File No PLC/1259

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

1,4-Benzenedicarbonyl dichloride, polymer with 1,4-benzenediamine

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.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also 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

June 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/1259	Rebain International (Aust) Pty Ltd	1,4-Benzenedicarbonyl dichloride, polymer with 1,4-benzenediamine	No	≤ 5 tonnes per annum	Component of plastics

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 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 (M)SDS should be easily accessible to employees.

- 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.

Storage

- The following precautions should be taken by workers regarding storage of the notified polymer:
  - Store in a segregated and approved area.

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 plastics, 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 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
Rebain International (Aust) Pty Ltd (ABN: 50 102 669 536)
53-55 Rodeo Drive
DANDENONG VIC 3175

Exempt Information (Section 75 of the Act)
Data items and details claimed exempt from publication: molecular weight, use details and spectral data.

2. IDENTITY OF POLYMER

Marketing Name(s)
Twaron Polymer PPTA Powder (5000, 5010, 5011)

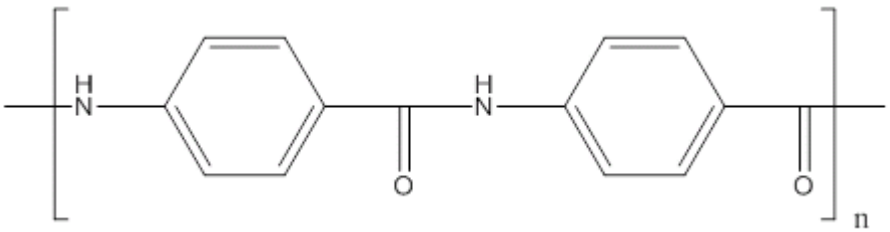
Chemical Name
1,4-Benzenedicarbonyl dichloride, polymer with 1,4-benzenediamine

CAS Number
26125-61-1

Other Name(s)
Poly-paraphenyleneterephthalamide

Molecular Formula
$(C_8H_4Cl_2O_2.C_6H_8N_2)_x$

Structural Formula



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

Reactive Functional Groups
The notified polymer contains only low concern functional groups.

Polymer Constituents

Chemical Name	*CAS No.*	*Weight % starting*	*Weight % residual*
1,4-Benzenediamine	106-50-3	44.5	0
1,4-Benzenedicarbonyl dichloride	100-20-9	55.5	0

Hazardous Impurities/Residual Monomers

Chemical Name	2-Pyrrolidinone, 1-methyl-		
CAS No.	872-50-4	*Weight %*	< 0.5
Hazardous Properties	Repr. Cat. 2; R61 Xi; R36/37/38 Conc. ≥ 10%: T; R61; R36/37/38 ≥ 5% Conc. < 10%: T; R61		

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	Yellow powder
Melting Point/Glass Transition Temp	Decomposes without melting at > 500 °C
Density	270-600 kg/m^3 at 20 °C
Water Solubility	Negligible. The notified polymer is mainly composed of hydrophobic species, and has a high molecular weight (NAMW > 10,000 Da)
Particle Size	90% > 25 µm
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	3	4	5	5

Use
The notified polymer will be introduced to Australia as a neat polymer in powder form. The notified polymer will be introduced in 25 kg drums, or 10 or 20 kg bags. The notified polymer will not be manufactured in Australia; reformulation will include extrusion or injection moulding or casting.

The end use of the notified polymer is as a reinforcing polymer to upgrade the abrasion and lubricating properties of polymer products used in industrial applications including thermosetting and thermoplastic polymers. Products incorporating the notified polymer will include polymer screens for mining and machine bearings for industrial use only.

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 particle size data indicate that the notified polymer is not expected to have particles in the respirable size range (< 10 μm) at significant levels; therefore lung overloading effects are not expected.

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

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. The notified polymer is expected to have a potentially cationic functionality; however, the high FGEW (> 5000 Da) indicates the notified polymer is not of concern to aquatic organisms.

The notified polymer will be imported neat to manufacture plastic and polymer articles by extrusion or injection moulding processes. No release of the notified polymer to the aquatic environment is expected from manufacture and reformulation processes. Accidental spills during the manufacturing process are expected to be collected and disposed of through approved waste management facilities in accordance with local government regulations. The majority of the notified polymer will be used in the manufacture of plastic and polymer articles by extrusion or injection moulding, and will therefore be physically incorporated within the inert polymer matrix. At the end of their useful life, articles containing the notified polymer are expected to be disposed of to landfill, in accordance with local government regulations. All wastes, including import container residues and empty containers, are expected to be disposed of through approved waste management facilities in accordance with local government regulations.

Based on its high molecular weight and chemical structure, the notified polymer is not expected to be readily biodegradable. In landfill, the notified polymer is bound within a polymer matrix, and is not expected to be bioavailable or mobile. Due to its high molecular weight and low water solubility, the notified polymer is not expected to cross biological membranes and is therefore not expected to bioaccumulate. In landfill, the notified polymer is expected to eventually degrade by biotic and abiotic processes to form water and oxides of carbon and nitrogen.

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.