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

PUBLIC REPORT

Polymer A in CA1000

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 Sustainability, Environment, Water, Population and Communities.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This 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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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
LTD/1557	PPG Industries Australia Pty Ltd	Polymer A in CA1000	ND*	≤ 1 tonnes per annum	Component of sealants

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

As no toxicity data were provided, the notified polymer cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

Human health risk assessment

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unreasonable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unreasonable risk to public health.

Environmental risk assessment

On the basis of the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer:
 - Avoid contact with skin
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
 - Coveralls
 - Gloves

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 *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.

Health Surveillance

- As the notified polymer may have the potential for sensitisation, employers should carry out health surveillance for any worker who has been identified in the workplace risk assessment as having a significant risk of sensitisation.

Disposal

- The notified polymer should be disposed of to landfill.

Emergency procedures
- Spills 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 chemical 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 chemical, 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 polymer has a number-average molecular weight less than 1000;

or

- (2) Under Section 64(2) of the Act; if
 - the function or use of the polymer has changed from a component of sealants, or is likely to change significantly;
 - the amount of polymer being introduced has increased from one tonne per annum, or is likely to increase, significantly;
 - the polymer has begun to be manufactured in Australia;
 - additional information has become available to the person as to an adverse effect of the polymer 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.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)
PPG Industries Australia (ABN 82 055 500 939)
McNaughton Road
Clayton VIC 3168

NOTIFICATION CATEGORY
Limited: Synthetic polymer with $M_n \geq 1,000$ Da.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, other names, 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)

Variation to the schedule of data requirements is claimed as follows: melting point, boiling point, density, vapour pressure, water solubility, hydrolysis as a function of pH, partition coefficient, n-octanol/water coefficient, adsorption/desorption, dissociation constant, particle size, flash point, flammability, autoignition temperature and explosive properties.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

USA (1993)

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

CA 1000 (an imported product containing the notified polymer)

ANALYTICAL DATA

Reference FTIR and GPC spectra were provided.

3. COMPOSITION

DEGREE OF PURITY > 98 %

DEGRADATION PRODUCTS

The notified polymer is stable under normal conditions and degradation products are likely to be oxides of carbon and sulfur.

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Solid

Property	Value	Data Source/Justification
Melting Point	> 60 °C	Estimated based on the high molecular weight of the polymer.
Boiling Point	Not determined	Estimated to be high based on molecular weight
Density*	1309 kg/m ³	MSDS
Vapour Pressure	< 1.3×10 ⁻⁹ kPa	Estimated based on the NAMW > 1000 Da (US EPA, 2010)
Water Solubility	Not determined	Not expected to be soluble in water based on its predominantly hydrophobic structure
Hydrolysis as a Function of pH	Not determined	Does not contain any readily hydrolysable functionality and is therefore expected to be hydrolytically stable
Partition Coefficient (n-octanol/water)	Not determined	Based on its high molecular weight the notified polymer is not expected to cross biological membranes.
Adsorption/Desorption	Not determined	Expected to adsorb to soil and sediment based on its high molecular weight.
Dissociation Constant	Not determined	Not expected to dissociate in the environmental pH range (4-9)

Particle Size	> 1µm	Estimated
Flash Point*	24°C (closed cup)	MSDS
Flammability	Not determined	Formulation containing the notified polymer is a flammable solid
Autoignition Temperature	Not determined	Not expected to autoignite under normal conditions
Explosive Properties	Not determined	Not expected to have explosive properties

*For imported product (CA1000) containing the notified polymer

DISCUSSION OF PROPERTIES

Reactivity

The notifier has stated that the polymer is stable under normal conditions of use.

Dangerous Goods classification

Based on the estimated physical-chemical data in the above table, the notified polymer is not classified according to the Australian Dangerous Goods Code (NTC, 2007). However the data above do not address all Dangerous Goods endpoints. Therefore consideration of all endpoints should be undertaken before a final decision on the Dangerous Goods classification is made by the introducer of the polymer.

5. INTRODUCTION AND USE INFORMATION

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

The notified polymer will be imported as a component of two-part sealants at concentrations up to 85%. The notified polymer will not be manufactured or reformulated in Australia.

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>	1	1	1	1	1

PORT OF ENTRY

Melbourne, Sydney and Brisbane

IDENTITY OF RECIPIENTS

PPG Industries Australia Pty Ltd

TRANSPORTATION AND PACKAGING

The notified polymer will be transported by road or rail in 200 kg drums.

USE

The notified polymer will be used as a component of two part sealants at concentrations up to 85%.

OPERATION DESCRIPTION

The imported sealant products containing the notified polymer at up to 85% will be transported to end-use sites. The products will be mixed with an accelerator and the resulting sealant will then be applied to the substrate using pumping equipment, such as caulking guns. The operator may also manually reshape the applied sealant.

The polymer material reacts with atmospheric moisture at the time of application to form a solid matrix. Excess adhesive will be cleaned using a specially formulated cleaning product and a cloth.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

NUMBER AND CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Transport	6-8	2-3	10-15
Application	50	8	260

EXPOSURE DETAILS

Transportation and storage workers will only become exposed to the notified polymer in the event of an accident.

Dermal and possibly ocular exposure may occur to the notified polymer at up to 85% concentration when mixing with the accelerator and loading the sealant into caulking guns, when manually reshaping the applied sealant after it has been applied and during cleaning of the equipment and surfaces.

Workers may make dermal contact with the notified polymer once the sealant formulation has dried to the substrate. However, once cured and dried, the notified polymer will be reacted into the polymer matrix and will not be bioavailable.

6.1.2. Public Exposure

The notified polymer is intended for industrial use only. The public may be exposed to the imported product (at up to 85% notified polymer) in the unlikely event of a transport accident or through direct contact with the dried sealant after application. However, once the sealant is cured and dried, the notified polymer will be fully reacted into the polymer matrix and will not be bioavailable.

6.2. Human Health Effects Assessment

No toxicity data were submitted.

Toxicokinetics.

The notified polymer has a high molecular weight and moderately low proportion of low molecular weight species (< 1000 Da) and expected low water solubility, therefore absorption across biological membranes would be limited.

Skin irritation and sensitisation.

The notified polymer contains a structural alert for skin irritation and skin sensitisation. However, given the high molecular weight of the notified polymer and low proportion of low molecular weight species (< 10% < 500 Da) the potential for skin irritation is expected to be low.

Health hazard classification

Based on the limited data available the notified polymer cannot be classified according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004).

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

The notified polymer based on structural considerations may have the potential for skin sensitisation.

There is the possibility of dermal or ocular exposure to the notified polymer at high concentrations of up to 85% by end users when mixing the sealant, loading the application equipment and applying the sealant. However, the expected use of PPE by workers should minimise exposure during these activities.

Overall, provided workers wear coveralls and suitable gloves when working with the sealant containing the notified polymer, and maintain safe work practises to reduce exposure, the risk to workers is not considered to be unreasonable.

6.3.2. Public Health

The notified polymer will be available for industrial use only. The public may make contact with the sealants containing the notified polymer after they have been applied and dried. However, once the sealants are cured and dried the notified polymer will not be bioavailable, hence based on the assessed use the risk to the public is not considered to be unreasonable.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1. Environmental Exposure

RELEASE OF CHEMICAL AT SITE

The notified polymer will not be manufactured or reformulated in Australia; therefore, there are no releases from these activities.

RELEASE OF CHEMICAL FROM USE

When sealant formulations containing the notified polymer are applied, it is anticipated that approximately 5-10% of the product will be extruded during application and be collected as waste material. During industrial use of the notified polymer, it is estimated that < 1% of the notified polymer will be spilt. Less than 1% of the notified polymer may remain as residues in the product containers. These wastes generated during application activities are expected to be disposed to landfill. Residues of the notified polymer left in empty storage containers from sealant use (< 1%) may be released to onsite sewage treatment where it is expected to be treated, removed and ultimately disposed to landfill. Equipment used to apply the coating formulations may be rinsed with solvent. It is estimated that up to 1% of the total import volume will be collected as residues in application equipment washings for treatment and disposal by licensed waste contractors.

RELEASE OF CHEMICAL FROM DISPOSAL

The notified polymer is immobilised within a polymeric matrix adhering to a variety of substrates, including metal and glass, and is expected to be disposed of along with the used article at the end of its useful life. The notified polymer is expected to be predominantly disposed of to landfill or recycling.

7.1.2. Environmental Fate

The majority of the notified polymer introduced is expected to be cured into a solid polymer matrix as part of its normal use pattern and in this form it is not expected to be bioavailable nor biodegradable. Notified polymer in solid waste disposed of to landfill is not expected to be mobile due to its high molecular weight. Bioaccumulation of the uncured polymer is unlikely as it is not expected to cross biological membranes due to its high molecular weight, and given its limited potential for aquatic exposure. The notified polymer will eventually degrade in landfill or by thermal decomposition during metal reclamation processes, to form water and oxides of carbon and sulphur.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration (PEC) has not been calculated for the notified polymer as, based on its reported use pattern, ecotoxicologically significant quantities are not expected to be released to the aquatic environment.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. Polymers without significant ionic functionality are generally of low concern to the aquatic environment. Due to the reported use pattern, no significant exposure of the notified polymer to aquatic organisms is expected. Furthermore, the majority of the notified polymer will be cured with other chemical substances to form a sealant matrix and is not expected to be bioavailable.

7.2.1. Predicted No-Effect Concentration

A Predicted No-Effect Concentration (PNEC) was not calculated as no ecotoxicological data were submitted and there will be very low potential for aquatic exposure.

7.3. Environmental Risk Assessment

A Risk Quotient is unable to be quantified as a PEC and PNEC were not calculated. There is no significant aquatic release of the notified polymer anticipated based on the reported use pattern. Moreover, after curing, the majority of the imported quantity of notified polymer will be incorporated into an inert matrix and is not expected to be mobile, bioavailable nor biodegradable. On the basis of the assessed use pattern, the notified polymer is not expected to pose an unreasonable risk to the environment.

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