File No PLC/1457

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

1,3-Propanediol, 2-butyl-2-ethyl-, polymer with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane

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

January 2018

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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/1457	Akzo Nobel Pty Ltd Carbon Revolutions Operations Pty Ltd	1,3-Propanediol, 2-butyl-2-ethyl-, polymer with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane	No	≤ 8 tonnes per annum	A component of industrial automotive paints

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.

- In the interest of occupational health and safety, the following precautions should be observed for use of the notified polymer as introduced in powder form:
  - The level of atmospheric nuisance dust should be maintained as low as possible. The Safe Work Australia exposure standard for atmospheric dust is 10 mg/m^3.

- 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

- 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 industrial automotive paints, 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 the product 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
Akzo Nobel Pty Ltd (ABN: 59 000 119 424)
51 McIntyre Road
SUNSHINE NORTH VIC 3020

Carbon Revolutions Operations Pty Ltd (ABN: 40 154 435 355)
Bldg NR, 75 Pigdons Road
WAURN PONDS VIC 3216

Exempt Information (Section 75 of the Act)
No details are claimed exempt from publication.

2. IDENTITY OF POLYMER

Marketing Name(s)
Setal l0-9752

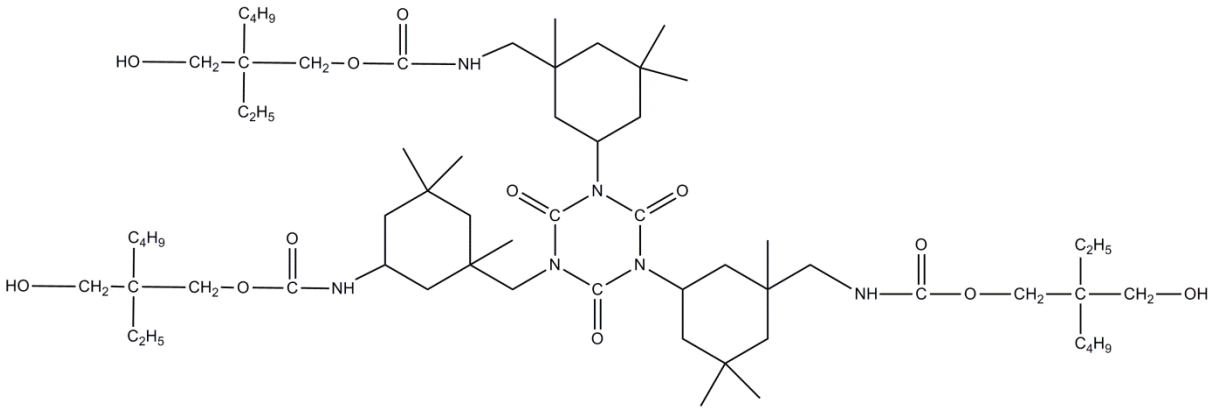
Chemical Name
1,3-Propanediol, 2-butyl-2-ethyl-, polymer with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane

CAS Number
195074-23-8

Other Name(s)
2-Butyl-2-ethyl-1,3-propanediol-isophorone diisocyanate copolymer

Molecular Formula
$(C_{12}H_{18}N_2O_2.C_9H_{20}O_2)_x$

Structural Formula



Molecular Weight

Number Average Molecular Weight (Mn)	1,581 Da
Weight Average Molecular Weight (Mw)	1,838 Da
Polydispersity Index (Mw/Mn)	1.162
% of Low MW Species < 1000 Da	3.346
% of Low MW Species < 500 Da	0.995

Polymer Constituents

Chemical Name	*CAS No.*	*Weight % starting*	*Weight % residual*
Cyclohexane, 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethyl-, homopolymer	53880-05-0	61.5	0.2
1,3-Propanediol, 2-butyl-2-ethyl-	115-84-4	38.5	2.0

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	Liquid
Melting Point/Glass Transition Temperature	64 °C
Density	1072 kg/m^3 at 20 °C
Water Solubility	Insoluble
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	1-2	1-2	4-6	4-6	6-8

Use

The notified polymer will be not manufactured in Australia. The notified polymer will be imported into Australia as a component of industrial automotive paints. The notified polymer will not be reformulated or repackaged in Australia and will not be sold to the general public.

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.

Release of the notified polymer from accidental spills are expected to be contained, collected with inert absorbent material and disposed of to landfill.

The main release of the notified polymer in coating products during use will be from overspray (estimated to be up to 35% of the import volume). Overspray is expected to be intercepted by engineering controls such as spray booth filters and water scrubbers. The polymer in the scrubber water is likely to cure as a component of the paint, removed from water periodically and disposed of to landfill in accordance with local regulations. Disposal of residue in the finished paint containers is expected to be collected for disposal to landfill in accordance with local, State and Federal regulations..

Once cured, the coatings containing the notified polymer will form an inert polymer matrix, and the incorporated notified polymer will not be bioavailable. Discarded painted metal and plastic automotive articles are expected to be sent to landfill or recycled at the end of their useful lives. In landfill, the notified polymer contained in solid waste or on coated surfaces is expected to be immobile due to its incorporation into an inert matrix of cured coatings. The notified polymer is not expected to be readily biodegradable, but bioaccumulation is not likely based on its high molecular weight. In landfill the notified polymer will eventually degrade via abiotic or biotic processes into water and oxides of carbon and nitrogen. During metals reclamation the notified polymer is expected to thermally decompose to oxides of carbon and nitrogen and water vapour.

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

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.