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

PUBLIC REPORT

Polymer in PPG7940-306B

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:

Street Address:	Level 7, 260 Elizabeth Street, SURRY HILLS NSW 2010, 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**

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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 CHEMICAL	INTRODUCTION VOLUME	USE
LTD/2013	Allnex Resins Australia Pty Ltd and PPG Industries Australia Pty Limited	Polymer in PPG7940-306B	ND*	≤ 1 tonne per annum	Component of 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.

As the notified polymer will be used in materials with direct food contact, the public report of this assessment will be forwarded to Food Standards Australia New Zealand (FSANZ) for their information.

Environmental risk assessment

On the basis of the assumed low hazard and 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.

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.

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.

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 importation volume exceeds one tonne per annum notified chemical;or
- (2) Under Section 64(2) of the Act; if
 - the function or use of the polymer has changed from component of 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 chemical provided by the notifier was reviewed by NICNAS. The accuracy of the information on the SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Allnex Resins Australia Pty Ltd (ABN: 25 000 045 572)
49 – 61 Stephen Road
BOTANY NSW 2019

PPG Industries Australia Pty Limited (ABN: 82 055 500 939)

14 – 20 McNaughton Road
CLAYTON VIC 3168

NOTIFICATION CATEGORY

Limited-small volume: Synthetic polymer with Mn < 1,000 g/mol (1 tonne or less per year)

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, CAS number, molecular and structural formulae, molecular weight, analytical data, degree of purity, polymer constituents, residual monomers, impurities and use details.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows: all physico-chemical, toxicity and ecotoxicity endpoints.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None.

NOTIFICATION IN OTHER COUNTRIES

Canada (1998)
China (2013)
South Korea (2014)
Taiwan (2015)
United States (2017)

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Polymer in PPG7940-306B/200K
Polymer in Phenodur PR 217/65B

MOLECULAR WEIGHT

Number Average Molecular Weight (Mn) is 500 - 1,000 g/mol.

ANALYTICAL DATA

Reference IR and GPC spectra were provided.

3. COMPOSITION

DEGREE OF PURITY

100% (polymer present in a solution at < 40% concentration)

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: Liquid.

Property	Value	Data Source/Justification
Melting Point/Freezing Point	Not determined	Introduced in solution
Boiling Point	Not determined	Expected to decompose prior to boiling.
Density	1050 kg/m ³ at 20 °C	SDS of product containing polymer at < 40%
Vapour Pressure	Not determined	Expected to be low considering the relatively high number average molecular weight (> 500 g/mol).
Water Solubility	Insoluble	SDS. Expected to be insoluble in water based on the structure of the notified polymer.
Hydrolysis as a Function of pH	Not determined	Contains functionalities susceptible to hydrolysis but unlikely to occur in the environmentally relevant pH range (4-9).
Partition Coefficient (n-octanol/water)	Not determined	Expected to partition to n-octanol on the basis of its expected low water solubility.
Adsorption/Desorption	Not determined	Expected to sorb to soil and sediment, and have low mobility in the environment on the basis of its expected low water solubility
Dissociation Constant	Not determined	Contains ionisable functionalities, and hence may partially dissociate under normal environmental conditions.
Flash Point	Not determined	Expected to be low based on the expected vapour pressure. The notified polymer will be introduced in a solution that has a flash point of 34 °C.
Flammability	Not determined	The notified polymer will be introduced in flammable solvent.
Autoignition Temperature	340 °C	SDS of product containing polymer at < 40%.
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.

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 a concentration of < 1%) as a component of a coating product.

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

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

PORT OF ENTRY
Melbourne

TRANSPORTATION AND PACKAGING

The notified polymer (at < 1% concentration) will be imported in 200 kg containers. The containers will be stored at the importers storage facilities prior to distribution to customers throughout Australia by road.

USE

The notified polymer is a component of a coating product that will be applied to the interior surface of aluminium, tinplate or tin-free steel packaging. The packaging will be for cosmetic and household products, and food products. The notified polymer will be present in the cured coating at < 2% concentration.

OPERATION DESCRIPTION

The imported product containing the notified polymer (at < 1% concentration) will be applied in industrial settings. The application process is expected to be largely enclosed and automated. Automatic spray heads will be used to apply the coating (containing the notified polymer) into formed cans, which are then cured by heat, crosslinking the components.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1. Occupational Exposure

CATEGORY OF WORKERS

<i>Category of Worker</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Transport and warehouse	1 - 8	10 - 30
End-user	8	200

EXPOSURE DETAILS

Transport and storage workers may come into contact with the notified polymer (at < 1% concentration) only in the event of accidental rupture of containers.

Coating applications

At end-use sites, dermal and ocular exposure to coating products containing the notified polymer (at < 1% concentration) may occur during transfer and cleaning processes. Inhalation exposure is not expected given the expected low vapour pressure of the notified polymer. Exposure at other times is expected to be limited by the automated and enclosed nature of the application processes. The potential for exposure should be minimised through the use of PPE (goggles, impervious gloves, coveralls) by workers.

6.1.2. Public Exposure

The public may come into contact with cured coatings containing the notified polymer (at < 2% concentration) following application to substrates. However, in the cured coatings the notified polymer is expected to be bound within a polymer matrix and will not be available for exposure.

6.2. Human Health Effects Assessment

No toxicity data were submitted.

No data on toxicokinetics for the notified chemical was provided. For dermal absorption, molecular weights below 100 Da. are favourable for absorption and molecular weights above 500 Da. do not favour absorption (ECHA, 2017). Dermal uptake is likely to be low if the water solubility is below 1 mg/L and the rate of penetration may be limited by the rate of transfer between the stratum corneum and the epidermis if log P values are above 4 (ECHA, 2017). The notified polymer has a moderate molecular weight (500-1000 g/mol) and is expected to be insoluble in water and have a high partition coefficient. Subsequently dermal absorption of the notified polymer is expected to be low. Given there are significant levels of low molecular weight species (< 500 g/mol), the possibility of absorption via the gastrointestinal tract cannot be excluded.

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

The notified polymer contains no structural alerts of concern and systemic absorption is expected to be low. Therefore, the notified polymer is expected to be of low hazard to human health.

6.3.1. Occupational Health and Safety

The notified chemical will not be reformulated in Australia. It will be imported as a component in a coating product at < 1% concentration. Dermal and ocular exposure of workers to the notified chemical may occur during application processes. However, provided that adequate control measures are in place to minimise worker exposure, including the use of engineering controls (automated and enclosed systems) and personal protective equipment (PPE) (gloves, safety glasses and protecting clothing) exposure should be minimised.

Under the conditions of 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 will be present in cured coatings at < 2% concentration in cosmetic, household and food products. Therefore, members of the public may experience repeated exposure to the notified polymer from the use of products that have been coated with it.

No migration studies were performed. The notified polymer is not expected to be released from the polymer matrix once it has been cured in the coating. The notified polymer is compliant with the guidance described under USA Code of Federal Regulations Title 21 Sec. 175.300 (Resinous and polymeric coatings), Swiss Ordinance (SR 817.023.21 – Printing inks), Council of Europe Resolution AP (2004)1 on Coatings, EU Plastics Regulation (No. 10/2011) and Chinese Food Contact Regulation (standard GB 4806.1-2016 – Food Safety National Standard of General Safety Requirements for Food Contact Materials and Articles).

Therefore, based on the information available, while the public may be exposed to the notified polymer through the use of cosmetic and household products and food contact items, it 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 into Australia already blended into the end use product (< 1% of the wet product). It will be stored in its original containers and transported to application sites. Environmental release is unlikely during storage and transportation. Spills are expected to be confined and contained using appropriate absorbing and disposed of as hazardous waste.

RELEASE OF CHEMICAL FROM USE

The notified polymer is intended to be used ultimately in the interior coating of cans, tubes and other packaging containers used in cosmetic and household products and food contact items. The coating will be applied by spray then cured in ovens. The cured crosslinked coating will contain < 2% of the notified polymer. Limited release during use is expected as the coating will be applied on an automated production line, most likely in a closed system under controlled conditions. The notifier estimates 0.5% of the notified polymer may be released annually from the site, predominantly to landfill, from the cleaning of manufacturing and application equipment. Therefore, environmental release from application sites is expected to be minimal.

RELEASE OF CHEMICAL FROM DISPOSAL

Residual polymer is expected to be in packaging and cleaning materials that are disposed of to landfill. The notifier has estimated that < 0.5% of the notified polymer may be released annually to landfill, from the disposal of product packaging and the cleaning and capture of materials containing the notified polymer. At the end of

their useful lives, the products containing the notified polymer will eventually be disposed of to landfill or recycled. Therefore most of the notified polymer will be present in landfill as irreversibly bound within the coating in which it was applied. As such the notified polymer is not expected to be released to the environment from landfill as it will not be mobile. Thermal degradation is expected to occur during recycling of coated products, and hence release of the notified polymer to the environment from this process is also unlikely.

7.1.2. Environmental Fate

No environmental fate data were submitted. The notified polymer is not expected to be readily biodegradable in the environment based on the structure of the compound. The majority of the imported notified polymer is expected to be irreversibly bound within the end product coating. At the end of their useful lives, the products containing the notified polymer will eventually be sent to landfill or recycled. The notified polymer is not expected to be mobile in landfill or bioavailable given that it is most likely be bound within coating. It is likely to undergo slow degradation in landfill via biotic and abiotic processes, eventually forming water and oxides of carbon. The notified polymer is expected to undergo thermal degradation during recycling to water and oxides of carbon.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration (PEC) for the notified polymer has not been calculated since no significant release to the environment is expected based on its reported use pattern.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. Polymers without significant ionic functionality are generally considered not to be harmful to aquatic organisms. The notified polymer is expected to be practically non-toxic to aquatic organisms (Boethling, & Nabholz, 1997).

7.2.1. Predicted No-Effect Concentration

A predicted no-effect concentration (PNEC) 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.

7.3. Environmental Risk Assessment

A risk quotient (PEC/PNEC) for the notified polymer was not calculated as neither a PEC nor PNEC was derived. Release of the notified polymer to the aquatic environment in ecotoxicologically significant quantities is not expected based on its reported use pattern. The notified polymer is expected to slowly degrade in the environment. However, is not expected to be bioaccumulative, as it is unlikely to cross biological membranes due to its high molecular weight. Based on the assessed use pattern of the notified polymer, it is not expected to pose an unreasonable risk to the environment.

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