File No PLC/941

August 2010

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in Resydrol AF 502w/35WA

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

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1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Cytec Australia Holdings Pty Ltd (ABN 45 081 148 629)
Suite 1, Level 1 Norwest Quay,
21 Solent Circuit, Norwest Business Park
Baulkham Hills NSW 2153

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, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details, and Import Volume

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
None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
Resydrol AF 502w/35WA (contains notified polymer at <50%)

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	*Criterion met*
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	Light brown liquid*
Melting Point/Glass Transition Temp	Not determined
Density	1030 kg/m^3 at 20°C*
Water Solubility	0.44 g/L, indicating the polymer is moderately soluble in water. The data was determined via measurement of the transmission of visible light for a series of dilutions of the original aqueous emulsion product. The highest concentration that reached about 100% transmission of visible light at 620 nm wavelength was determined to be the solubility according to the test report.
Dissociation Constant	Not determined. The pK_a for the polymer is expected to be about 4 based on the structural information.
Particle Size	Not relevant.
Reactivity	Stable under normal environmental conditions. Hydrolysis of the notified polymer is expected to be slow in the environmental pH range despite the presence of hydrolysable functional groups in the polymer.
Degradation Products	None under normal conditions of use

* aqueous emulsion product Resydrol AF 502w/35WA containing the notified polymer at <50%

5. INTRODUCTION AND USE INFORMATION

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	≤10	≤10	≤30	≤50	≤100

Use

The polymer will be imported as a component of Resydrol AF 502w/35WA (approximately <50% polymer in aqueous emulsion). The product will be used as a binder in the formulation of industrial coatings. The majority of the industrial coatings (containing the notified polymer at <40%) will be applied to metal substrates, such as storage drums using, conventional spraying painting methods, such as automated airless spray in enclosed spray booths.

Mode of Introduction and Disposal
The notified polymer will be imported as a component of the product, Resydrol AF 502w/35WA, comprising <50% of the notified polymer in 200 kg metal drums. This product will arrive at the wharf and be transported by road to Cytec Australia Holdings warehouses from where it will be redistributed to customers by road. The customers will reformulate the product into an end use industrial coating. The reformulated coatings will be packaged in 200 L drums, which will be transported to the end user by road.

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
Workers involved in the importation, interim warehousing, and transportation to the customer sites would only be exposed to the notified polymer in the event of an accident.

Dermal and ocular exposure may occur during weighing prior to reformulation and when filling containers with reformulated product. Exposure to significant amounts of the notified polymer should be limited by the expected use of personal protective equipment.

Spray painters may come into contact with the notified polymer through dermal, inhalation and ocular routes. The risk of exposure, however, should be minimal as the spray paint will be applied in a ventilated spray booth by workers using personal protective equipment. After application and once dried, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable to exposure.

Overall, the OHS risk presented by the notified polymer is expected to be low, based on the minimal exposure to workers from the use of PPE and engineering controls, and the assumed low intrinsic hazard of the polymer.

Public Health Risk Assessment

The notified polymer is intended for use by professional spray painters only, and will not be sold to the public. Following application, the notified polymer will become trapped within a film and will not be bioavailable. The public are not likely to come into contact with coated products such as industrial metal drums. Therefore, the risk to public from dermal exposure to the notified polymer is considered low.

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 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, which does not apply to the notified polymer. In addition, the toxicity to algae is likely to be further reduced due to the presence of calcium ions in the environment, which will bind to the functional groups.

Environmental Risk Assessment

The notified polymer will be imported into Australia as a component of an emulsion product. Further blending of the product with other ingredients is expected to form industrial end-use coating products. Blending equipment and empty import drums will be cleaned by solvent or water and the residues will be collected and disposed of to landfill. Any solvent generated from equipment cleaning is expected to be sent to a solvent collector for treatment according to State/Territory legislation.

Any releases from residues in import drums and wastes resulting from overspray, mixing and spray equipment cleaning are expected to be either recycled or disposed of to landfill. The majority of the notified polymer will be applied via coating to metal substrates, and will be most likely thermally decomposed into water and oxides of carbon and nitrogen during the recycling of the metal substrates at the end of their useful lives. The notified polymer is not expected to bioaccumulate due to its high molecular weight. No significant release of the notified polymer to the water system is expected.

In landfill, the polymer contained in waste or on the coated surfaces is expected to be immobile due to its hydrophobic structural characteristics, being bound in an inert matrix in the coated articles. It is expected to eventually degrade via abiotic or biotic processes into water and oxides of carbon and nitrogen. The notified polymer is not expected to pose an unacceptable risk to the aquatic environment based on the reported use pattern and its characteristics as a PLC.

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.

- Service personnel should wear cotton or disposable gloves and ensure adequate ventilation is present when removing spent printer cartridges containing the notified polymer and during routine maintenance and repairs.

- 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 application should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)].

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 binder for industrial coatings, 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.