

File No PLC/452

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

**FULL PUBLIC REPORT**

**Polymer in Rheolate 450**

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  
Chemicals Notification and Assessment**

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**FULL PUBLIC REPORT****Polymer in Rheolate 450****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

International Sales and Marketing Pty Ltd (ABN 36 467 259 314)  
262 Highett Road  
HIGHETT VIC 3190

## NOTIFICATION CATEGORY

Synthetic 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 formula
- Structural formula
- Polymer constituents
- Means of identification

## 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 (2000)

**2. IDENTITY OF CHEMICAL**

## OTHER NAME(S)

EA 2751A

## MARKETING NAME(S)

Polymer in Rheolate 450

**3. COMPOSITION**

## PLC CRITERIA JUSTIFICATION

Functional Group	Category	Equivalent Weight (FGEW)
Carboxyl	Low	N/A
Unconjugated nitrile	Low	N/A

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Meets Molecular Weight Requirements	Yes
Meets Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes

Approved Elements Only	Yes
No Substantial Degradability	Yes
Not a Water Absorbing Polymer	Yes
Low Concentrations of Residual Monomers	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

#### 4. INTRODUCTION AND USE INFORMATION

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

Year	1	2	3	4	5
Tonnes	20	20	20	20	20

##### USE

The notified polymer will be used a rheological additive (thickener) for water based architectural paints.

#### 5. PROCESS AND RELEASE INFORMATION

##### 5.1. Operation Description

###### *Importation & Transport*

The notified polymer will be imported as dispersion in water at a concentration of 29-31%. It will be packaged in 204 L drums. Following importation to Sydney, Melbourne and Brisbane docks, the polymer dispersion will be transported by road to customers following a short period of interim storage at the docks.

###### *Reformulation*

At customers' sites, the notified polymer will be either pumped from drums or poured using drum lifting equipment into mixing vessels where the formulation of architectural paints which contain up to 0.6% of the notified polymer. The paint formulation will then be packaged into 0.5 L, 1 L, 4 L, and 20 L cans for sale nationwide to tradesmen and DIY consumers.

###### *End-Use*

Final application of the paint formulation containing the notified polymer at 0.6% will take place using brush, roller, or conventional spray.

#### 6. EXPOSURE INFORMATION

##### 6.1. Summary of Environmental Exposure

###### *Release of Polymer during Transportation, Storage, Formulation*

Environmental release of the notified polymer during importation, storage and transportation is unlikely except in the event of accidental spillage. During formulation, some potential for release arises during rinse out of equipment and containers but generally these washings are recycled, or flocculated out through on-site treatment facilities. Any residual material can be dried out for disposal at solid waste facilities.

###### *Release of Polymer from Use*

The majority of the polymer will be tied to the fate of the finished product. Being typically formulated at concentrations of 0.6% in products whose end use causes the notified polymer to become entrained, results in an expected low environmental impact. Empty cans and pails containing 1% dry paint residue (containing 200 kg of the notified polymer per annum) will be consigned to landfill. During spray painting the majority of the overspray containing the notified polymer will be bound to sheets or paper forming an inert matrix, to be disposed of to landfill or incinerated, or overspray will be allowed to

settle on the ground. Up to 200 kg of the notified polymer may be disposed of to the sewer systems during the cleaning of application equipment, especially the brushes or rollers used by DIY home painters. Waste polymer may be expected to partition to the sediment of an aquatic environment. Based on the high molecular mass and insoluble nature of the polymer as it is predicted to have large Kow and Koc values (providing it is not ionised) and is not expected to hydrolyse despite having hydrolysable groups present.

The notified polymer is not expected to cross biological membranes due to its high molecular weight and therefore is not expected to bioaccumulate.

## 6.2. Summary of Occupational Exposure

### *Importation & Transport*

Exposure to the notified polymer during importation, transport and storage is not expected except in the event of an accident where the drums containing the notified polymer in the product Rheolate 450 may be breached.

### *Reformulation*

Workers involved in reformulation of the product containing the notified polymer may be exposed to the notified polymer during pumping or decanting of the drummed dispersion into the blending vessel. Dermal and possible ocular exposure may occur through unexpected drips and splashes of residual dispersion from hoses and cam-lock fittings or splashing during the decanting process. Transfer of the reformulated paint to the packaging line takes place via a dedicated pipeline and exposure to the paint containing the notified polymer is not anticipated except in the case of leaking pipes or fittings or unscheduled repairs, where maintenance workers may be dermally or ocularly exposed to residual paint. All workers however wear PPE such as overalls, safety glasses, gloves and safety boots, and reformulation plants are equipped with fume extraction equipment at all workstations.

### *End-Use*

Professional painters may be exposed to the notified polymer during the application of reformulated paint products. Exposure will be primarily via the dermal route, however, occasional inadvertent ocular and oral exposure may also occur. Inhalation exposure may also occur where application is performed using spray equipment and the paint products form airborne particles. Tradesmen ordinarily wear overalls and shoes during application with brush and roller application, and respiratory protection during spray application.

Once dried, the polymer will be encased within the paint matrix and unavailable for further exposure.

## 6.3. Summary of Public Exposure

The paints containing the notified polymer at 0.6% will be available to the public for domestic application. Exposure will be primarily via the dermal route, however, occasional inadvertent ocular and oral exposure may also occur. Inhalation exposure may also occur where application is performed using spray equipment and the paint products form airborne particles.

Once dried, the polymer will be encased within the paint matrix and unavailable for further exposure.

## 7. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20°C and 101.3 kPa</b>	White solid (pure polymer) Milky white emulsion (polymer dispersion)
<b>Melting Point/Glass Transition Temp</b>	Not applicable. Notified polymer is introduced as a dispersion in water.
<b>Density</b>	1070 kg/m <sup>3</sup> (polymer dispersion)
<b>Water Solubility</b>	Forms a dispersion in water (supplied as a 30% solution) and is classified as a hydrophobic alkali soluble. Soluble at high pH in the range 4-9.
<b>Dissociation Constant</b>	Not determined, has carboxylic acid groups, expected to have typical acidity.
<b>Reactivity</b>	Stable under normal environmental conditions
<b>Degradation Products</b>	None expected

## 8. HUMAN HEALTH IMPLICATIONS

### 8.1. Toxicology

No toxicological data were submitted.

### 8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. The emulsion, containing the notified polymer at 29-31%, may cause mechanical irritation of the eyes. The notified polymer contains residual 2-Propenenitrile which has a carcinogenic classification (R45) at concentrations above 0.1%. 2-Propenenitrile is however present in the pure polymer at a concentration of less than 0.003%.

## 9. ENVIRONMENTAL HAZARDS

### 9.1. Ecotoxicology

No toxicological data were submitted.

### 9.2. Environmental Hazard Assessment

The hydrophobic nature of the notified polymer indicates that most would adsorb onto particles of sediment and sludge, and would therefore not remain in the water compartment and be available for assimilation by aquatic organisms.

Given the above, the overall environmental hazard is expected to be low.

## 10. RISK ASSESSMENT

### 10.1. Environment

The products containing the notified polymer will likely be used throughout Australia. The major environmental exposure is expected to be due to the disposal of waste from the coatings manufacture and application to landfill. Large portions of architectural paints are removed before repainting and are disposed of to landfill or fall onto the ground. If spilt on land, the notified polymer is expected to become immobilised in the soil layer. Due to its low water solubility encapsulation in the coating, the polymer will remain bound within the soils and sediments of the landfill and is expected to be slowly degraded by the abiotic processes.

The waste polymer is discharged in domestic wash waters to waste water treatment systems through washing of brushes etc. If a worst-case scenario is considered as follows with no removal of the notified polymer in the sewage treatment plant, the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated to be 0.14 µg/L.

Amount entering sewer annually	200 kg
Population of Australia	20 million
Amount of water used per person per day	200 L
Number of days in a year	365
Estimated PEC <sub>aquatic</sub> (Ocean)	1.36 x 10 <sup>-2</sup> µg/L
Estimated PEC <sub>aquatic</sub> (River) (V/[P x W x D])	1.36 x 10 <sup>-1</sup> µg/L

Based on dilution factors of 1 and 10 for inland and ocean discharges of STP-treated effluents, the PECs of the notified polymer in freshwater and marine water may approximate 0.136 or 0.014 µg/L, respectively.

It is not possible to assess the risk to aquatic organisms without ecotoxicity data. However, based on the proposed use pattern, the release of the notified polymer to the aquatic environment is expected to be low and disperse. Adsorption to sludge, soil and sediment as well as dilution in receiving waters should reduce environmental concentrations to acceptable levels. Abiotic or slow biotic processes are expected to degrade the notified polymer eventually.

## 10.2. Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low during reformulation and repackaging activities due to the low hazard associated with the notified polymer, and the engineering controls in place to minimise exposure.

Tradesmen using the paints containing the notified polymer are expected to be dermally exposed via the hand held application of paints with brush and roller. The risk to these workers is, however, assessed as low due to the low hazard and low concentration of the notified polymer in the paints (< 0.6%).

## 10.3. Public health

Members of the public may be occasionally exposed to the paint containing the notified polymer during domestic painting. Where paint is applied via spray equipment, inhalation exposure may also occur. The risk associated with domestic painting is assessed as low given the low hazard of the notified polymer, the low concentration of notified polymer in the paint products, and the infrequency of use. Additionally, DIY consumers are expected to follow the safety precautions details on the paint labels which are sufficient to mitigate exposure.

## 11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

### 11.1. Environmental risk assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

### 11.2. Human health risk assessment

#### 11.2.1. Occupational health and safety

There is low concern to occupational health and safety under the conditions of the occupational settings described.

#### 11.2.2. Public health

There is negligible concern to public health when safety guidelines supplied with paints are followed.

## 12. MATERIAL SAFETY DATA SHEET

### 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.

## 13. 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 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 manufacturers to minimise environmental exposure during manufacture and use of the notified polymer and paint containing it:
  - Do not allow the polymer, paint products containing the polymer to sewer or containers to contaminate drains or waterways or sewer.

#### Disposal

- Wastes generated during industrial application should be disposed of through a licensed waste contractor. Wastes generated during domestic use should be disposed of according to the following instructions: “Do not pour unwanted paint down the drain. Keep unwanted paint in sealed containers for disposal via special chemical waste collections. Empty paint containers should be left open in a well-ventilated area to dry out. When dry, recycle steel containers via steel can recycling programs. Disposal of empty paint containers via domestic recycling programs may differ between local authorities. Check with your local council first.”

#### Emergency procedures

- Spills/release of the notified polymer should be handled by containing the material with adsorbent material and, then be incinerated after recovery or secured in landfill in accordance with local regulations.

### 13.1. 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.

No additional secondary notification conditions are stipulated.