

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Disperbyk 2080

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 2019

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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/1558	Reschem Technologies Pty Ltd PPG Industries Australia Pty Ltd	Polymer in Disperbyk 2080	No	< 10 tonnes per annum	Component of paints and coatings

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, noting that the formulation may be classified as H318 (causes serious eye damage) because of hazardous impurities.

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

- A copy of the 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

- Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.

- 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 use as a component of coatings 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.

Safety Data Sheet

The SDS of products containing the notified polymer was provided by the applicant. The accuracy of the information on the SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

Reschem Technologies Pty Ltd (ABN: 90 3165 656 219)

Unit 9

1 – 3 Jubilee Avenue

WARRIEWOOD NSW 2102

PPG Industries Australia P/L (ABN: 80 055 500 399)

14 McNaughton Road

CLAYTON VIC 3168

Exempt Information (Section 75 of the Act)

Data items and details exempt from publication include: chemical name, other names, CAS number, molecular and structural formulae, molecular weight, polymer constituents, residual monomers/impurities, spectral data, purity, and import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

DISPERBYK-2080

Molecular Weight

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

3. PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met</i>
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	Yellow liquid
Melting Point/Glass Transition Temperature	< 5 °C
Density	$1.041 \times 10^3 \text{ kg/m}^3$ at 20 °C
Water Solubility	Not determined. Expected to be soluble based on its use as a wetting and dispersing agent.
Dissociation Constant	Not determined. Contains dissociable functionality.
Particle Size	Not applicable
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

5. INTRODUCTION AND USE INFORMATION

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

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

Use

The notified polymer will not be manufactured in Australia. It will be imported into Australia at < 30% concentration as a component of DISPERBYK-2080 in sealed steel 25 kg, 200 kg or 1,000 kg drums, or in reformulated pigment concentrates, paints or coatings. The notified polymer will be used as a wetting and dispersing agent in anti-corrosive primers, direct-to-metal coatings, and aqueous wood and furniture coatings. Products containing the notified polymer at < 30% concentration are for industrial use only and will be applied to substrates by spray, brush or roller.

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.

The notified polymer contains structural alerts for corrosion, sensitisation and irritation. The potential for these effects is likely to be limited by the high molecular weight ($M_n > 1,000$ g/mol) of the polymer.

The notified polymer is partially water soluble with high molecular weight and therefore if inhaled at low levels is likely to be readily cleared from the upper respiratory tract through mucociliary action. Small proportions of the notified polymer may reach the lower respiratory tract, but it should still be readily cleared from the lungs unless high levels are inhaled. When high levels of the notified polymer are inhaled, it is likely to be cleared from the lungs, but this may be slow. The expected use of PPE and adequate ventilation (or respiratory equipment where there is insufficient ventilation) by workers when handling products containing the notified polymer should reduce inhalation exposure levels and hence lower the risk of temporary lung overloading.

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.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. The notified polymer contains functional groups with the potential to become anionic under environmental conditions (pH 4-9). Anionic polymers are generally of low toxicity to fish and daphnia, however they are known to be moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. The notified polymer contains functionality that dilutes the chelating effect, which results in significantly reduced toxicity to algae (Boethling & Nahbolz, 1997).

The notified polymer will not be manufactured in Australia. It will be imported and used as a wetting and dispersing additive in aqueous coating systems or imported in reformulated pigment concentrates, paints or coatings for industrial use only. Release of the notified polymer to the environment in the event of accidental spills or leaks during storage, transport and use is expected to be absorbed on suitable materials and disposed of to landfill in accordance with local government regulations. The coatings will be applied by professional applicators in industrial settings. The formulated products may be applied by spray techniques, brush or roller. It is assumed that some of the products could be released as overspray

generated during use. The overspray is expected to be collected on kraft paper or newspaper in spray booths before disposal to landfill in accordance with local government regulations.

Following the application, most of the notified polymer is expected to share the fate of the article to which it has been applied, either subjected to metal reclamation processes or disposed of to landfill at the end of its useful life. During metal reclamation processes, 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. Thus, release of the notified polymer from the assessed use pattern is not expected to lead to ecotoxicologically significant concentrations in the aquatic environment. However, if accidentally released to water, the notified polymer is soluble in water but is not expected to cross biological membranes due to its high molecular weight and is therefore not expected to bioaccumulate. In landfill, the notified polymer is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon and nitrogen and salts of ammonium.

Therefore, based on its assumed low hazard and assessed use pattern, 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, <https://www.safeworkaustralia.gov.au/doc/model-code-practice-spray-painting-and-powder-coating>.

Boethling, RS & Nabholz VJ (1997) Chapter 10 Environmental Assessment of Polymers under the U.S. Toxic Substances Control Act. In: Hamilton, JD Sutcliffe R ed. Ecological Assessment of Polymers Strategies for Product Stewardship and Regulatory Programs, 1st ed. New York, Van Nostrand Reinhold, pp 187-234.