

File No SAPLC/103

October 2009

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

FULL PUBLIC REPORT

Polymer in Epotuf 38-411

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 Environment, Water, Heritage and the Arts 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 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**

FULL PUBLIC REPORT**Polymer in Epotuf 38-411****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, Import Volume, and Site of Reformulation

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

Canada (2000)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Epotuf 38-411 (Contains 50% w/w notified polymer)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (NAMW) >1000

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains moderate concern functional groups, however, the combined FGEW is greater than 1000, therefore it meets the PLC criteria.

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
Melting Point/Glass Transition Temp
Density

Clear, viscous liquid (imported product)
Not applicable. The notified polymer is not isolated from solution.
930-990 kg/m³ at 20°C (imported product)

Water Solubility	Not determined. However, the notified polymer is expected to have low water solubility due to the predominance of hydrophobic groups.
Reactivity	The notified polymer contains reactive functional groups that will cross-link when exposed to the atmosphere during application.
Degradation Products	None under normal conditions of use. The notified polymer is expected to be hydrolytically stable within the environmental pH range of 4-9.

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	1-3	1-3	1-3	1-3

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 186kg (net) steel drums as a component (50% w/w) of the product Epotuf 38-411. Upon arrival at ports in 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 by road to up to three companies throughout Australia.

Reformulation processes

The notified polymer solution will be reformulated into a pigmented marine antifouling paint (5% notified polymer).

During reformulation, 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 or forklift. Once blended with other ingredients, the finished paint product will be decanted into 20 L steel pails for sale to paint applicators.

Use

The notified polymer will be used as a component of marine antifouling paints and applied to a variety of marine vessels. Paints containing the notified polymer will be applied by roller and spray techniques.

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 reformulation, workers will manually weigh and transfer the polymer solution and other ingredients to a mixing vessel. Blending will be carried out in a closed mixing vessel with adjacent exhaust ventilation. Once blending is complete, the finished paint will be transferred under gravity to 20 L steel pails. Exhaust ventilation is also present adjacent to the packing-off area.

Workers involved in the blending and packing-off processes will wear impermeable gloves, eye protection and overalls. Exposure to the notified polymer through inhalation will be negligible due to the polymer having low volatility and the use of local exhaust ventilation. Exposure can occur by either dermal or ocular routes, however significant exposure will be limited due to the workplace practices and personal protective equipment used.

Paint application to marine vessels will take place in ship dry docks and will be applied by roller and spray painting techniques. During painting and cleaning processes, applicators may come into contact with the notified polymer through dermal, ocular and inhalation routes. However, paint applicators will wear impermeable gloves, eye protection, overalls and respirators incorporating organic vapour cartridges to minimise exposure.

After application and once dried, the paint containing the notified polymer will be cured into an inert matrix and the polymer will thus be unavailable for exposure.

PUBLIC EXPOSURE

Neither the notified polymer, nor paints containing it, will be sold to the public.

The public may come into contact with marine coatings containing the notified polymer. However, after application and once dried, the paint containing the notified polymer will be cured into an inert matrix and the polymer will thus be unavailable for exposure.

6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be assumed 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 the assumed low hazard and low exposure as well as the engineering controls and personal protective equipment used by the workers.

PUBLIC HEALTH

The risk to the public is considered to be negligible, based on the assumed low hazard and the negligible public exposure.

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 from drums or steel packaged containers.

During reformulation and packaging, spills are expected to be minimal. When spills occur, they will be contained by bunding, collected with absorbent material and sent to a licensed off site waste disposal centre. Empty drums from import will be sent to drum reconditioners.

Cleaning of paint manufacturing equipment will be performed by flushing with cleaning solvent. Cleaning solvent and paint residues will be stored on site until being transferred to a waste treatment facility where solids will be separated and later disposed of to a licensed waste landfill site.

The total amount of polymer lost to waste during paint formulation due to spills, drum residues and cleaning is expected to be approximately 2% (40 kg per annum) of the import volume.

Approximately 70% of the paint will be applied by roller and the remainder by spray techniques. It is estimated that up to 20% of paint (400kg per annum of notified polymer) may be lost to overspray. During spray painting, hessian curtains and protective sheeting will be used on surrounding surfaces and floors to collect the majority of overspray. Protective sheeting will be disposed of to licensed waste landfill sites.

Cleaning solvent and liquid paint residues resulting from paint application will be stored on site until being transferred to an outside waste treatment facility where solids will be separated and later disposed of to a licensed waste landfill site.

Under normal use procedures, losses of the notified polymer through overspray, and cleaning of plant equipment as well as losses from residues in containers have been estimated to be a maximum of 30 tonnes per annum.

During the life cycle of the applied antifouling paint, it is estimated that up to 50% of the paint will erode from the surface of ships hulls in the marine environment, and most of the remainder will be removed by sanding and stripping techniques when maintenance recoating is required. Solid residues from sanding and stripping will be disposed of to licensed waste landfill sites.

ENVIRONMENTAL FATE

The notified polymer cross-links via oxidation when exposed to the atmosphere. Once cured, the polymer has negligible water solubility, is quite stable and not likely to be readily biodegradable. Waste polymer from paint manufacture, equipment cleaning, overspray and paint sanding residues will be in the cured, solid form and the majority will be disposed of to landfill where it will be immobile. The remainder of the polymer will erode from ships hulls in the ocean in a diffuse manner and become part of marine sediments. Although not expected to be readily biodegradable, the material in landfill and marine sediments would slowly degrade through biotic and abiotic processes to form oxides of carbon and water.

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

Once cured, the notified polymer has negligible water solubility, is quite stable and not likely to be readily biodegradable. The polymer is not expected to cross biological membranes, due to the low solubility and high molecular weight, and as such should not bioaccumulate.

Release to the aquatic environment through erosion of paint on ships hulls will be very diffuse, and will be of cured notified polymer. Cured solid notified polymer in landfill and marine sediments will be immobile. Therefore, the risk to the environment is considered to be low.

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 an unacceptable risk to the environment based on its reported use pattern and volume.

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.
- 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.
- Spray painting applications should be in accordance with the *National Guidance Material for Spray Painting [NOHSC (1999)]*.

Environment

- Spillages and residues of the notified polymer solution or paints containing it, should be kept out of waterways and taken up with inert absorbent material (e.g. sand, soil) for disposal.

Disposal

- The notified polymer should be solidified and disposed of to landfill; or incinerated, if permitted under state and local regulations.
- Empty containers should be sent to local recycling or waste disposal facilities.

Emergency procedures

- Spills/release of the notified polymer should be handled by absorbing with sand or other inert absorbent material and put into suitable container for disposal. Contaminated containers can be re-used after cleaning.

11. 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 chemical 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 chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical 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 chemical has changed from [a component of marine antifouling paint](#), or is likely to change significantly;
 - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
 - [the chemical 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.