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June 2006

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

**FULL PUBLIC REPORT**

**Polymer in Kelsol 3964-B2G-70**

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 Ageing and the Department of the Environment and Heritage has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

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**Director  
NICNAS**

## **TABLE OF CONTENTS**

FULL PUBLIC REPORT .....	3
1. APPLICANT AND NOTIFICATION DETAILS .....	3
2. IDENTITY OF CHEMICAL .....	3
3. PLC CRITERIA JUSTIFICATION .....	3
4. PHYSICAL AND CHEMICAL PROPERTIES .....	4
5. INTRODUCTION AND USE INFORMATION .....	4
6. HUMAN HEALTH IMPLICATIONS .....	5
6.1. Exposure Assessment .....	5
6.2. Toxicological Hazard Characterisation .....	5
6.3. Human Health Risk Assessment .....	5
7. ENVIRONMENTAL IMPLICATIONS .....	6
7.1. Exposure Assessment .....	6
7.2. Environmental Hazard Characterisation .....	6
7.3. Environmental Risk Assessment .....	6
8. CONCLUSIONS .....	7
8.1. Level of Concern for Occupational Health and Safety .....	7
8.2. Level of Concern for Public Health .....	7
8.3. Level of Concern for the Environment .....	7
9. MATERIAL SAFETY DATA SHEET .....	7
9.1. Material Safety Data Sheet .....	7
10. RECOMMENDATIONS .....	7
10.1. Secondary Notification .....	8

**FULL PUBLIC REPORT****Polymer in Kelsol 3964-B2G-70****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

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

## NOTIFICATION CATEGORY

Self Assessment: 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 Formulae, Molecular Weight,  
Polymer Constituents, Residual Monomers/Impurities, Use Details and Manufacture/Import Volume

## PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

## NOTIFICATION IN OTHER COUNTRIES

Canada – NSN # 1525 – Schedule VI – 1995

USA – PMN # P-94-0909

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Polymer in Kelsol 3964-B2G-70

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) > 1000

## REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

**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>Melting Point/Glass Transition Temp</b>	Not applicable. The notified polymer is not isolated from solution.
<b>Density</b>	1,048 – 1,072 kg/m <sup>3</sup> at 25°C as the supplied polymer solution.
<b>Water Solubility</b>	The polymer is moderately soluble in water due to it containing a moderate level of hydrophilic groups.
<b>Dissociation Constant</b>	The notified polymer contains oil modifiers that will crosslink further within 24 hours of exposure to the atmosphere and render the polymer insoluble in water.
<b>Hydrolysis as a Function of pH</b>	The notified polymer has a low level of acid groups and will show typical acidity. Although the polymer contains hydrolysable groups, it is only likely to undergo hydrolysis at extremes of the pH range.
<b>Reactivity</b>	The notified polymer will cross-link further via oxidation of the oil modifiers when exposed to the atmosphere during application.
<b>Degradation Products</b>	None under normal conditions of use

#### 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>	10-30	10-30	10-30	30-100	30-100

##### USE AND MODE OF INTRODUCTION AND DISPOSAL

###### Mode of Introduction

The notified polymer will not be manufactured in Australia. The notified polymer is contained within the product Kelsol 3964-B2G-70 (70% w/w notified polymer), and will be imported by sea in 200kg steel drums. Upon arrival at ports in Sydney 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 for reformulation. Currently only one paint manufacturer in Melbourne has been identified but it is expected that up to 5 paint manufacturers will use the notified polymer by year 5.

The Kelsol 3964-B2G-70 product consists of the following ingredients:

Notified polymer	70%
2-Butoxy ethanol	15%
2-Butanol	15%

###### Reformulation/manufacture processes

At the paint manufacturer, the product is formulated into pigmented paint, for either top coat or primer application. These paints will contain 10-20% of the notified polymer. During formulation, the notified polymer will be manually weighed and then poured directly into a high-speed disperser mixing tank with the aid of a drum lifting machine. Once blended with other ingredients and converted into the finished paint product, it will be decanted into 4, 20 and 200 litre steel drums for sale to industrial customers.

**Use**

The notified polymer will be used as a component, at a concentration of <20%, of industrial OEM paints for metal and wood articles including machinery parts, construction implements, garden and farm implements, scaffolding and steel structures.

Paints will be applied by brush, and standard and automated spray painting methods. Spray painting will be conducted in spray booths meeting applicable Australian Standards.

**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, painters will come into contact with the notified polymer through dermal, inhalation and ocular routes. The risk of exposure during spray application, however, will be minimal as application is done in ventilated spray booths with workers using protective equipment.

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**

Neither the notified polymer, nor paints containing it, will be sold to the public. The public may come into contact with metal and wooden articles 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**

The notified polymer will not be sold to the public and will only be used by industrial painters. 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**

Release to the environment during shipping, transport and warehousing will only occur through accidental spills or leaks of the drums or steel packaged containers.

During formulation and packaging, spills are expected to be minimal. When spills occur, they will be contained by bunding, collected with absorbent material and sent to a licensed off site waste disposal centre. Empty drums from import will be sent to drum reconditioners.

Cleaning of paint manufacturing equipment will be performed by flushing with cleaning solvent. Cleaning solvent and paint residues will be transferred to the on site waste paint treatment facility where solids will be separated and later disposed of to a licensed waste landfill site.

The total amount of waste polymer during paint formulation due to spills, drum residues and cleaning is expected to be approximately 2 % of the import volume.

Paints containing the notified polymer will be applied by brush, robotic and conventional spray techniques. By year 5, paint containing the notified polymer may be applied to a wide variety of OEM machinery parts and implements. As an average between robotic and conventional spray techniques, it is estimated that up to 25% of paint may be lost to overspray. Overspray will be collected in baffles and filters and allowed to dry and cure. Solids paint residues will be collected and disposed of to a licensed waste landfill site.

Under normal use procedures, losses of the notified polymer through overspray, and cleaning of plant equipment as well as losses from residues in containers have been estimated to be a maximum of 30 %, which equates to a maximum of 30 tonnes per annum. Wastes from application will be cured and solidified and disposed of to landfill.

The remainder of the notified polymer will be bound in the paint matrix and not be available for direct release to the environment. Disposal of the metal and wooden articles may be through landfill or recycling, and the fate of the paint will be related to that of the painted article.

#### **ENVIRONMENTAL FATE**

The notified polymer is expected to be hydrolytically stable and to not be readily biodegradable.

The notified polymer contains oil modifiers that will crosslink further within 24 hours of exposure to the atmosphere and render the polymer insoluble in water. Therefore, once fully cured, it is expected that the notified polymer in landfill will associate with sediments and organic phases of soil and sediments, and slowly degrade to simple carbon compounds. During metal recycling, the polymer will be destroyed, releasing water and oxides of carbon.

### **7.2. Environmental Hazard Characterisation**

No ecotoxicological data were submitted. The notified polymer may potentially become anionic under environmental conditions (pH 4 to 9) since it contains some acidic functionality. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrients elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of polymer backbones. This is unlikely to apply to the notified polymer. However, the toxicity to algae is likely to be reduced due to the presence of calcium ions, which would bind to the functional groups.

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

No aquatic exposure is anticipated during reformulation and end use of the notified polymer. It is envisaged that 2% waste would be generated from the reformulation process. These wastes would be cured and solidified before being collected by licensed waste contractors and be disposed of to landfill or incinerated. It is expected that practically all of the waste generated from end users (30 % as overspray) will be disposed of in approved landfills as inert solid waste. In landfill and once cured, the solid wastes will not be mobile and will degrade slowly by biotic and abiotic processes and not pose a significant risk to the environment.

## 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

- Personal protective equipment required during formulation are:
  - Eye protection (safety glasses or goggles)
  - Impermeable gloves
  - Industrial clothing and footwear

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Use of spray paints containing the notified chemical should be in accordance with the NOHSC National Guidance Material for Spray Painting.
- 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 the notifier to minimise environmental exposure during formulation of the notified polymer:
  - Bunding
- The following control measures should be implemented by end users (spray painters) to minimise environmental exposure during use of the notified polymer:
  - Exhaust ventilation with filter

#### Disposal

- The notified polymer should be disposed of to landfill or incinerated.
- Empty containers should be sent to local recycling or waste disposal facilities.

#### Emergency procedures

- The imported product, Kelsol 3964-B2G-70, is a Dangerous Good and classified as Class 3, flammable. In case of a spill all sources of ignition should be eliminated. Due care should be taken to avoid ignition and possible explosion.
- Spills/release of the notified polymer should be handled by absorbing with sand or other inert absorbent material and put into suitable container for disposal. Contaminated containers can be re-used after cleaning.

#### 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.