File No PLC/1296

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Acrysol™ RM-1600

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.

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 2015

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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/1296	Rohm & Haas Australia Pty Ltd Dow Chemical (Australia) Pty Ltd	Polymer in Acrysol™ RM-1600	No	≤ 600 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

- 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.

- 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, 2012) 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.

or

(2) Under Section 64(2) of the Act; if
- the function or use of the notified polymer has changed from a 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 a 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
Rohm and Haas Australia Pty Ltd (ABN: 29 004 513 188)
Level 17
8 Exhibition Street
MELBOURNE VIC 3000

Dow Chemical Australia Pty Ltd (ABN: 72 000 264 979)
Level 17
8 Exhibition Street
MELBOURNE VIC 3000

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 and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)
Polymer in Acrysol™ RM-1600

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	Not applicable
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	Pale yellow liquid*
Melting Point/Glass Transition Temp	Imported in aqueous solution
Density	1000 - 1100 kg/m^3 at 25 °C*
Water Solubility	Soluble in water
Dissociation Constant	Not determined. The notified polymer does not contain any functional groups that are expected to be ionised in the environmental pH range (4 - 9).
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

*For the imported product Acrysol™ RM-1600 containing the notified polymer at a concentration of 20%.

5. INTRODUCTION AND USE INFORMATION

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

Year	*1*	*2*	*3*	*4*	*5*
Tonnes	30 - 100	100 – 300	100 – 300	100 – 300	300 – 600

Use
The notified polymer will be used as a component of paint. The notified polymer will be imported into Australia at a concentration of 20%. The notified polymer will be reformulated in Australia into water-based paint products containing the notified polymer at a concentration of < 5% for use in interior and exterior architectural paints. The water-based paints will be used by industrial and Do-it-Yourself (DIY) users.

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 risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

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 not be manufactured in Australia. Therefore, release of the notified polymer to the environment is not expected from this activity. Accidental spills of notified polymer during import, transport or storage are expected to be adsorbed onto a suitable material and collected for disposal in accordance with local regulations. The notified polymer may enter wastewater streams during reformulation processes to produce paints. Up to 2% of the total import volume of the notified polymer is estimated to be released into wastewater as a result of rinsing empty import containers, mixing equipment, transfer lines and filling machines. Wastewater containing the notified polymer may be re-used as the water diluent phase in subsequent reformulation activities. Alternatively, wastewaters may be disposed of through a waste disposal company and be eventually discharged to sewers.

The notified polymer will be used as water-based paints for interior and exterior architectural substrates by professional painters and DIY applications. During application of the coating, release to the environment may occur from residues in empty containers (< 5%), spills (< 1%) and from cleaning of equipment (< 1%). The majority of the release will be in the form of polymer adsorbed onto substrates. During use, paints and coatings are expected to be applied by brush, roller and spray techniques. It is expected that approximately 20-60% of the coating product will be in the form of overspray during spraying operations and will typically entail landfill disposal after being collected. Brushes spray equipment and rollers will be cleaned by wiping them on newspaper followed by rinsing in water. The used newspaper and any drop sheets, cleaning cloths or rags will be disposed of to landfill. Residues in empty containers and spills (collected using inert material) are expected to be disposed of to landfill. As a worst case scenario it is assumed that 7% (including 5% from DIY use) of the notified polymer is expected to be released to sewers. Assuming 0% of the notified polymer will be removed via absorption to sludge in the sewage treatment plant, the resultant predicted environmental concentration (PEC) in sewage effluent on a nationwide basis is estimated as 25.44 µg/L [PECriver = 115.07 kg notified polymer/day ÷ (200 L/person/day × 22.613 million people) × 1 (dilution factor)]. The PEC is well below the EC50 for algae of the most toxic polymers (EC50 > 1 mg/L). Assuming the releases occurs nationwide and over the entire year, this is unlikely to lead to ecotoxicologically relevant concentrations of the notified polymer in the aquatic environment.

Once cured, the coatings containing the notified polymer will form an inert polymer matrix, and the incorporated notified polymer will not be bioavailable. Discarded end use articles containing the notified polymer are expected to be disposed of to landfill, recycled, or subjected to combustion which will entail thermal decomposition of the coating to form water vapour and oxides of carbon and nitrogen. In landfill, the notified polymer is not expected to be mobile or bioavailable and will eventually degrade by abiotic and biotic processes to water and oxides of carbon and nitrogen. Bioaccumulation is not likely based on its high molecular weight.

Therefore, the notified polymer is not considered to pose an unreasonable risk to the aquatic environment based on its assessed use pattern.