

File No PLC/893

February 2010

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

**FULL PUBLIC REPORT**

**Polymer in Zelan 338**

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 334-336 Illawarra Road, Marrickville NSW 2204.

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**

## **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 .....	3
5. INTRODUCTION AND USE INFORMATION .....	4
6. HUMAN HEALTH IMPLICATIONS .....	4
7. ENVIRONMENTAL IMPLICATIONS .....	4
8. CONCLUSIONS AND RECOMMENDATIONS .....	5

**FULL PUBLIC REPORT****Polymer in Zelan 338****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

DuPont (Australia) Ltd (ABN 59 000 716 469)  
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, CAS number, Other names, Molecular formula, Structural formula, Polymer constituents, Residual monomers, Use details.

## 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 (1997)

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Zelan 338 (30% notified polymer)

## 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*

Molecular Weight Requirements  
Functional Group Equivalent Weight (FGEW) Requirements  
Low Charge Density  
Approved Elements Only  
Stable Under Normal Conditions of Use  
Not Water Absorbing  
Not a Hazard Substance or Dangerous Good

*Criterion met*

Yes  
Yes  
Yes  
Yes  
Yes  
Yes  
Yes

The notified polymer meets the PLC criteria.

**4. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance at 20°C and 101.3 kPa:	White solid
Glass Transition Temp	155°C for the precursor to the notified polymer.
Density	1195 kg/m <sup>3</sup> at 25°C for the precursor to the notified polymer. 1080 kg/m <sup>3</sup> at 25°C for the product Zelan 338.
Water Solubility	0.2 – 1.2 g/L at pH 2 as measured according to OECD TG120, increasing to > 10 g/L at pH 7 and 9.
Dissociation Constant	Expected to be fully dissociated within the environmental pH range of 4-9.
Particle Size	Imported in solution
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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	< 10	< 10	< 10	< 10	< 10

#### Use

The notified polymer is a component of stain and soil resistant coatings, which will be applied to textiles, including carpets. The coatings containing the notified polymer will only be sold to and used by textile manufacturers and will not be sold to the public.

After dilution of the imported product (to concentrations of < 3%), the coatings containing the notified polymer will be applied to the textile substrate by passing through a mechanised applicator that requires minimal human intervention. Once applied the coating will be dried using low-temperature, high-volume air blowers fixing the notified polymer to the textile substrate.

#### Mode of Introduction and Disposal

The notified polymer will not be manufactured within Australia.

The notified polymer will be imported as a component of the product Zelan 338 at a concentration of 30%.

## 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 potentially occur during certain processes involving the notified polymer. However, exposure to significant amounts of the notified polymer is limited because of the automated processes, and the engineering controls and personal protective equipment worn by workers.

Overall, the OHS risk presented by the notified polymer is not considered to be unacceptable, based on the minimal exposure to workers and the assumed low hazard of the polymer.

### Public Health Risk Assessment

The notified polymer will not be sold to the public. There is potential for extensive public exposure (mainly dermal) to textiles and carpets that have been coated with the notified polymer (up to 3% concentration). However, it will be adhered to the fibres of the textile or carpet and therefore exposure to the notified polymer is expected to be negligible. Over time, the notified polymer may wear off the textile, though this is expected to be a gradual process and thus exposure of the public by this route is expected to be minimal.

Overall, the risk to the public presented by the notified polymer is not considered to be unacceptable, based on the minimal exposure of the public and the assumed low hazard of the notified polymer.

## 7. ENVIRONMENTAL IMPLICATIONS

**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 does not 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.

**Environmental Risk Assessment**

The notified polymer (diluted in water) will be applied to carpet and other textiles by a combination of enclosed spray and trough dipping systems. After application, the notified polymer is effectively “fixed” to the textile fibres by a high volume, low temperature drying process. It is expected that <2% of the annual introduction volume of notified polymer may be released from the application facility, predominantly from equipment cleaning and maintenance operations. The spent spray/dipping solution containing the notified polymer is expected to be sent to the on-site treatment facility prior to being disposed to sewer as trade waste. The notified polymer is highly soluble in the environmental pH range of 4–9, and normal operations in sewage treatment plants may only remove up to 50% of the polymer from influents. The notified polymer that is discharged from sewage treatment plants (at low concentrations) is not expected to bioaccumulate based on its high molecular weight and is also unlikely to have toxic effects on aquatic biota. The notified polymer is expected to ultimately degrade in aquatic environments, primarily by abiotic processes.

It is estimated by the notifier that ~25% of the applied notified polymer may be physically abraded from treated carpet or textile. Of this, the notifier estimates that 60-80% will be collected by routine vacuuming for disposal to landfill as solid waste. The remaining 20-40% of the abraded fraction (10% of the overall import quantity) is expected to be collected by steam cleaning and water/shampoo cleaning with disposal to sewer, with expected partial removal within STPs for disposal to landfill. The remaining quantity of notified polymer (~75%) is expected to share the fate of the carpet or textiles to which it has been applied. It is expected that it will ultimately be disposed of to landfill. In landfill the notified polymer is expected to ultimately degrade to water, oxides of carbon, and inorganic salts.

The limited aquatic releases of the notified polymer that are expected to occur from its use on carpets and the presumed low ecotoxicological hazard together indicate a minimal risk to the environment.

**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 considered 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 and/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 stain and soil resistant coatings for textiles, 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 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 product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.