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NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

PUBLIC REPORT

Polymer in KA-79-9846 Hardener

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (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 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 Energy.

This 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:

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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	CHEMICAL OR TRADE NAME	HAZARDOUS CHEMICAL	INTRODUCTION VOLUME	USE
LTD/2058	PPG Industries Australia Pty Ltd	Polymer in KA-79-9846 Hardener	ND*	< 10 tonnes per annum	Component of industrial coatings

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard Classification
As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia.

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 reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

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, noting that the formulation may be classified because of hazardous impurities.

  Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (SWA, 2015) or relevant State or Territory Code of Practice.

- A copy of the SDS should be easily accessible to employees.

- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)* as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Emergency procedures

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

Disposal

- Where reuse or recycling are not appropriate, dispose of the notified polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

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 of less than 1000 g/mol;

or

(2) Under Section 64(2) of the Act; if
  - the function or use of the polymer has changed from a component of industrial coatings or is likely to change significantly;
  - the amount of polymer being introduced has increased, 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.

Safety Data Sheet
The SDS of the product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

This notification has been conducted under the cooperative arrangement with Canada. The health and environmental hazard assessment components of the Canadian report were provided to NICNAS and, where appropriate, used in this assessment report. The other elements of the risk assessment and recommendations on safe use of the notified polymer were carried out by NICNAS.

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT
PPG Industries Australia Pty Ltd (ABN: 82 055 500 939)
14-20 McNaughton Road
CLAYTON VIC 3169

NOTIFICATION CATEGORY
Limited: Synthetic polymer with Mn ≥ 1,000 g/mol

EXEMPT INFORMATION (SECTION 75 OF THE ACT)
Data items and details exempt from publication include: chemical name, other names, molecular and structural formulae, molecular weight, analytical data, degree of purity, polymer constituents, residual monomers, impurities, additives/adjuvants, use details, and import volume.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)
Schedule data requirements are varied for all physico-chemical endpoints.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT
None

NOTIFICATION IN OTHER COUNTRIES
Canada (2016)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)
KA-79-9846 Hardener (product containing the notified polymer at ≤ 50% concentration)

MOLECULAR WEIGHT
Number average molecular weight (Mn) is > 1,000 g/mol.

ANALYTICAL DATA
Reference GPC spectrum was provided.

3. COMPOSITION

DEGREE OF PURITY
> 90%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: clear liquid*

Property	*Value*	*Data Source/Justification*
Melting Point	Not determined	Expected to be < 0 °C
Boiling Point	> 37.78 °C	SDS*
Density	970 kg/m^3	SDS*
Vapour Pressure	Not determined	Expected to be low based on high molecular weight
Water Solubility	Not determined	Expected to have low water solubility based on its predominantly hydrophobic structure; however, it may be dispersible

Property	*Value*	*Data Source/Justification*
Hydrolysis as a Function of pH	Not determined	Contains hydrolysable functionalities but significant hydrolysis is not expected under environmental pH range of 4-9
Partition Coefficient (n-octanol/water)	Not determined	Expected to partition from water to n-octanol based on its predominantly hydrophobic structure
Adsorption/Desorption	Not determined	Expected to bind to soil and sediments through hydrophobic and ion exchange mechanisms
Dissociation Constant	Not determined	Contains potential cationic functionalities and is likely ionised in environmental pH range of 4-9
Flash Point	29 °C	SDS*
Flammability	Not determined	Introduced in flammable organic solvent
Autoignition Temperature	Not determined	Introduced in flammable organic solvent
Explosive Properties	Not determined	Contains no functional groups that would imply explosive properties
Oxidising Properties	Not determined	Contains no functional groups that would imply oxidative properties

* For the notified polymer at ≤ 50% concentration in organic solvent

DISCUSSION OF PROPERTIES

Reactivity
The notified polymer is expected to be stable under normal conditions of use.

Physical Hazard Classification
Based on the submitted physico-chemical data depicted in the above table, the notified polymer is not recommended for hazard classification according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia.

5. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS
The notified polymer will not be manufactured in Australia. It will be imported at ≤ 50% concentration in Part B of a finished two-part industrial coating system.

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	< 10	< 10	< 10	< 10	< 10

PORT OF ENTRY
Melbourne and Sydney

TRANSPORTATION AND PACKAGING
The notified polymer will be imported at ≤ 50% concentration in Part B of a finished two-part industrial coating system in 5 L cans.

USE
The notified polymer will be used as a component of Part B of a two-part industrial protective coating system, at ≤ 50% concentration. Immediately prior to use, end users will mix Part B with Part A. The concentration of the notified polymer in the mixed coating system will be ≤ 12.5%. The mixed coating system will be applied to outdoor steel structures.

OPERATION DESCRIPTION
End users will manually pour Part B (containing the notified polymer at ≤ 50% concentration) into the Part A container, reducing the concentration of the notified polymer to ≤ 12.5%. The combined coating system will mainly be applied by airless spray, but may also be applied by roller or brush.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

CATEGORY OF WORKERS

Category of Worker	*Exposure Duration (hours/day)*	*Exposure Frequency (days/year)*
Transport and storage	1-2	2-4
Painters	50-100	260

EXPOSURE DETAILS
Transport and storage workers are not expected to be exposed to the notified polymer except in the unlikely event of an accident or container rupture.

End-use
Dermal and ocular exposure to the notified polymer at ≤ 50% concentration may occur during the manual pouring and blending of Part A and Part B of the two-part coating system. Exposure should be minimised through the use of personal protective equipment (PPE: goggles, impervious gloves, coveralls) as stated by the notifier. Inhalation exposure is not expected given the expected low vapour pressure of the notified polymer.

Dermal, ocular and inhalation exposure to the notified polymer at ≤ 12.5% concentration may occur during application of the combined coating system. Coating application will be primarily by spray, but potentially with brush and roller. As stated by the notifier, the potential for exposure should be minimised through the use of natural ventilation and PPE (goggles, impervious gloves, coveralls) by workers, including the use of respiratory protection during spray application. Once the coating is cured and dried, the notified polymer will be reacted into the polymer matrix and will not be available for exposure.

Dermal, ocular and inhalation exposure to the notified polymer at ≤ 12.5% concentration may also occur during the cleaning and maintenance of equipment. As stated by the notifier, the potential for exposure should be minimised through the use of PPE (goggles, impervious gloves, coveralls) by workers, including the use of respiratory protection. Inhalation exposure should be further mitigated through the use of exhaust ventilation, where possible.

6.1.2. Public Exposure
The finished two part coating system, containing the notified polymer at ≤ 50% concentration in part B, will be for industrial use only and will not be sold to the public. The public may come into contact with surfaces coated with coatings containing the notified polymer. However, once the coatings are cured and dried the notified polymer will be reacted into the polymer matrix and will not be available for exposure.

6.2. Human Health Effects Assessment
No toxicity data were submitted.

Based on the high molecular weight of the notified polymer (Mn > 1,000 g/mol) and low levels (< 1%) of low molecular weight species < 500 g/mol, the potential for the notified polymer to cross biological membranes is expected to be limited. Inhalation exposure of the notified polymer is expected to be low based on its expected low vapour pressure.

The notified polymer contains a structural alert associated with genotoxicity. However based on the chemical structure it is not expected that the structural alert would be reactive and therefore of concern. In addition, systemic exposure is not expected.

The notified polymer also contains structural alerts associated with corrosion/irritation and sensitisation. However given the high molecular weight and low levels of low molecular weight species, the potential for the notified polymer to cause irritation and sensitisation is low.

Health Hazard Classification
As no toxicity data were provided, the notified polymer cannot be classified according to the *Globally Harmonised System of Classification and Labelling of Chemicals* (GHS), as adopted for industrial chemicals in Australia.

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety
No toxicity data were provided for the notified polymer. Based on the available information, the notified polymer is expected to be of low hazard.

Workers may be exposed to the notified polymer at ≤ 50% concentration during application of coatings containing the notified polymer. The expected use of PPE by workers including respirators, coveralls, goggles and gloves as precautions for other hazardous components of the product containing the notified polymer is expected to minimise exposure.

Therefore, based on the expected low hazard and under the occupational settings described, the notified polymer is not considered to pose an unreasonable risk to the health of workers.

6.3.2. Public Health
The notified polymer is intended for use in industrial applications only. The public may come into dermal contact with substrates on which the coatings are applied. However, once the coatings are cured and dried, the notified polymer will be incorporated into the polymer matrix and will not be available for exposure.

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

7. ENVIRONMENTAL IMPLICATIONS

7.1. Environmental Exposure & Fate Assessment

7.1.1. Environmental Exposure

RELEASE OF CHEMICAL AT SITE
The notified polymer will be imported in Part B of a finished two-part industrial coating system. No reformulation or repackaging will occur in Australia. Spills or accidental release of the products containing the notified polymer during import, storage, and transport are expected to be collected by suitable absorbents and disposed of to landfill, in accordance with local government regulations.

RELEASE OF CHEMICAL FROM USE
The notified polymer will be used as a component of Part B of a two-part industrial protective coating system. Immediately prior to use, professional workers will mix Part B with Part A. The mixed coating system will be applied to outdoor steel structures mainly by airless spray but potentially also by roller or brush. The main release of the notified polymer is likely from overspray during use, estimated by the notifier to account for up to 30% of the total import volume. The overspray will be collected on tarpaulins or plastic coverings and disposed of to landfill, in accordance with local government regulations. The solvent waste from cleaning of the application equipment is estimated by the notifier to account for up to 1% of the total import volume. This waste will be collected by an approved waste contractor and disposed of in accordance with local government regulations.

RELEASE OF CHEMICAL FROM DISPOSAL
Most of the notified polymer is expected to share the fate of the articles to which it has been applied, to either enter metal recycling or be disposed of to landfill at the end of their useful lives. Residual notified polymer in empty containers, estimated by the notifier to account for up to 2% of the total import volume, is expected to be cured into an inert solid matrix and be disposed of to landfill along with the empty containers.

7.1.2. Environmental Fate

No environmental fate data were submitted. As a result of its use pattern, most of the notified polymer is expected to share the fate of the articles to which it has been applied, either subjected to metal reclamation or being disposed of to landfill at the end of their useful lives. During metal reclamation, the notified polymer will thermally decompose to form water vapour and oxides of carbon and nitrogen. In landfill, the notified polymer will be present as cured solids and will be neither bioavailable nor mobile. The notified polymer is not expected to be bioaccumulative due to its high molecular weight. In landfill, the notified polymer is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon and nitrogen.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration (PEC) has not been calculated as release of the notified polymer to the aquatic environment will be limited based on its reported use pattern as a component of industrial coatings.

7.2. Environmental Effects Assessment

No ecotoxicological data were submitted for the notified polymer. The notified polymer contains potentially cationic functionalities with Functional Group Equivalent Weight (FGEW) < 5,000 and therefore is potentially harmful to aquatic organisms in environmental waters.

7.2.1. Predicted No-Effect Concentration

The Predicted No-Effect Concentration (PNEC) has not been calculated since no ecotoxicological data are available.

7.3. Environmental Risk Assessment

The Risk Quotient (PEC/PNEC) for the aquatic compartment has not been calculated as no ecotoxicological data are available and release of the notified polymer to the aquatic environment will be limited based on its reported use pattern. On the basis the reported use pattern as a component of industrial coatings, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

United Nations (2009) Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 3rd revised edition. United Nations Economic Commission for Europe (UN/ECE), http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html