

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

### POLYMER OF LOW CONCERN FULL PUBLIC REPORT

#### **Polymer in Orotan 2002**

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government Department of Sustainability, Environment, Water, Population and Communities.

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 Street, 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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX:	+ 61 2 8577 8888
Website:	<a href="http://www.nicnas.gov.au">www.nicnas.gov.au</a>

**Director  
NICNAS**

June 2011

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## 1. APPLICANT AND NOTIFICATION DETAILS

### Applicants

Rohm & Haas Australia Pty Ltd (ABN: 29 004 513 188)  
4<sup>th</sup> Floor, 969 Burke Road  
Camberwell, VIC 3124

### 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 and import volume.

## 2. IDENTITY OF POLYMER

### Marketing Name(s)

Orotan 2002 (42% notified polymer)

### Molecular Weight

Number Average Molecular Weight (Mn) is >1,000 Da

### Reactive Functional Groups

The notified polymer contains only low concern functional groups.

## 3. PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met</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

Appearance at 20 °C and 101.3 kPa	Clear, colourless to pale-yellow solid
Melting Point/Glass Transition Temp	Not determined. The notified polymer is not isolated from solution.
Density	1,000-1,100 kg/m <sup>3</sup> at 20 °C
Water Solubility	Not determined. Water solubility was reported to vary with pH (low solubility at pH ≤4 and soluble at pH ≥7.5).
Dissociation Constant	The notified polymer is estimated to have a pKa ~4 based on its functional groups
Reactivity	Stable under normal environmental conditions. The notified polymer contains potentially hydrolysable groups but due to its limited water solubility, hydrolysis is not expected to readily occur under ambient 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>
Tonnes	10-30	10-30	10-30	10-30	10-30

#### Use

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia as a component of Orotan 2002 at 42% concentration for use as a pigment dispersant in paints. The imported product containing the notified polymer will be reformulated into interior and exterior house paints, which will contain <0.4% notified polymer. The paints will be used by both DIY and contract painters and may be applied by brush, roller or spray.

## 6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. The risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

## 7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Anionic polymers are generally of low toxicity to fish and daphnia, however they are known to be moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This is unlikely to apply to the notified polymer. Additionally, the toxicity to algae is likely to be further reduced due to the presence of calcium ions in the aquatic compartment which will bind to the acid functional groups.

Most of the notified polymer will be bound within the inert paint polymer matrix on housing surfaces. It will share the fate of the substrate to which it has been applied and is expected to be eventually disposed of to landfill. The notified polymer in residues in empty containers (<1%), precipitated solids from reformulation waste water (<3%) and paint collected as overspray (<5%) will be disposed of to landfill. A predicted environmental concentration in rivers ( $PEC_{\text{river}}$ ) for a worst case scenario can be calculated on the assumptions that 5% of the total annual import volume is released to sewer nationwide from the cleaning of application equipment and that none of the notified polymer is removed by sewage treatment plant (STP) processes. The  $PEC_{\text{river}}$  is 0.97 µg/L if the daily chemical release ( $1500 \text{ kg}/365 = 4.11 \text{ kg}$ ) is diluted by the daily effluent production ( $200 \text{ L/person/day} \times 21.16 \text{ million people} = 4,232 \text{ ML}$ ).

As release levels are low, and will be diffused across Australian waters, the notified polymer is not expected to reach ecotoxicologically significant concentrations. The notified polymer is not likely to bioaccumulate due its high molecular weight. In landfill and the aquatic compartment the notified polymer is expected to eventually degrade biotically and abiotically to form water and oxides of carbon and sulfur. Therefore, based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

## 8. RECOMMENDATIONS

### Human Health Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

### Environmental Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

**Health and Safety Recommendations**

- 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.
- A copy of the MSDS should be easily accessible to employees.
- Spray application should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)].
- 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.

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

**Disposal**

- The notified polymer should be disposed to landfill.

**Emergency Procedures**

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
- Spills and/or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

**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 paints, 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 notified polymer 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 a product containing the notified polymer was provided by the applicant. The accuracy of the information on the MSDS remains the responsibility of the applicant.