

File No: SAPLC/109

February 2010

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

FULL PUBLIC REPORT

Polymer in HP-27-3730

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 the 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:

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**

Part 2 –PLC Self Assessment**Polymer in HP-27-3730****1. APPLICANT AND NOTIFICATION DETAILS****APPLICANT**

PPG Industries Australia Pty Ltd (ABN 82 055 500 939)
McNaughton Road CLAYTON VIC 3168

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

2. IDENTITY OF CHEMICAL**MARKETING NAME(S)**

GP Polyester HP-27-3730

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (NAMW) >1000

The notified polymer contains only low concern functional groups.

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**

Liquid (based on product)

Melting Point/Glass Transition Temp

Not applicable as a solution

Density

1117 kg/m³ at 25°C

Water Solubility

The notified polymer is expected to have low water solubility due to its predominantly hydrophobic structure

Dissociation Constant

Residual acid groups with typical pKa ~5 are expected to be ionised on the environmental pH range (4–9)

Reactivity

Stable under normal environmental conditions. The notified polymer is unlikely

Comment [N1]: Part 2 of this template will form the Full Public Report. Part 2 should contain information that is suitable to appear in the public reports. There must be sufficient information to support the risk assessment. For example, the marketing name must be provided, along with a non-confidential percentage quantity of the notified polymer within the marketed product. Also, sufficient Introduction and Use information must be provided to identify all potential exposure. Upper limits must be given for Introduction Volume.

Comment [N2]: Write the name, ACN (or ABN; please indicate which), and address of the notifier.

Comment [N3]: List the items which have been specified on Form 3 as being claimed exempt from publication. Alternately, delete text that doesn't apply to you as appropriate. Complete the sections in Part 1 for which confidentiality has been claimed in Form 3. In some cases it will be necessary to provide generic text/values in Part 2 for the ... [1]

Comment [N4]: Required non-confidential information. Please include here all names under which the notified polymer (either alone or as a component of a formulation) has been, or v... [2]

Comment [N5]: Complete this section when the precise Molecular Weight values are claimed as exempt information.

Comment [N6]: Consult the NICANS Handbook for Notifiers, Appendix 10, for more information on the PLC criteria. It is assumed that all criteria will be met, as a default, if this for... [3]

Comment [N7]: Not required for polymers that are not isolated from solution. If data is not available, please provide justification as well as an indication of likely behaviour.

Comment [N8]: Not required for polymers that are not isolated from solution. Please provide the specific gravity of the polymer solution if available, and indicate that this value is obtained f... [4]

Comment [N9]: Not required if the polymer is not isolated from solution. In this case, provide an indication of likely solubility based on structural considerations.

Comment [N10]: If no data is available, please provide an estimate based on structural considerations.

to hydrolyse under standard environmental conditions.

None under normal conditions of use

Degradation Products

Comments

The notified polymer contains acidic functionality that could theoretically dissociate in water, however, this is unlikely to be of significance to the environmental behaviour of the notified polymer given its expected very low water solubility.

5. INTRODUCTION AND USE INFORMATION

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

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

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer and the paint containing the polymer will be made at the Clayton, Victoria PPG site. The polymer will be made as a 50-70% w/w polymer solution in an organic solvent, and stored in 200 L steel drums. The paint contained in 200 L steel drums is to be warehoused at the Clayton site from where it will be distributed by truck to customers for application.

Reformulation/manufacture processes

The notified polymer is poured from 200 L drums into 5000 L capacity steel vessels. Other batch ingredients are added and mixed at room temperature. The final product (containing <20% notified polymer in solution) is then piped to 200L steel drums.

Use

The notified polymer solution will be used as a component of industrial exterior roofing and walling coil coatings, forming part of the binder in the coatings.

The coating will be used by industrial coil coating companies only and will not be available to the public.

Comment [N11]: Please include here any essential comments for understanding the physical and chemical properties of the notified polymer. For example, formulation details if the polymer is never isolated, comments on water solubility testing (if any). As water solubility is one of the few required endpoints, it is particularly important that it is clear and can be used for estimation of environmental fate (Section 7.1.2).

Comment [N12]: This is required non-confidential information. Please include here the most precise estimates available if this information is not confidential; otherwise specify the non-confidential volume range.

Comment [N13]: Please refer to the Guidance Document for assistance in answering the questions posed in this section. Concisely describe the importation, manufacturing, processing, reformulation, repackaging and/or end use operations involving the notified polymer or formulation. Identify the major unit operation steps and chemical conversions, including secondary operations involving the notified polymer, such as loading/unloading transport containers (give size and type). Less detail should be provided here if an application for confidentiality for the use has been made; in which case general values can be used here and the detailed use will be recorded in Part 1 (confidential section). Where reformulation occurs, or there are multiple uses, give an approximate percentage of the total for each application, and describe which sector(s) the use applies to (site limited/ industry/ commercial/ consumer).

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

Exposure during polymer manufacture may occur during weighing and addition of monomers, sampling and testing, as well as filling the product into containers. Engineering controls expected to be implemented to minimise exposure consist of automated processes for weighing, addition and filtering, and the use of localised exhaust extraction. Personal protective equipment expected to be worn during these processes include goggles, gloves and overalls.

During formulation, workers will manually weigh and transfer the notified polymer in solution to the mixing vessels. Workers will wear impermeable gloves, eye protection and overalls. Exposure from the notified polymer (at <70% concentration) to these workers can occur by either dermal or ocular routes, however significant exposure will be limited due to the workplace practices and personal protective equipment used.

Transport and warehousing workers may come into dermal and ocular contact with the notified polymer through accidental leaks and spillages of the containers.

Throughout end use, workers will come into contact with the notified polymer through dermal, inhalation and ocular routes. The risk of exposure, however, will be minimal as the paint is applied automatically by rollers in a large application unit within a ventilated room under supervision by workers using personal protective equipment.

After application, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence not bioavailable.

PUBLIC EXPOSURE

The notified polymer will not be sold to the public. The public may come into contact with the finished dried product on building exterior roofing and walling, however in this form the notified polymer will be bound in an inert matrix and as such is not expected to be bioavailable.

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.

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 anticipated low hazard and low exposure as well as the engineering controls and personal protective equipment used by workers.

PUBLIC HEALTH

The notified polymer is intended for use only by trained operators in industrial facilities and will not be sold to the public. Following application, the notified polymer will be cured and trapped within a coating and will not be bioavailable. Therefore, the risk to public health from exposure to the notified polymer is considered acceptable.

Comment [N14]: Assessment of exposure to workers and the public based on the proposed processes and uses. It is not necessary to expand on exposure in environments where PPE or engineering controls will be used to limit exposure. Where there is likely to be exposure, briefly describe the circumstances. Please refer to the guidance documents, and use the standard text where applicable. If the notified polymer does not fit the scenarios, please adapt the most relevant text, or write an assessment in a similar style.

Comment [N15]: Please include all available toxicological endpoints. The following suggested text (first example) is appropriate in the absence of toxicity data or suspicion of toxicity from other sources. In this case, the first statement is sufficient, and the remainder of this section may be deleted. Include any other information regarding Hazard. For example: '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.'
or
'Hazardous monomers are present only at low levels, below the cut-off concentration for classification as a hazardous substance under the *NOHSC Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2002).'

Comment [N16]: The health risk is characterised by integrating the hazard and exposure assessments. Please refer to the guidance documents for further guidance and examples.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

Release to the environment during transport and warehousing will only occur through accidental spills or leaks of containers. When spills occur, they will be contained by bunding, collected with absorbent material and sent to a licensed off site waste disposal centre.

There is the potential for release of the notified polymer during manufacture, reformulation, equipment cleaning, from container residues and in the event of an accidental spill. An estimated 2% of the polymer will remain as residues in containers, which will be treated before disposal to landfill. Less than 1% of waste polymer will be generated from cleaning after reformulation. Therefore the total waste polymer could amount to up to 3% of the manufacture volume at market maturity. It is expected that no waste notified polymer would enter the sewerage system or natural waterways.

The wall and roofing coil coating is applied in a continuous process (24 h/day). The metal coil, on a coil coating line, passes through the coating unit where the paint is applied by roller-coating, picking up paint from a tray, before the curing oven. The highly industrialised process eliminates most waste as unused coating is re-used in paint formulation. However, it is expected that a small amount of solid wastes (and hence notified polymer) generated through the process are collected and disposed to landfill.

The remainder of the notified polymer will be bound in the cured paint matrix and not be available for direct release to the environment. Disposal of the coated article may be through landfill or recycling, and the fate of the paint will be related to that of the article.

ENVIRONMENTAL FATE

The waste remaining in the empty drums and that generated in cleaning equipment and spills will ultimately be disposed of to landfill. It is expected that the notified polymer will be immobile in landfill and slowly degrade to water and oxides of carbon. The notified polymer is not expected to bioaccumulate due to its high molecular weight and low potential for aquatic exposure. During metal recycling, the notified polymer is expected to be thermally decomposed to produce water vapour and oxides of carbon.

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

7.3. Environmental Risk Assessment

Most of the notified polymer used in exterior roofing and walling coil finishes will be bound in a cured paint matrix and will eventually be incorporated in metal recycling programs or sent to landfill for disposal after its useful life. In landfill or through recycling processes, the notified polymer is expected to degrade through biotic and abiotic processes to water and oxides of carbon.

Based on the low environmental exposure resulting from its limited potential for release to the aquatic compartment, the notified polymer is not expected to pose an unacceptable risk to the environment.

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.

Comment [N17]: Refer to the PLC Guidance Document for scenarios for different use and release patterns.

Comment [N18]: The following suggested text (first example) is appropriate in the absence of toxicity data or suspicion of toxicity from other sources. Include other data, for example:
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, which is unlikely to apply to the notified polymer.

Comment [N19]: The environmental risk is characterised by integrating the hazard and exposure assessments. Please refer to the guidance documents for further guidance and examples.

Comment [N20]: Refer to the [PLC Guidance document](#) for assistance in completing this section.

8.3. Level of Concern for the Environment

The polymer is not expected to pose a 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 a 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.

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.

Storage

- The following precautions should be taken by the notifiers regarding storage of the notified polymer:
 - *bunding*

Emergency procedures

- Spills/release of the notified polymer should be handled by absorbing with sand and put into containers for disposal. Contaminated containers can be reused after cleaning.

10.1. 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

Comment [N21]: A copy of the MSDS as specified in the Handbook for Notifiers must accompany this form. Please provide the MSDS electronically, if possible.

Comment [N22]: Some examples of recommendations are listed here. If alternative recommendations are required, amend or replace these recommendations. Recommendations for the safe use of the notified polymer must be completed as part of the self-assessment template, and should be aligned with requirements identified in the risk assessment. NICNAS will amend this section as necessary in cases where the recommendations do not align with the risk assessment. This may include cases where either insufficient, or overly severe, recommendations have been made.

- (2) Under Section 64(2) of the Act; if
- the function or use of the notified polymer has changed from a component of surface coatings, or is likely to change significantly;
 - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
 - the method of manufacture of the notified polymer in Australia has changed, or is likely to change, in a way that may result in an increased risk of an adverse effect of the notified polymer on occupational health and safety, public health, or the environment;
 - 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.

Comment [s23]: Use for manufactured chemicals. Delete if the chemical is only imported

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

Material Safety Data Sheet

The MSDS of a 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.

