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January 2007

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

**FULL PUBLIC REPORT**

**Polymer in Urotuf L522-MPW-40**

This Assessment has been compiled 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) is administered by the 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 Department of the Environment and Heritage.

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**Director  
NICNAS**

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## **FULL PUBLIC REPORT**

### **Polymer in Urotuf L522-MPW-40**

#### **1. APPLICANT AND NOTIFICATION DETAILS**

**APPLICANT(S)**

DIC International (Australia) Pty Ltd (ABN 17 003 441 067)  
30-32 Kilkenny Court  
Dandenong South VIC 3175

**NOTIFICATION CATEGORY**

Polymer of Low Concern

**EXEMPT INFORMATION (SECTION 75 OF THE ACT)**

Data items and details claimed exempt from publication:

Chemical Name, Other Names, CAS Number, Molecular and Structural Formula, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details, Import Volume, and Site of Manufacture/Reformulation

**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**

Canada (1996)

#### **2. IDENTITY OF CHEMICAL**

**MARKETING NAME(S)**

Polymer in Urotuf L522-MPW-40

% of Low MW Species < 1000	< 5
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% of Low MW Species < 500	< 2
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**MOLECULAR WEIGHT (MW)**

Number Average Molecular Weight (Mn)	>10000
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**REACTIVE FUNCTIONAL GROUPS**

The notified polymer contains a high concern functional group but the FGEW is > 5000.

#### **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

<b>Appearance at 20°C and 101.3 kPa</b>	Hazy, opaque liquid as a solution in water and cosolvent.
<b>Melting Point/Glass Transition Temp</b>	Not applicable. The notified polymer is not isolated from solution.
<b>Density</b>	1,000 – 1,100 kg/m <sup>3</sup> at 25°C as the supplied polymer solution.
<b>Water Solubility</b>	Dispersible, but not truly soluble, given the lack of hydrophilic groups.
<b>Dissociation Constant</b>	The notified polymer has an anionic group expected to have typical acidity. It also has a few potential cationic amine groups present.
<b>Reactivity</b>	Stable under normal environmental conditions
<b>Degradation Products</b>	None under normal conditions of use
<b>Comment</b>	The notified polymer could theoretically hydrolyse, however this is unlikely in the environmental pH range 4-9.

#### 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>	1-5	1-5	5-10	5-10	5-10

USE AND MODE OF INTRODUCTION AND DISPOSAL

##### Mode of Introduction

The notified polymer will not be manufactured in Australia. It will be imported by sea in the form of a solution (40% (w/w)) in 200 litre closed head drums. Upon arrival at ports in Sydney, Brisbane and/or Melbourne the notified polymer will be transported by road to the notifier's warehouse where it will be stored under cover until such time that it is transported to the paint manufacturer(s) site(s) for reformulation.

The components of the imported product are:

Notified polymer	40% (w/w)
Triethylamine (CAS No. 121-44-8)	1-5%
N-Methyl-2-pyrrolidone (CAS No. 872-50-4)	5.0%
Water	50-55%

##### Reformulation/manufacture processes

At the paint manufacturer, the product is formulated into pigmented paint for top coat flooring applications. These paints will contain 20-30% (w/w) of the notified polymer.

During formulation, the notified polymer will be manually weighed and then transferred for high-speed dispersing in a mixing tank. Once blended with other ingredients and converted into the finished paint product, it will be decanted into 4, 10 or 20 litre steel or plastic pails for sale to industrial customers.

The paint products containing the notified polymer will be applied by contractors using brush and roller painting methods.

**Use**

The notified polymer will be used as a component, at a concentration of 20-30% (w/w), of industrial paints for interior flooring applications.

**6. HUMAN HEALTH IMPLICATIONS****6.1. Exposure Assessment****OCCUPATIONAL EXPOSURE**

Transport and warehousing workers may come into dermal and ocular contact with the notified polymer through accidental leaks and spillages of the drums and containers.

During formulation, workers will manually weigh and transfer the polymer solution to the mixing vessels. Workers will wear impermeable gloves, eye protection and coveralls. Exposure from the notified polymer to these workers can occur by either dermal or ocular routes, however significant exposure will be limited due to the workplace practices and personal protective equipment used.

Throughout end use, contract painters will mainly come into contact with the notified polymer through dermal, and ocular routes.

After application and once dried, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable for exposure.

**PUBLIC EXPOSURE**

The notified polymer will not be sold to the public nor will paints containing it.

The public may come into contact with floors in public places coated with the notified polymer. However, after application and once dried, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable for exposure.

**6.2. Toxicological Hazard Characterisation**

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be 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 as well as the engineering controls and personal protective equipment used by workers.

**PUBLIC HEALTH**

Neither the notified polymer, nor paints containing it, will be sold to the public and will only be applied by industrial contractors. Once the polymer is applied and cured it will form an inert matrix, and hence will not be bioavailable. Risk to the public is considered low.

## **7. ENVIRONMENTAL IMPLICATIONS**

### **7.1. Exposure Assessment**

#### **ENVIRONMENTAL RELEASE**

Environmental release during importation, transport and storage is expected to be minimal, due to individual container sizes and bunding. Environmental impact from such accidents will be minimised by established MSDS spill response procedures including containment, collection and disposal procedures.

It is estimated that annually approximately 3% of the import volume (i.e. up to 300 kg annually) will be released due to spills, import container residue and process equipment cleaning during paint formulation. Spills will be contained by the bunding, collected with inert absorbent material (eg sand) and placed in a sealable container ready for disposal. The process equipment, blending tanks and mixers will be cleaned with water with the resultant wash-water being collected and reused, if possible, otherwise it will be treated onsite to separate solids. The resultant solids will be sent to landfill.

Release of the notified polymer as a result of its use is expected to include spills, container residue and cleaning of brushes and rollers, and would release up to 5% of the import volume annually (i.e. up to 500 kg/year). The paint will only be applied by industrial contractors. Application brushes and rollers will be cleaned with an appropriate solvent. Generally wastes generated during application will be allowed to dry and the solids then disposed of to landfill. However, some of the cleaning effluent may be disposed of via the sewer. Spilt material will be collected and sent to landfill. The residue in empty containers will be allowed to dry and then the containers will be disposed of to landfill.

Once the paint is applied and dried the notified polymer will be part of an inert matrix and will not be released.

#### **ENVIRONMENTAL FATE**

The majority of the notified polymer will crosslink with other paint components to form a high molecular weight film and become immobilised. As part of this surface coating, the notified polymer will share the same fate as the painted article. In landfill the notified polymer will be immobile (due to its low water solubility and due to its potential charged nature) and will degrade via abiotic and biotic means over time.

Any notified polymer in the sewer (ie due to incorrect cleaning effluent disposal) will become associated with sludge or sediments. The notified polymer is expected to be hydrolytically stable in water and not be readily biodegradable but will degrade by abiotic and biotic means over time. Due to its molecular weight, the notified polymer is unlikely to cross biological membranes and cause toxicity or bioaccumulate.

### **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 overchelation 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. The toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups. Polyanionic polymers with NAMW >1000 are generally of low concern to the aquatic environment. Therefore, the aquatic toxicity may be expected to be low.

The polymer is also potentially cationic and therefore toxic. However, in most cases the anionic form would predominate, except at low pH.

### **7.3. Environmental Risk Assessment**

Due to its use pattern across Australia, release of the notified polymer will be diffuse. If released into water bodies or the STP it will become associated with sediment or sludge and be immobile, as is the case if disposed of to landfill. Adverse ecotoxicological effects are unlikely due to these factors.

## 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 Negligible Concern to public health when used in the proposed manner.

### 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.

#### Environment

- The following control measures should be implemented by paint formulator and end users to minimise environmental exposure during use of the notified polymer:
  - Do not allow material or contaminated packaging to enter drains, sewers or water courses.

#### Disposal

- Wastes generated during paint formulation and industrial application should be disposed of through a licensed waste contractor or to landfill after pre-treatment on-site.

#### Emergency procedures

- Spills/release of the notified polymer should be handled by absorbing onto an inert material, scooping up and placing in marked containers for disposal.

### 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.