

File No: PLC/362

4 June 2003

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

FULL PUBLIC REPORT

Polymer in HP-23-7390

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
4. INTRODUCTION AND USE INFORMATION.....	3
6. PHYSICAL AND CHEMICAL PROPERTIES.....	4
7.1 Toxicology.....	4
7.2 Occupational Health	4
7.2.1 Occupational Exposure	4
7.2.2 Exposure Assessment	5
7.3 Public Health	5
7.3.1 Public Exposure	5
7.3.2 Exposure Assessment	5
8. ENVIRONMENTAL IMPLICATIONS	5
8.1 Ecotoxicology.....	5
8.2 Environmental Contamination.....	5
8.2.1 Environmental Exposure.....	5
8.2.2 Exposure Assessment	6
9. RISK ASSESSMENT	6
10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	7
10.2. Environmental risk assessment	7
10.3. Human health risk assessment	7
11. MATERIAL SAFETY DATA SHEET	7
11.1. Material Safety Data Sheet	7
12. RECOMMENDATIONS.....	7
12.1. Secondary notification	8
13. BIBLIOGRAPHY	8

FULL PUBLIC REPORT**Polymer in HP-23-7390****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)
PPG Australia
McNaughton Road
Clayton VIC 3168

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details claimed exempt from publication:

- Chemical identity
- Customer details

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
No

2. IDENTITY OF CHEMICAL

OTHER NAME(S)
None

MARKETING NAME(S)
Polymer in HP-23-7390

PLC CRITERIA JUSTIFICATION
Insert more rows for FGs if required

Molecular weight	The notified polymer satisfies the molecular weight criteria.
Reactive Functional Groups	The notified polymer has no groups of high or moderate concern.
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.
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>	350	350	350	350	350

USE

The polymer is an intermediate used in the manufacture of packaging coatings namely a coating used on the exterior of metal beverage cans).

6. PHYSICAL AND CHEMICAL PROPERTIES

HP-23-7390 is a 60-90% solution of the notified polymer in 2-butoxyethanol.

Appearance at 20°C and 101.3 kPa	Polymer solution is a clear amber viscous liquid
Melting Point/Glass Transition Temp	Not provided
Density	1115 kg/m ³ (polymer solution)
Water Solubility	The notified polymer is never isolated from the polymer solution, thus its water solubility could not be determined. Due to its high molecular weight, non-ionic nature and the presence of aromatic and aliphatic functional groups the polymer is not likely to be water soluble.
Particle Size	Polymer exists as a solution in solvents.
Degradation Products	None expected
Loss of monomers, other reactants, additives impurities	None expected

The carboxylic acid groups present will have typical acidity and may increase the polymer's water solubility, but they are present in small amounts. The polymer contains ester linkages that may hydrolyse under extreme pH conditions. Due to its expected very low water solubility it should associate with the octanol phase and with the organic matter of soils and sediments.

7. HUMAN HEALTH IMPLICATIONS

7.1 Toxicology

9.2.1. 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

7.2.1 Occupational Exposure

- The notified polymer is manufactured within a closed reaction vessel from constituent reactants that are transferred automatically from containers to the reaction vessel. Once manufacture is complete, the notified polymer is transferred to 205L drums for interim storage until use by pipeline. Worker exposure during the manufacture and drumming of the polymer is therefore unlikely. The manufacture of the coating solution, which contains 10-30% of the notified polymer, is prepared in similar fashion and the likelihood of exposure during this process is also considered unlikely.
- Workers responsible for the sampling and quality control testing may be exposed to the notified polymer during these activities at either 60-90% (polymer solution) or 10-30% (coating solution) during laboratory activities.
- The application of the coating to metal sheets is performed by automated machinery and requires minimal worker interaction. Once the coating is dried in a multi-zone oven, it is bound to the metal as a solid film and is thus no longer an exposure hazard.
- Exposure to transport workers and waterside workers responsible for transport and preparation of drummed coating solution for overseas export are not expected to be exposed to the coating solution containing the notified polymer except in the unlikely event of an accident. As the coating solution contains solvent and is classified as a flammable liquid, drums used for storage of the coating will be dangerous goods rated and are therefore not easily ruptured.

7.2.2 Exposure Assessment

Dermal and ocular exposure can occur during certain formulation processes such as connecting and disconnecting hoses used in the drumming of the formulated polymer solution and coating solution. However, exposure to the notified polymer is limited because of the engineering controls such as enclosed processes and local exhaust ventilation.

7.3 Public Health

7.3.1 Public Exposure

- Members of the public may be dermally exposed to the notified polymer as the dried plastic coating on the exterior of metal cans.

7.3.2 Exposure Assessment

The plastic coating containing the notified polymer once dried is an inert solid film and is thus biologically unavailable.

8. ENVIRONMENTAL IMPLICATIONS

8.1 Ecotoxicology

8.1.1 Ecotoxicological Investigations

No toxicological data were submitted.

8.1.2 Environmental Hazard Assessment

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

AND (if powder)

The powder may cause mechanical irritation to the eyes, and to the respiratory tract if inhaled. Repeated or prolonged skin contact may result in mild irritation.

8.2 Environmental Contamination

8.2.1 Environmental Exposure

There are three distinct stages during which the notified polymer may be released.

Polymer solution manufacture and coating manufacture stages

- Spills (eg during container filling, accidental, etc), process equipment cleaning and container residue would account for any release of notified polymer during these stages. Any material spilt would be contained by bunding and then collected and returned to the process if not contaminated or placed in a sealable container and disposed of to landfill or incineration. The washwater will go to an on-site treatment plant where the notified polymer will be removed within the sludge/solids. This material would go to landfill. Up to 350 kg of waste notified polymer may be generated annually from these stages.

Coating application stage

- With roller application, overspray will be minimal. Coating application is done under ventilation with the air passing through filters, thus catching any fumes and overspray. Roller application is very efficient (approximately 90%) with any coating not applied (ie excess material) being retained and recycled by PPG or going through a solvent recovery plant and solids going to an incinerator. Equipment cleaning and container residues will also account for some release of the polymer, which will be handled in the same manner as the application excess. This stage will account for up to 2000 kg or waste polymer annually.

Ultimately, the final product to which the coating has been applied will either be recycled or go to landfill. At this time the polymer will be in an inert matrix so will not leach out if placed in landfill. If the containers are recycled the coating will be removed and collected in sludge/solids, which will go to landfill or be incinerated. When the polymer is incinerated water and the oxides of carbon will be generated.

8.2.2 Exposure Assessment

Minor amounts of the notified polymer will be disposed of to landfill across the whole of Australia. Due to its low water solubility, molecular weight and nature any polymer released into the environment will adhere to organic material, sediments or soil. The waste polymer that is disposed of to landfill is unlikely to leach out. Overtime the polymer will undergo biotic and abiotic degradation.

Due to its low water solubility and high molecular weight the polymer, its potential for bioaccumulation is low

9. RISK ASSESSMENT

9.1. Environment

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

9.2 Occupational health and safety

Workers involved in the manufacture of the notified polymer and the coating solution containing the notified polymer wear personal protective equipment commensurate with the hazard associated with the constituent reactants. As the constituent reactants of the notified polymer and the solvents used in formulation of the coating solution include known hazardous substances (NOHSC 1999a), the personal protective equipment worn by workers will be adequate protection against the non-hazardous notified polymer. Similarly, workers involved in the formulation of the coating solution wear personal protective equipment commensurate with the other, more hazardous constituents and are therefore adequately protected against exposure to the notified polymer.

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

9.3 Public health

The notified polymer is intended for use in beverage can manufacture 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. Therefore, the risk to public from exposure to the notified polymer is considered low.

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 attributed to the notified polymer.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The notifier has provided MSDS in accordance with the schedule item B 12 of the *ICNA Act*. The accuracy of the information on the MSDS 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.

Environment

- The following control measures should be implemented by the manufacturer to minimise environmental exposure during manufacture of the notified polymer:
 - *Handle only in sealed (eg cemented) areas, which have good bunding and no access to storm drains or watercourses;*
 - *Regular maintenance of extraction/ventilation equipment.*

Disposal

- The notified polymer should be disposed of to landfill or by incineration.

Emergency procedures

- Spills/release of the notified polymer should be handled by containment, and collected and reused if possible. If not possible then an adsorption material (such as sand) should be used, then collected, placed into sealable labelled container and disposed of to landfill. Do not allow to enter drains or watercourses.

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.
 - [list of circumstances]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

NOHSC (1999a) List of Designated Hazardous Substances [NOHSC:10005(1999)]. National Occupational Health and Safety Commission, Canberra, AusInfo.

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