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

**FULL PUBLIC REPORT**

**Polymer in Arolon 881**

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.

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 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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## **FULL PUBLIC REPORT**

### **Polymer in Aroclon 881**

#### **1. APPLICANT AND NOTIFICATION DETAILS**

**APPLICANT**

DIC Australia Pty Ltd (ABN 12 000 079 550)  
323 Chisholm Rd  
AUBURN NSW 2144

**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, Details of Import Volume.

**PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)**

None

**NOTIFICATION IN OTHER COUNTRIES**

Unknown

#### **2. IDENTITY OF CHEMICAL**

**MARKETING NAME(S)**

Aroclon 881 (aqueous dispersion containing the notified polymer at 42% (w/w))

**MOLECULAR WEIGHT (MW)**

Number Average Molecular Weight (NAMW) >10,000

#### **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**

Milky, white liquid.

**Melting Point/Glass Transition Temp**

Not applicable. The notified polymer is not isolated from the dispersion.

**Density**

1050 to 1070 kg/m<sup>3</sup> at 25°C. As the polymer dispersion in water.

**Water Solubility**

Dispersible. As the polymer dispersion in water.

However, the notified polymer is expected to have low water solubility due to its high molecular weight and predominance of hydrophobic groups.

**Reactivity**

The notified polymer contains reactive functional groups that will cross-link further when exposed to the atmosphere during application.

**Degradation Products**

None under normal conditions of use. The notified polymer contains potentially hydrolysable groups but hydrolysis is unlikely to occur under abiotic ambient environmental conditions (pH 4-9).

**Comments**

The physico-chemical properties listed above refer to the imported product Arolon 881, an aqueous dispersion.

**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>	1-3	3-10	3-10	10-30	10-30

**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 200 kg steel drums as a component (42% w/w) of the product Arolon 881. 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 up to five companies throughout Australia.

**Reformulation/manufacture processes**

At the coating manufacturer, the product is formulated into timber coatings. These coatings will contain approximately 30% (w/w) of the notified polymer.

Typically 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 coating product, it will be decanted into 1, 4, and 20 litre steel and/or plastic containers for sale to both DIY and industrial customers.

The coating products containing the notified polymer will be applied by brush, roller and/or spray painting methods to a variety of timber products.

**Use**

The notified polymer will be used as a component of clear and semi-transparent timber coatings at a concentration approximately 30% (w/w).

**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, painters may come into contact with the notified polymer through dermal, inhalation and ocular routes. Spray application would be limited mainly to industrial users and applied in ventilated spray booths conforming to applicable Australian Standards.

After application and once dried, the coating containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable for exposure.

#### PUBLIC EXPOSURE

The Arolon 881 product will not be sold directly to the public. However, the public may come into contact with the notified polymer when applying coatings containing it and during contact with timber products coated with it. However, after application and once cured, the notified polymer is cross-linked into an inert polymer matrix 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 Arolon 881 product will not be sold directly to the public. However, the public may come into contact with the notified polymer when applying coatings containing it and during contact with timber products coated with it. However, after application and once cured, the notified polymer will be cross-linked into an inert polymer 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.

It is estimated that up to 1% of the notified polymer will remain as residues in “empty” drums and coating containers that will be disposed of to licensed waste landfill sites. Up to 3% will be lost to wash water during cleaning of formulation equipment. 50% of this cleaning water will be re-used in subsequent batches and the remainder treated in on-site water treatment facilities where the polymer solids will be precipitated and disposed of to licensed waste landfill sites.

Apart from cleaning application equipment as described below, residues from brush and roller application will be negligible. However, some residues from spray application will occur. Spray application would be limited mainly to industrial users and applied in ventilated spray booths conforming to applicable Australian Standards. It is estimated that 25% of the coatings will be applied by spray application by industrial users. Approximately 20% of this amount will be lost to overspray. Therefore, the total amount of coating lost to overspray will be approximately 5% of the import volume. The overspray will be caught in spray booth baffles. Periodically these used baffles containing dried coating will be disposed of to licensed waste landfill sites.

Up to a further 5% of the notified polymer will be lost to wash water when cleaning coating application equipment. Approximately 50% of this wash water will be applied to household gardens when hosing

equipment and the remainder will be lost to the sewer.

#### ENVIRONMENTAL FATE

The notified polymer will cross-link further when exposed to the atmosphere, further increasing its molecular weight and hydrophobicity. The cured polymer is expected to be insoluble in water, hydrolytically stable and to not be readily biodegradable. Due to its hydrophobic nature, it is expected that the cured polymer in landfill will associate with organic phases of soil and sediments, and slowly degrade to simple carbon and nitrogen compounds.

Similarly, in sewage treatment plants, the cured polymer is expected to precipitate from water and be adsorbed by organic phases in sediments.

### 7.2. Environmental Hazard Characterisation

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

### 7.3. Environmental Risk Assessment

It is envisaged up to 13% waste would be generated from the application and disposal processes. The majority of this waste would be cured and solidified before being collected by licensed waste contractors and be disposed of to landfill. In landfill, the solid wastes will not be mobile and will degrade slowly by biotic and abiotic processes.

Up to 3% of waste will reach the sewer via washing of application equipment by domestic users. However, domestic use will be diverse throughout Australia and therefore the concentration of the notified polymer in waters reaching sewage treatment plants would be very low. In sewage treatment plants, the cured polymer is expected to precipitate from water and be adsorbed by organic phases in sediments.

Based on the above, and the polymer's expected low hazard characterisation, the notified polymer is not expected to 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.

- 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.

#### Disposal

- The notified polymer should be disposed of to landfill.
- Empty containers should be sent to local recycling or waste disposal facilities.

#### Emergency procedures

- Spills/release of the imported product containing the notified polymer not be allowed into drains or waterways. Spills should be handled by absorbing with sand or other inert absorbent material and put into suitable container for disposal.

### 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.