File No PLC/1372

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Rust-Oleum Water-Based Interior/Exterior Paint

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government 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 Australian Government 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

November 2016

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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
PLC/1372	Rust-Oleum Australia Pty Ltd	Polymer in Rust-Oleum Water-Based Interior/Exterior Paint	No	≤ 300 tonnes per annum	Component of paint

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental Risk Assessment
Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- In the interest of occupational health and safety, the following precautions should be observed during spray application of paints containing the notified polymer:
    - Use adequate general ventilation
    - Avoid inhalation exposure
    - Use respiratory protection if inhalation exposure may occur.

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

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

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

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

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;
- the notified polymer is introduced in powder form;

or

(2) Under Section 64(2) of the Act; if
- the function or use of the notified polymer has changed from component of paint, or is likely to change significantly;
- the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
- the notified polymer has begun to be manufactured in Australia;
- additional information has become available to the person as to an adverse effect of the notified 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 (M)SDS of the product containing the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants
Rust-Oleum Australia Pty Ltd (ABN: 86 112 409 926)
Unit 12, 4 Southridge Street
EASTERN CREEK NSW 2766

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, purity, polymer constituents, residual monomers/impurities and import volume.

2. IDENTITY OF POLYMER

Marketing Name
Rust-Oleum Water-Based Interior/Exterior Paint (product containing the notified polymer at < 30% concentration)

Molecular Weight
Number Average Molecular Weight (Mn) is > 10,000 Da.

3. PLC CRITERIA JUSTIFICATION

Criterion	*Criterion met*
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	Milky, white liquid*
Melting Point/Glass Transition Temp	Not determined
Density	1,000 – 1,300 kg/m^3 at 25°C*
Water Solubility	Not determined. Expected to be low based on its high molecular weight and predominantly hydrophobic structure of the notified polymer.
Reactivity	Stable under normal environmental conditions.
Degradation Products	None under normal conditions of use.

*Values as based on properties listed in the (M)SDS of the product containing the notified polymer at < 30% concentration.

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	100-300	10-30	10-30	10-30	10-30

Use
The notified polymer will be used as a component of interior and exterior architectural paints at < 30% concentration. The finished paint products will be imported, and used by DIY consumers and professional painters. The paints will mainly be applied by brush or roller and less than 20% will be applied by spray application. Spray application by consumers is not expected.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard.

The notified polymer has a high molecular weight, likely to be > 70,000 Da (see molecular weight section above for more information), with expected low water solubility. Inhalation of respirable particles of polymers with molecular weights > 70,000 Da has been linked with irreversible lung damage due to lung overloading and impaired clearance of particles from the lung, particularly following repeated exposure (US EPA, 2013). While there is also a concern for polymers with molecular weights between 10,000 and 70,000 Da, it is acknowledged that there is a data gap for this range. If the notified polymer is inhaled at low levels and/or infrequently, it is assumed that it will be cleared from the lungs. However, high level and/or frequent exposure may result in lung overloading effects, though the level of exposure in humans that would result in any effects, as well as the severity, is uncertain.

Although not considered in this risk assessment, NICNAS notes that the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS),* as adopted for industrial chemicals in Australia. These are not present in the notified polymer as introduced above the cut off concentrations for classification.

Occupational Health and Safety Risk Assessment
Workers carrying out spray application of coatings may experience frequent and/or prolonged inhalation exposure. The risk of lung overloading would be reduced by workplace controls that would reduce exposure such as good ventilation, safe work practices and respiratory protection if inhalation exposure may occur. With the use of these controls, the risk to workers posed by the notified polymer is not considered unreasonable.

Public Health and Safety Risk Assessment
The public may be exposed during use of DIY products containing the notified polymer at < 30% concentration, but are not expected to have inhalation exposure. Given the assumed low hazard, the risk posed by exposure to the notified polymer is not considered unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Polymers without significant ionic functionality are generally of low concern to the environment.

The notified polymer will be imported into Australia as a component of finished paints and coating formulations; no reformulation or repackaging will occur in Australia. Products containing the notified polymer will be used by both professional and Do-It-Yourself (DIY) users. During use, paints and

coatings containing the notified polymer are expected to be applied by brush or roller (≥ 80%), and spray techniques (< 20%). It is expected some of the coating product will be in the form of overspray during spraying operations, and will typically entail disposal to landfill after being collected. During use, the notified polymer may also be released to the environment as accidental spills and container residues. These releases are expected to be collected and disposed of to landfill.

Residues containing the notified polymer on brushes and rollers are expected to be rinsed into containers, and then allowed to cure before disposal as solid wastes to landfill. As a worst case scenario, it is assumed that up to 5% of the notified polymer used by DIY users may be incorrectly disposed of to the sewer, drains, or ground from waste and washing of application equipment. Assuming the release occurs nationwide and over the entire year, the predicted environmental concentration (PEC) for rivers is estimated to be up to 9.1 µg/L. The calculated PEC is far below the EC50 for algae of the most toxic non-ionic polymers (EC50 > 1 mg/L). Therefore, the notified polymer is not expected to be released to surface waters at ecotoxicologically significant concentrations.

PEC_{river} = 5% × 300,000 kg/year ÷ 365 day/year ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)] = 9.1 µg/L.

The notified polymer in paints and coatings cured on the substrate will share the fate of the coated article, which ultimately is expected to be disposed of to landfill. In landfill, the notified polymer will be present as cured solids, which will be neither bioavailable nor mobile. Furthermore, the notified polymer is not expected to bioaccumulate due to its high molecular weight.

In landfill or water, the notified polymer is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon and nitrogen. Therefore, based on the calculated PEC value and the expected low toxicity, the notified polymer is not considered to pose an unreasonable risk to the environment.

BIBLIOGRAPHY

Safe Work Australia (2015) Code of Practice: Spray Painting and Powder Coating, Safe Work Australia, http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/spray-painting-and-powder-coating.

US EPA (2013) High Molecular Weight Polymers in the New Chemicals Program. http://www.epa.gov/oppt/newchems/pubs/hmwtpoly.htm (Accessed 11 August 2016)