File No PLC/700

22 May 2007

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

FULL PUBLIC REPORT

Polymer in VIACRYL VSC 6295w/45WA

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 Water Resources.

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:

Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888.
Website:	www.nicnas.gov.au

Director
NICNAS

TABLE OF CONTENTS

FULL PUBLIC REPORT

Polymer in VIACRYL VSC 6295w/45WA

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
Cytec Australia Holdings Pty Limited (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 identity and details of polymer.

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
VIACRYL VSC 6295w/45WA is on confidential TSCA. PMN P-02-0041 and NOCed July 3, 2002

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
VIACRYL VSC 6295w/45WA

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn)	>10000
% of Low MW Species < 1000	< 1
% of Low MW Species < 500	< 1

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met (yes/no/not applicable)*
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	N/A
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	~ 60 - 100°C
Density	1049 kg/m^3 at 20°C (DIN EN ISO 2811-2, Determination of density Part 2: Immersed body (plummet) method.
Water Solubility	~ 10 mg/L. Determined using a VIS Spectrophotometer by analysing transmission of light in 10-100 mg/L samples in deionised water.
Dissociation Constant	The notified polymer contains carboxylate groups which are expected to have a pKa of 3-5.
Reactivity	Stable under normal environmental conditions. The notified polymer contains hydrolysable functionality but this won't occur under ambient abiotic environmental conditions. Polymer will separate out of solution if neutralized with acid to pH < 7.0. Do not mix with acids or acidic material. Other material to avoid are isocyanates and anhydrides.
Degradation Products	Hazardous decomposition products are oxides of carbon, nitrogen and ammonia, carbon monoxide and carbon dioxide.

5. INTRODUCTION AND USE INFORMATION

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	3 - 10	3 - 10	10 - 30	10 - 30	30 - 100

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will not be manufactured in Australia. It will be imported by ship through ports in Sydney. The imported product will arrive in Australia in sealed 200 L steel drums containing < 20% of the notified polymer that will be transported to the customers by road. Once at the customer site the notified polymer will be blended into finished products such as paints and wood floor varnishes/finishes containing the notified polymer in the range of 10 - 20%. The containers with the blended products containing the notified polymer would likely be transported from the customer's warehouse for distribution to trade distribution centers and retail shops by road.

Reformulation/manufacture processes

The notified polymer will be imported in 200 L steel drums at < 20% active material. It will be transported from the wharf to the formulator's warehouse. Two incoming goods receiving personnel will unload the containers and store them in designated storage areas.

The product containing the notified polymer will be reformulated into coatings at the formulation site. Formulation of the notified polymer into coating will involve transfer of notified polymer by metered dosing to a 1000 kg stainless steel mixing vessel and mixing the notified polymer and other ingredients

in a sealed vessel fitted with a high-speed mixer and local ventilation system. Each batch is to be quality checked and adjustments made as required. The final end-use products will be automatically pumped into drums and into 0.5 – 4 L cans for industrial and consumer use. The use of personal protective equipment such as an apron, gloves and safety glasses is recommended in the MSDS. Coatings containing the notified polymer will be warehoused at the formulation site and distributed to trade distribution centers and retail shops by road.

Use

Products containing the notified polymer will be used as a coating in paint formulations and wood finishes at concentrations from 10-20%. The most likely method of application is by roller or brushes. The floor coating may be spread in large scale operations by simply spreading the product onto the floor via a spreader or squeegee.

Typical formulations containing the notified polymer include floor sealers and furniture lacquers.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

During transport and storage, workers are unlikely to be exposed to the notified polymer except when the drum container is accidentally broken.

Dermal and ocular exposure to up to 20% of the notified polymer may occur during formulation of the coating including; exposure during quality control testing, maintenance and filling cans with the finished product. Exposure would be limited if personal protecitve equipment, such as impervious gloves, overalls and protective eyewear are worn. Exposure by inhalation is also possible but likely to be minimal in a closed mixing system with exhaust ventilation.

Dermal and ocular exposure to up to 20% notified polymer may occur during application of the paint and floor coating. Typically, tradesmen will apply paint and coating products containing the notified polymer with a paint brush, short pile roller or paint pad. There will typically be a minimum drying time of 2 to 4 hours between coatings. Exposure to products containing the notified polymer is possible from accidental drips, spills and splashes when opening cans as well as during cleaning of the equipment. Exposure would be limited if personal protecitve equipment, such as impervious gloves, overalls and protective eyewear are worn. The notified polymer is stable under normal working conditions and has a relatively high molecular weight and therefore is not readily absorbed through the skin.

PUBLIC EXPOSURE

Dermal and ocular exposure to the notified polymer is possible during home use of paints and floor varnishes/finishes containing the notified polymer in the range of 10 to 20%.

The public will be using these products significantly less often than workers, however, exposure may be significant due to the lack of expertise in handling these types of products. Exposure can be limited by using personal protective equipment, for example impervious gloves, overalls, protective eyewear and protective footwear.

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. However, as a high molecular weight polymer with low water solubility, there is a risk of lung damage caused by respiration of polymer particles.

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 minimal exposure to workers and the low intrinsic hazard of the polymer.

Although exposure to the notified polymer could occur during blending and application of the paints and wood floor finishes, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer. Significant inhalation exposure to the notified polymer during the application modes described is not expected.
Suitable engineering controls and personal protective equipment should be used to limit inhalation exposure if the paint is spray applied.

PUBLIC HEALTH

The public will be exposed to the notified polymer during use of paints and wood floor finishes by do-it-yourself handyman. There is potential for dermal exposure during the application process and ocular exposure may also occur from splashing or spattering of the product from rollers. However, the risk to public health is considered to be low due to the predicted low hazard of the notified polymer.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Environmental release of the notified polymer is summarised in the following table.

Source of release	% Annual Volume	Released to
Residual within import containers	≤1%	Landfill
Accidental spills	≤1%	Landfill
Reformulation equipment washings	≤1%	Trade Waste Sewer
Residual notified polymer within consumer containers	≤2%	Landfill
Application equipment washings	≤5%	Sewer
Cured notified polymer at the end of its useful life	≥90%	Landfill

Under a worst case scenario, 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 as follows:

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Total Annual Import/Manufactured Volume	100,000	kg/year
Proportion expected to be released to sewer	6%	
Annual quantity of chemical released to sewer	6,000	kg/year
Days per year where release occurs	365	days/year
Daily chemical release:	16.44	kg/day
Water use	200.0	L/person/day
Population of Australia (Millions)	20.496	million
Removal within STP	0%	
Daily effluent production:	4,099	ML
Dilution Factor - River	1.0	
Dilution Factor - Ocean	10.0	
PEC - River:	4.01	µg/L
PEC - Ocean:	0.40	µg/L

ENVIRONMENTAL FATE
Notified polymer that is disposed of to sewer is expected to associate with soil and sediments, with a proportion being removed in waste water treatment plants. Overtime the notified polymer is expected to degrade via biotic and abiotic means to form simple organic and nitrogen based compounds.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This should not apply to the notified polymer. Further, the toxicity to algae is likely to be reduced due to the presence of calcium ions, which will bind to the functional groups (Nabholz *et al*. 1993).

7.3. Environmental Risk Assessment

As ecotoxicological data were not submitted, it is not possible to calculate the Predicted No-Effect Concentration (PNEC) or subsequently derive a Risk Quotient (RQ). However, the expected diffuse release pattern should help mitigate any potential ecotoxicity. Therefore, there should be an adequate safety margin and the risk to the environment under the reported use pattern is expected to be acceptable.

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 No Significant 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.

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

- 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.
- Spray painting applications should be in accordance with the NOHSC *National Guidance Material for Spray Painting*.

Environment

Disposal

- The notified polymer should be disposed of to landfill.

Storage

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe 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.