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 organism due to its high water solubility and high molecular weight.

Once the notified polymer as a component of the ink has been dried it is expected to be hydrolytically stable and not expected to be readily biodegradable. The dried ink containing the notified polymer will be part of the flexible plastic waste stream. Papers printed with the ink (containing the notified polymer) may be sent directly to landfill or alternatively sent for recycling. Printing ink used in packaging bags, shopping bags and food wrapping is expected to be sent to land fill and some proportion is expected to be recycled.

#### **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.