

File No: PLC/373

27 May 2003

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

FULL PUBLIC REPORT

Polyester Alkyd 21

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 Heritage.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at:

Library
National Occupational Health and Safety Commission
25 Constitution Avenue
CANBERRA ACT 2600
AUSTRALIA

To arrange an appointment contact the Librarian on TEL + 61 2 6279 1161 or + 61 2 6279 1163.

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:

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
Chemicals Notification and Assessment**

TABLE OF CONTENTS

FULL PUBLIC REPORT	3
1. APPLICANT AND NOTIFICATION DETAILS	3
2. IDENTITY OF CHEMICAL	3
3. COMPOSITION.....	3
4. INTRODUCTION AND USE INFORMATION.....	4
6. PHYSICAL AND CHEMICAL PROPERTIES.....	4
7. HUMAN HEALTH IMPLICATIONS	5
7.1 Toxicology.....	5
7.2 Occupational Health	5
Occupational Exposure	5
Exposure Assessment.....	5
7.3 Public Health	5
Public Exposure	5
Exposure Assessment.....	5
8. ENVIRONMENTAL IMPLICATIONS	5
8.1 Ecotoxicology.....	5
8.2 Environmental Contamination.....	6
Environmental Exposure.....	6
Exposure Assessment.....	6
9. RISK ASSESSMENT	6
10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	6
10.2. Environmental risk assessment.....	6
10.3. Human health risk assessment	7
11. MATERIAL SAFETY DATA SHEET AND LABEL.....	7
11.1 Material Safety Data Sheet	7
11.2. Label	7
12. RECOMMENDATIONS.....	7
12.1. Secondary notification	8
13. BIBLIOGRAPHY	8

FULL PUBLIC REPORT**Polyester Alkyd 21****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Nuplex Industries (Australia) Pty Ltd (ABN 25 000 045 572)
49-61 Stephen Road
Botany NSW 2019

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name
Certain product names
CAS number
Structural and molecular formulae
Polymer constituents
Residual monomers and impurities
Exact manufacture volume
Site of manufacture and reformulation

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

Listed on USA, Canada and EU inventories

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Polyester Alkyd 21

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn)	3175
Weight Average Molecular Weight (Mw)	6742
Polydispersity Index (Mw/Mn)	2.12
% of Low MW Species < 1000	6.9
% of Low MW Species < 500	2.5

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

Charge Density	The notified polymer has low charge density.
Elemental Criteria	The notified polymer contains only approved elements.
Degradability	The notified polymer is not biodegradable or by other means.
Water Absorbing	The notified polymer is not a water-absorbing polymer.
Residual Monomers	All residual monomers are below the relevant cut-off.
Hazard Category	The notified polymer is not classified as a hazardous substance.

The notified polymer meets the PLC criteria.

4. 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>	<500	<500	<1000	<1000	<1000

USE

Component of surface coating for use in fibre reinforced composite materials at a level between 45 and 55% w/w.

6. PHYSICAL AND CHEMICAL PROPERTIES

The physico-chemical properties are for the notified polymer in solvent solution.

Appearance at 20°C and 101.3 kPa	Clear to pale yellow liquid
Melting Point/Glass Transition Temp	Not determined
Density	1,200 kg/m ³
Water Solubility	Not determined
Particle Size	The polymer will be prepared in a styrene solution prior to use in fibreglass article manufacture. Based on its predominantly hydrophobic character, the notified polymer is unlikely to exhibit significant water solubility.
Degradation Products	Not determined. The notified polymer is never isolated and is always used as a solvent solution.
Loss of monomers, other reactants, additives impurities	Not determined
Hydrolysis as Function of pH	None
Partition coefficient	The notified polymer contains ester linkages that could be expected to undergo hydrolysis under extreme pH conditions. However, in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur.
Adsorption/desorption	The notified polymer's expected low water solubility and likely hydrophobic nature are indicative of partitioning into the octanol phase.
Dissociation constant	The notified polymer is expected to be immobile in soil due to its expected low water solubility.
	The notified polymer may contain some terminal carboxylic acid groups which are expected to have typical acidity.

7. HUMAN HEALTH IMPLICATIONS

7.1 Toxicology

Toxicological Investigations

No toxicological data were submitted.

Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

7.2 Occupational Health

Occupational Exposure

- More than 20 workers at each manufacture site will be exposed to the polymer when weighing chemicals, sampling for quality control and during packing operations. The expected maximum exposure is approximately 2 hours per day, 3-4 times/year. Workers exposure is also possible when blending of the polymer is carried out prior to distribution to end-use customers.
- Exposure of transport workers is not anticipated except in the event of accidental spill.
- Exposure to the end-use product containing the notified polymer is possible during application, such as spraying onto a mould. It is estimated that 3 workers will be exposed at 8 hours/day.

Exposure Assessment

Dermal and ocular exposure can occur during manufacture and formulation processes. However, exposure to significant amounts of the notified polymer is limited due to the enclosed manufacture and formulation, and automated drumming operations, the engineering controls employed and personal protective equipment worn by workers.

Workers may be exposed to the notified polymer during spray application. Exposure to significant amounts of the notified polymer is limited because of the enclosed and automated spray application, engineering controls and personal protective equipment worn by workers.

After application and once dried, the coating containing the notified polymer is sprayed over with a resin/glass mixture and cured into an inert matrix and is hence unavailable for exposure.

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

7.3 Public Health

Public Exposure

- Public exposure to the notified polymer will occur from dermal contact with finished fibreglass articles.

Exposure Assessment

- The notified polymer will not be available to the public. However, members of the public may come into contact with materials coated with the notified polymer. Exposure will be low because the notified polymer is likely to be bound within the cured fibreglass coating, from which it is unlikely to be bioavailable.

8. ENVIRONMENTAL IMPLICATIONS

8.1 Ecotoxicology

Ecotoxicological Investigations

No toxicological data were submitted.

Environmental Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

8.2 Environmental Contamination

Environmental Exposure

The amount of waste generated from the manufacture of the notified polymer is expected to be very small since the synthesis is being carried out in committed equipment and any recovered material is used in the next batch. It is anticipated the amount of waste produced during manufacture, blending and packaging processes will be <100 kg.

Release during application is also expected to be low because the notified polymer will form part of a moulded fibreglass. All wastes from spraying (assuming overspray of 5%) will be contained within the plant and waste resulting from off cuts is expected to be minimal. Up to 50 tonnes per annum of notified polymer wastes will be disposed of during manufacture and use, and up to 2 tonnes of the notified polymer will be released from the disposal of end use containers.

Wastes containing the notified polymer will be disposed of to landfill, including resins that have solidified prior to use. Liquid wastes from the cleaning of application equipment used in the manufacture of fibreglass products will either be incinerated or evaporated to dryness and the resulting solid residue disposed of in landfill.

The majority of the notified polymer will be incorporated into fibreglass products and at the end of their useful life will be disposed of to landfill.

Exposure Assessment

The notified polymer is expected to have low water solubility and therefore will be immobile in both terrestrial and aquatic compartments. The notified polymer is expected to associate with the soil matrix and sediments and slowly degrade through abiotic and biotic processes into water vapour and oxides of carbon. Liquid wastes resulting from the cleaning of application equipment used in the manufacture of fibreglass products will either be incinerated or evaporated to dryness. The resulting solid residue will be disposed of to landfill where degradation will occur through the processes described above.

The notified polymer is not expected to cross biological membranes due to its high molecular weight and low water solubility and is therefore not expected to bioaccumulate (Connell 1989).

9. RISK ASSESSMENT

9.1. Environment

The majority of the notified polymer will be reacted with styrene to form a very high molecular weight and stable polymer matrix. Therefore, the notified polymer is expected to be immobile and pose little risk to the environment.

The notified polymer is not likely to present a hazard to the environment when it is stored, transported and used in the proposed manner.

9.2 Occupational health and safety

The OHS risk presented by the notified polymer is expected to be low. The notified polymer may be present in formulations containing hazardous ingredients. If these formulations 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.

9.3 Public health

The notified polymer is intended for use by professional fibreglass fabricators only, and will not be sold to the public. Members of the public may make dermal contact with materials coated with the notified polymer. However, the risk to public health will be negligible because following coating application, the notified polymer is bound within a matrix, and will not be bioavailable.

10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

10.2. Environmental risk assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

10.3. Human health risk assessment

10.3.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

10.3.2. Public health

There is Negligible Concern to public health when used as a component of surface coating in fibre reinforced composite materials.

11. MATERIAL SAFETY DATA SHEET AND LABEL

11.1 Material Safety Data Sheet

The MSDS of the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

11.2. Label

The label for the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

12. 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. Liquid wastes should either be incinerated or evaporated to dryness and the resulting solid residue disposed of in landfill.

Emergency procedures

- Spills/release of the notified polymer should be contained as described in the MSDS (ie. collect spilled material with an inert absorbent) and the resulting waste disposed of to an authorised landfill.

12.1. 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.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

Connell DW (1989). Bioaccumulation of xenobiotic compounds. Boca Raton, USA, CRC Press, pp 47-57.

NOHSC (1994a) National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1994b) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Canberra, Australian Government Publishing Service.

NOHSC (1999) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]. National Occupational Health and Safety Commission, Canberra, AusInfo.