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

PUBLIC REPORT

Chemical in PU 7000 Series Primers

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.

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
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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/1913	PPG Industries Australia Pty Ltd	Chemical in PU 7000 Series Primers	ND*	< 1 tonne per annum	Component of industrial coatings

*ND = not determined

CONCLUSIONS AND REGULATORY OBLIGATIONS

Hazard classification

Based on the available information, the notified chemical is recommended for hazard classification according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia. The recommended hazard classification is presented in the following table.

<i>Hazard classification</i>	<i>Hazard statement</i>
Flammable liquids (Category 4)	H227- Combustible liquid
Skin corrosion/irritation (Category 1)	H314 - Causes severe skin burns and eye damage

Based on the available information, the notified chemical is recommended for hazard classification according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004), with the following risk phrase:

R35: Causes severe burns

Human health risk assessment

Provided that the recommended controls are being adhered to, under the conditions of the occupational settings described, the notified chemical is not considered to pose an unreasonable risk to the health of workers.

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

Environmental risk assessment

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

Recommendations

REGULATORY CONTROLS

Hazard Classification and Labelling

- The notified chemical should be classified as follows:
 - Flammable liquids (Category 4): H227- Combustible liquid
 - Skin corrosion/irritation (Category 1): H314 - Causes severe skin burns and eye damage

The above should be used for products/mixtures containing the notified chemical, if applicable, based on the concentration of the notified chemical present and the intended use/exposure scenario.

- Due to the flammable properties of the notified chemical, the notifier should consider their obligations under the Australian Dangerous Goods Code (NTC, 2015).

CONTROL MEASURES

Occupational Health and Safety

- A person conducting a business or undertaking at a workplace should implement the following engineering controls to minimise occupational exposure to the notified chemical as introduced in the product:
 - Adequate ventilation
 - Spray booths used for spray applications, where possible
 - Automatic process for spray applications, where possible
- A person conducting a business or undertaking at a workplace should implement the following safe work practices to minimise occupational exposure during handling of the notified chemical as introduced in the product:
 - Avoid contact with skin and eyes
 - Avoid inhaling aerosols or spray mists
- A person conducting a business or undertaking at a workplace should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified chemical as introduced in the product:
 - Protective clothing/coveralls
 - Impervious gloves
 - Eye protection
 - Respiratory protection during spray application

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 (M)SDS should be easily accessible to employees.
- If products and mixtures containing the notified chemical 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 chemical 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 chemical should be handled by containment, physical 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 chemical 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 chemical has changed from a component of industrial coatings, or is likely to change significantly;
 - the amount of chemical being introduced has increased, or is likely to increase, significantly;
 - the chemical has begun to be manufactured in Australia;
 - 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.

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

(Material) Safety Data Sheet

The (M)SDSs of products containing the notified chemical provided by the notifier were reviewed by NICNAS. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

PPG Industries Australia Pty Ltd (ABN: 82 055 500 939)
14-20 McNaughton Road
CLAYTON VIC 3168

NOTIFICATION CATEGORY

Limited-small volume: Chemical other than polymer (1 tonne or less per year).

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, analytical data, degree of purity, impurities, additives/adjuvants, import volume and identity of manufacturer.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed for flammability.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

Japan

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

PU 7000 Series Primers (contain < 30% notified chemical)

MOLECULAR WEIGHT

< 500 Da

ANALYTICAL DATA

Reference NMR and IR spectra were provided.

3. COMPOSITION

DEGREE OF PURITY

> 90%

4. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AT 20 °C AND 101.3 kPa: pale yellow liquid

Property	Value	Data Source/Justification
Melting Point/Freezing Point	< -20 °C	Measured
Boiling Point	from approximately 328 °C at 101.4 kPa	Measured
Density	872.5 kg/m ³	Measured
Vapour Pressure	4.0 × 10 ⁻⁵ kPa at 25 °C	Measured
Water Solubility	1.25 × 10 ⁻³ g/L at 20 °C	Measured
Hydrolysis as a Function of pH	t _{1/2} = ~5hours (K _{obs} = ~0.138 hr ⁻¹) at 25 °C and pH4 t _{1/2} < 2 hours at 25 °C and pH7/pH 9	Measured
Partition Coefficient (n-octanol/water)	Not determined	Expected to partition from water to n-octanol on the basis of its low predicted water solubility and predominantly

Property	Value	Data Source/Justification
Adsorption/Desorption	Not determined	hydrophobic structure Despite the low molecular weight, the notified chemical is expected to adsorb strongly to soils and sludge sediments due to the presence of the potential cationic functionality
Dissociation Constant	Not determined	Contains ionisable functionalities. Therefore, the notified chemical is expected to be ionised at the environmental pH range of 4 – 9
Flash Point	80 °C at 101.3 kPa	Measured
Flammability	Lower: 1% Upper: 8%	Product (M)SDS*
Autoignition Temperature	266 °C	Measured
Explosive Properties	Predicted negative	Based on the chemical structure
Oxidising Properties	Predicted negative	Based on the chemical structure

*The product contains the notified chemical at < 30%.

DISCUSSION OF PROPERTIES

For full details of tests on physical and chemical properties, refer to Appendix A.

Reactivity

The notified chemical 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 chemical is recommended for hazard classification according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia. The recommended hazard classification is presented in the following table.

Hazard classification	Hazard statement
Flammable liquids (Category 4)	H227- Combustible liquid

5. INTRODUCTION AND USE INFORMATION

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

The notified chemical will not be manufactured or reformulated in Australia. The notified chemical will be imported into Australia as a component of finished industrial coatings at < 30% concentration.

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

IDENTITY OF MANUFACTURER/RECIPIENTS
PPG Industries Australia Pty Ltd

TRANSPORTATION AND PACKAGING

Finished industrial coatings containing the notified chemical at < 30% concentration will be imported and transported in 1 L and 5 L metal cans. The cans will be distributed by air and road to industrial customers.

USE

The notified chemical will be used as a component of industrial coatings at < 30% concentration for metal substrates.

OPERATION DESCRIPTION

The notified chemical will not be manufactured or reformulated in Australia. Imported coatings may be manually decanted and mixed in spray booths and the subsequent spray application is expected to be automatic through use of robotics or semi-automatic through use of applicator-operated spray guns.

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>
Stevedores	2-3	10-15
Transport and warehousing/storage workers	6	260
Coating applicators	6	260
Maintenance, shift workers and cleaners at coating site	4	260

EXPOSURE DETAILS

Transport and storage workers are not expected to be exposed to the notified chemical (at < 30% concentration) except in the unlikely event of an accident.

End-use

Exposure to coatings containing the notified chemical (at < 30% concentration) may occur during transfer, application and cleaning processes. The potential for exposure should be minimised through the stated use by the notifier of personal protective equipment (PPE) including goggles, impervious gloves, coveralls and respiratory protection (during spray application) by workers. Inhalation exposure should be further mitigated through the use of exhaust ventilation, spray booths and automatic robotics or applicator-operated spray guns.

Workers may come into contact with substrates coated with the notified chemical after application. However, once the coatings have dried, the notified chemical will be bound within a solid matrix and will not be available for exposure.

6.1.2. Public Exposure

Coatings containing the notified chemical will be used in industrial settings only and will not be sold to the public. The public may come into contact with substrates coated with the notified chemical after application. However, once the coatings have dried, the notified chemical will be bound within a solid matrix and will not be available for exposure.

6.2. Human Health Effects Assessment

No toxicity data were submitted.

The notified chemical has a low molecular weight (< 500 Da). Therefore, absorption across biological membranes is expected. Dermal absorption may also be enhanced by the corrosive properties of the notified chemical.

The pH values of the notified chemical and water solutions containing 10% and 5% notified chemical were measured to be > 14, 11.58 and 11.21 respectively. Therefore, the notified chemical is classified as Skin Corrosion/Irritation (Category 1): H314 - causes severe skin burns and eye damage.

Health hazard classification

Based on the available information, the notified chemical is recommended for hazard classification according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia. The recommended hazard classification is presented in the following table.

<i>Hazard classification</i>	<i>Hazard statement</i>
Skin corrosion/irritation (Category 1)	H314 – Causes severe skin burns and eye damage

Based on the available information, the notified chemical is recommended for hazard classification according to the *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 2004), with the following risk phrase:

R35: Causes severe burns

6.3. Human Health Risk Characterisation

6.3.1. Occupational Health and Safety

The notified chemical is classified as corrosive based on the measured pH value. The provided MSDSs of the coating products contain the relevant hazard statement, exposure controls and personal protection measures. The expected control measures in place (e.g. PPE, sufficient ventilation, spray booths and automatic robotics/applicator-operated spray guns) to minimise exposure should minimise the risk of corrosive effects.

Once the coatings have dried, the notified chemical will be bound within an inert matrix and will not be available for exposure.

Therefore, provided that the recommended controls are being adhered to, under the occupational settings described, the risk to the health of workers from use of the notified chemical is not considered to be unreasonable.

6.3.2. Public Health

Coatings containing the notified chemical will be used in industrial settings only and will not be sold to the public. The public may come into contact with surfaces coated with products containing the notified chemical. However, once the coatings have dried, the notified chemical will be bound within the solid matrix and will not be available for exposure.

Based on the assessed use patterns, the risk to the public from use of the notified chemical 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

No manufacturing or reformulation of the notified chemical will take place in Australia. Release of the notified chemical to the environment during importation, storage, and transport is unlikely. In the event of a spill, the notified chemical is expected to be contained and collected with an inert absorbent material and disposed of in accordance with local regulations.

RELEASE OF CHEMICAL FROM USE

The coatings containing the notified chemical will be used mainly in industrial processes and applications, and will not be made available to the public. The coatings containing the notified chemical will be applied to metal substrates by professional spray paint operators in spray booths. Prior to application, the coating will be manually decanted and mixed. This is expected to occur in the spray booths and the potential of release is expected to be low. The loss from overspray is predicted to be approximately < 20% of the product containing the notified chemical. Release generated from washing spray equipment (< 1% of the import volume) and spills from the spray application are expected to be collected and disposed of in accordance with local regulations.

RELEASE OF CHEMICAL FROM DISPOSAL

The majority of the notified chemical will be cured into an inert matrix expected to be associated with metal substrates after application. It is expected to share the fate of the substrate to which it is applied and be disposed of to landfill or subjected to metal recycling processes. Residual notified chemical in empty containers is expected to be disposed of to landfill in accordance with local regulations.

7.1.2. Environmental Fate

No environmental fate data were submitted. The captured overspray and the articles to which the notified chemical will be applied will be disposed of to landfill. The majority of the notified chemical is expected to be cured within an inert matrix adhering to articles following its use in coating applications. In its cured form it is

not expected to be mobile, bioavailable or biodegradable. The notified chemical is expected to eventually degrade via biotic and abiotic processes in landfill, or by thermal decomposition during metal reclamation processes, to form water and oxides of carbon and nitrogen.

A small fraction of the notified chemical may be released to the sewer due to the cleaning of application equipment. In wastewater treatment processes in sewage treatment plants (STPs), most of the notified chemical is expected to partition to sludge due to its low water solubility and cationicity. The sludge from STPs is expected to be removed for disposal to landfill or used on land for soil remediation.

7.1.3. Predicted Environmental Concentration (PEC)

The predicted environmental concentration (PEC) has not been calculated as release of the notified chemical to the aquatic environment is expected to be very limited based on its reported use pattern.

7.2. Environmental Effects Assessment

No ecotoxicity data were submitted. The notified chemical contains functionality which has the potential to become cationic under environmental conditions (pH 4-9). The cationic charge density is < 5000 Da and thus the notified chemical has the potential to be toxic to aquatic life. However, due to low water solubility and given no significant release of the notified chemical is expected to the aquatic environment, this is not considered to be a concern.

7.2.1. Predicted No-Effect Concentration

A predicted no-effect concentration (PNEC) has been not calculated for the notified chemical as no ecotoxicity data were submitted. The release of the notified chemical to the aquatic environment will be very limited based on its reported use pattern.

7.3. Environmental Risk Assessment

A risk quotient (PEC/PNEC) for the notified chemical was not calculated as neither a PEC nor PNEC was derived. Release of the notified chemical to the aquatic environment in ecotoxicologically significant quantities is not expected based on its reported use pattern. The notified chemical is not expected to be bioavailable and is expected to slowly degrade in the environment. Based on the assessed use pattern of the notified chemical, it is not expected to pose an unreasonable risk to the environment.

APPENDIX A: PHYSICAL AND CHEMICAL PROPERTIES

Pour Point < -20 °C

Method	OECD TG 102 Melting Point/Melting Range.
Remarks	As the test substance was noted to become increasingly viscous on cooling during the preliminary testing, the pour point was therefore considered to be the most appropriate method for the main test.
Test Facility	Envigo (2015)

Boiling Point from approximately 328 °C at 101.4 kPa

Method	OECD TG 103 Boiling Point.
Remarks	Determined by differential scanning calorimetry. The start temperature could only be approximated as a result of the low rate of enthalpy change noted during boiling.
Test Facility	Envigo (2015)

Density 872.5 kg/m³

Method	Not reported.
Test Facility	PPG (2014)

Vapour Pressure 4.0 × 10⁻⁵ kPa at 25 °C

Method	OECD TG 104 Vapour Pressure.
Remarks	Determined using a vapour pressure balance.
Test Facility	Harlan (2014)

Water Solubility 1.25 x 10⁻³ g/L at 20 °C

Method	OECD TG 105 Water Solubility. EC Council Regulation No 440/2008 A.6 Water Solubility.
Remarks	Flask Method. Preliminary visual solubility testing indicated the water solubility to be less than 0.10 g/L. Therefore, due to the low solubility of the test item and the lack of any suitable chromophore(s), it was considered that mass spectrum detection would be most suitable for water solubility testing.
Test Facility	Envigo (2015)

Hydrolysis as a Function of pH

Method	OECD TG 111 Hydrolysis as a Function of pH. EC Council Regulation No 440/2008 C.7 Degradation: Abiotic Degradation: Hydrolysis as a Function of pH.
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<i>pH</i>	<i>T (°C)</i>	<i>t</i> _{1/2} <hours>
4	25	~5
7	25	< 2
9	25	< 2

Remarks	The pH 7 and 9, 20.0 ± 0.5 °C and 30.0 ± 0.5 °C results indicated “None detected” for all of the time point samples, including the initial samples. As a result, it could only be concluded that the half-life at pH 7 and 9 at 25 °C would be less than a couple of hours.
Test Facility	Envigo (2015)

Flash Point 80 ± 2 °C at 101.3 kPa

Method	EC Council Regulation No 440/2008 A.9 Flash Point.
Remarks	Determined by a closed cup flash point tester.
Test Facility	Harlan (2015)

Autoignition Temperature 266 ± 5 °C

Method EC Council Regulation No 440/2008 A.15 Auto-Ignition Temperature (Liquids and Gases).
Test Facility Harlan (2015)

Explosive Properties Predicted negative

Method EC Council Regulation No 440/2008 A.14 Explosive Properties.
Remarks Based on the chemical structure
Test Facility Harlan (2015)

Oxidizing Properties Predicted negative

Method EC Council Regulation No 440/2008 A.21 Oxidizing Properties (Liquids).
Remarks Based on the chemical structure
Test Facility Harlan (2015)

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