File No PLC/939

October 2010

# NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

## FULL PUBLIC REPORT

## Polymer 3 in Electroshield 21 resin

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, Water, Heritage and the Arts.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth St, SURRY HILLS NSW 2010.

This Full 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**

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This notification has been conducted under the cooperative arrangement with the Office of Pollution Prevention and Toxics (OPPT), of the United States Environmental Protection Agency (US EPA). Information pertaining to the assessment of the notified polymer as conducted by the US EPA was provided to NICNAS, and where appropriate, has been used in this assessment report. The other elements of the risk assessment and recommendations on safe use of the notified polymer were carried out by NICNAS.

## Polymer 3 in Electroshield 21 resin

### 1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Dupont (Australia) Ltd
7 Eden Park Drive
Macquarie Park NSW 2113

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, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details, Import Volume, and Site of Use/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
USA, Canada

### 2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Electroshield 21 resin (product containing the notified polymer at <5% concentration)

CAS NUMBER
Not assigned

MOLECULAR WEIGHT (MW)
Number Average Molecular Weight (Mn) > 1,000 Da

REACTIVE FUNCTIONAL GROUPS
The notified polymer contains only low concern functional groups.

### 3. PLC CRITERIA JUSTIFICATION

| *Criterion* | *Criterion met* |
|---|---|
| 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 to yellow semi opaque solid that is routinely not isolated from solution. Imported as light white solution. |
| Melting Point/Glass Transition Temp | Estimated to be 100-200°C. |
| Density | 1115 kg/m$^3$ at 20ºC |
| Water Solubility | 0.5-1.4 mg/L at pH 2, 20ºC; 0.9-23 mg/L at pH 9, 20ºC; and 1.4-4.6 mg/L at pH 7, 37ºC<br>Method based on OECD 120 Solution/Extraction Behaviour of Polymers in Water.<br>The results indicated that the notified polymer is not readily dispersible in the environmental pH range of 4-9, which is consistent with its predominantly hydrophobic structure. |
| Partition Coefficient (n-octanol/water) | Log Pow >3.6 at 40°C<br>OECD TG 117 Partition Coefficient (n-octanol/water) HPLC Method.<br>The results indicated that the notified polymer will preferentially partition to octanol from water, which is consistent with its predominantly hydrophobic structure. |
| Dissociation Constant | Not determined. The notified polymer does not contain any dissociable functional groups. |
| Particle Size | Notified polymer is not isolated from solution. |
| Reactivity | Stable under normal environmental and usage 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 | <10 | <10 | <10 | <10 | <10 |

**Use**

After arriving at the end user site, the product containing notified polymer (<5%) will be transferred to a holding tank and pumped into an electrodeposition coating (e-coat) bath along with other components. The final concentration of the notified polymer in the e-coat bath will be < 5%. Automotive vehicle bodies will be dipped into the e-coat bath, rinsed and placed into a drying oven. After drying, the vehicle bodies will subsequently be covered with several layers of pigment coating.

**Mode of Introduction and Disposal**

The notified polymer will not be manufactured in Australia and will be imported in 1040 L bulk containers as a component (<5%) of the finished product (undercoat) for use in the vehicle factory settings. The solution will then be pumped to a 20 tonne steel road tanker and transported to the end user site. The notified polymer may also be imported as a neat technical resin solution (<85%) for remedial dosing. The neat technical solution will be in the minority of imports.

## 6. HUMAN HEALTH IMPLICATIONS

**Hazard Characterisation**
No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

**Occupational Health and Safety Risk Assessment**
Dermal and ocular exposure may occur during the e-coating, cleaning and quality control processes involving the notified polymer. However, exposure to significant amounts of the notified polymer is limited because of the fully automated processes, the engineering controls and personal protective equipment worn by workers.

Although some exposure to the notified polymer could occur to workers, the notified polymer is not considered to pose an unacceptable risk to the health of workers due to the assumed low hazard of the notified polymer.

**Public Health Risk Assessment**
The notified polymer is intended only for use in industry and will not be available to the public; therefore direct public exposure to the notified polymer is not expected.

However, members of the public may make dermal contact with finished car surfaces coated with the notified polymer. The notified polymer, in this case, will not come in contact with the public as it will be covered by a further undercoat and a minimum of 3 topcoats. Furthermore, the notified polymer will also be heat treated to create a cross-linked structure and leaving no residual activity and will be unavailable for exposure. Therefore, the risk to public health is not considered unacceptable, based on the anticipated low hazard of the notified polymer and expected minimal exposure.

## 7. ENVIRONMENTAL IMPLICATIONS

**Hazard Characterisation**
No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

**Environmental Risk Assessment**
The majority of the notified polymer will be irreversibly cross-linked into the inert polymer matrix used to undercoat automotive vehicle components during original equipment manufacture. The notified polymer will share the fate of the coated automotive parts, and will eventually be disposed of to landfill or sent to metal reclamation facilities. In landfill, the notified polymer is not expected to be bioavailable or leach, due to its high molecular weight and cross-linked structure, and will undergo slow biotic or abiotic degradation processes. Waste water containing residues of the notified polymer will be treated at on site waste water treatment plants (WWTP). Only a small fraction of the annual imported volume of the notified polymer is likely to be released to the sewer as residues not captured by the WWTP. In sewage treatment plants (STP), the notified polymer is expected to be removed by up to 90% through adsorption to sludge during STP processes. Sludge containing the notified polymer is likely to be collected for disposal to landfill or may be used for soil remediation. The notified polymer is expected to degrade, in soil or by thermal decomposition during metal reclamation processes, to form water and oxides of carbon and nitrogen.

## 8. CONCLUSIONS AND RECOMMENDATIONS

**Human health risk assessment**
Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

**Environmental risk assessment**
Based on the reported use pattern, the notified polymer is not expected to pose a risk to the environment.

**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.

- 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.

Disposal

- The notified polymer should be disposed of to landfill.

Emergency procedures

- Spills or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

**Regulatory Obligations**

*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 automotive vehicle coating, or is likely to change significantly;
  - the amount of notified polymer being introduced has increased more than 10 tonnes, 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 chemical 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 polymer and product containing the notified polymer provided by the notifier were reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.