File No SAPLC/36

May 2006

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in Kelsol 3902-BG4-75

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

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1. APPLICANT AND NOTIFICATION DETAILS

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

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, Manufacture/Import Volume, and Site of Manufacture/Reformulation

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)
None

NOTIFICATION IN OTHER COUNTRIES
Unknown

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Kelsol 3902-BG4-75 (75% notified polymer in 1-butanol and 2-butoxyethanol)

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

Criterion	*Criterion met (yes/no/not applicable)*
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	Clear amber liquid
Melting Point/Glass Transition Temp	Not applicable. The notified polymer is not isolated from solution.
Density	1,012 – 1,036 kg/m^3 at 25°C as the supplied polymer solution.
Water Solubility	Expected to be low due to predominance of hydrophobic groups.
Dissociation Constant	The notified polymer has a low level of acid groups and will show typical acidity.
Reactivity	The notified polymer will cross-link further via oxidation of the oil modifiers when exposed to the atmosphere during application.
Degradation Products	None under normal conditions of use

Comments
In normal use and handling, the polymer is not isolated from formulation adjuvants.

The water solubility of the notified polymer is expected to be low due to predominance of hydrophobic groups. The notified polymer contains oil modifiers that will crosslink further within 24 hours of exposure to the atmosphere and render the polymer totally insoluble in water.

5. INTRODUCTION AND USE INFORMATION

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	1-3	3-10	3-10	10-20	10-20

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 (75% w/w) in 200 litre closed head 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 components of the imported product are:

Notified polymer		75% (w/w)
1-Butanol	(CAS No. 71-36-3)	12.5%
2-Butoxyethanol	(CAS No. 111-76-2)	12.5%

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.

The paint products containing the notified polymer will be applied by standard and automated spray painting methods to metal parts in a spray booth meeting applicable Australian Standards.

Use
The notified polymer will be used as a component, at a concentration of < 20%, of industrial paints for

automotive and other machinery parts. Initially, these paints will only be applied via robotic spray techniques as a primer coat for OEM metal automotive parts. By year 5 it is expected that other machinery manufacturers will use paints containing the notified polymer for other OEM machinery parts.

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, spray painters will come into contact with the notified polymer through dermal, inhalation and ocular routes. The risk of exposure, however, will be minimal as application is done in a ventilated spray booth 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. Although unlikely, the public may come into contact with metal parts 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 spray equipment operators. 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 waster 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.

Initially, paints containing the notified polymer will only be applied by robotic spray techniques where it is estimated that 15% of paint will be lost to overspray. By year 5, paint containing the notified polymer may be applied to other OEM machinery parts and some may be applied by conventional spray painting techniques in typical spray painting booths. It is estimated that up to 50% of paint may be lost to overspray via conventional spray painting techniques. In both cases, 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 6 tonnes per annum. Wastes from application will be cured, 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 parts may be through landfill or recycling, and the fate of the paint will be related to that of the metal part.

ENVIRONMENTAL FATE

The notified polymer is expected to be hydrolytically stable and to not be readily biodegradable. Due to its hydrophobic nature, 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 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, 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

- 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.

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

- 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 3902-BG4-75, 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.
- The notified polymer should not be allowed to enter drains or waterways.

Storage

- If products and mixtures containing the notified polymer are classified dangerous goods, dangerous goods storage requirements may apply.

Transport and Packaging

- If products and mixtures containing the notified polymer are classified dangerous goods, dangerous goods transport and packaging requirements may apply.

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.