

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Zetag 9000 products

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**

May 2014

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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/1194	BASF Australia Ltd & Chemiplas Australia Pty Ltd	Polymer in Zetag 9000 products	No	≤ 1 tonnes per annum	Flocculant for waste treatment systems

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

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 for the 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

- The notified polymer should be disposed to landfill.

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 flocculant for waste treatment systems, 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 products containing the notified polymer were 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**

BASF Australia Ltd (ABN: 62 008 437 867)
Level 12, 28 Freshwater Place
SOUTH BANK VIC 1077

Chemiplas Australia Pty Ltd (ABN: 29 003 056 808)
Level 3, 112 Wellington Parade
EAST MELBOURNE VIC 3002

Notification Category

Polymer of Low Concern

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, spectral data, purity, polymer constituents, residual monomers/impurities, use details, manufacture/import volume and site of manufacture/reformulation.

Previous Notification in Australia by Applicant(s)

Yes

Notification in Other Countries

A component of the mixture only has been notified overseas.

Europe

Canada

New Zealand

2. IDENTITY OF POLYMER**Marketing Name(s)**

Zetag® 9018

Zetag® 9019

Zetag® 9048FS

Zetag® 9049FS

Zetag® 9068FS

Molecular Weight

Number Average Molecular Weight (Mn) is > 1,000 Da

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	The polymer is not isolated from the finished solution. The product as imported appears as a cream emulsion.
Melting Point/Glass Transition Temp	Not determined. Expected to be low (< 10 °C) based on similar polymers. The notified polymer will only be introduced in solution.
Density	~1,000 kg/m ³ at 20 °C (for Zetag sales products)
Water Solubility	Not determined. Expected to be low based on the predominately hydrophobic chemical structure of the polymer.
Dissociation Constant	Not determined. The notified polymer contains carboxylic acid functionality which may be ionised under normal environmental conditions.
Reactivity	The polymer contains functional groups that may be slowly hydrolysed in the environment. 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

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Tonnes	<1	<1	<1	<1	<1

Mode of Introduction

The notified polymer will be imported into Australia as a component of finished products at a concentration of <1%, and will not be manufactured or reformulated in Australia. The products will be imported into Australia packaged in various forms, such as 25 kg plastic Jerri cans, 220 kg plastic drums or 1,000 L intermediate bulk containers.

Details of Use

The notified polymer will be used as a flocculant for municipal and industrial waste waters/sludges.

At waste water treatment plants, the notified polymer may be decanted manually or automatically pumped to a holding tank. The polymer is then transferred to a make-down tank by an automated metering system. The polymer water in mineral oil emulsion will be further diluted with water while being mechanically agitated, before the mixture is pumped into waste water streams through a mechanical dosing system. The amount of the finished product containing the notified polymer will depend on the volume of waste water to be treated and the unit operation, such as clarification, thickening or dewatering.

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.

Occupational Health and Safety Risk Assessment

The notified polymer will be imported into Australia as a component of finished products and will not be reformulated.

It is estimated that between 10 and 20 wharf/transport/warehouse workers will be involved in the transportation and handling of the finished products. Exposure is expected to occur only in the event of an accident. Dermal and ocular exposure may occur for workers involved in the transfer of the finished product from the transport containers to a holding tank via connecting pump mechanisms. The number of workers involved in this task will vary at different waste treatment sites.

The extent of exposure to the notified polymer for waste treatment operators should be low (30–60 minutes per day). This will include tasks such as handling the product containers, removing bungs and connecting the pumping equipment where dermal and ocular exposure may occur. No exposure should occur during the pumping stage as it is an automated system. Local exhaust ventilation will be used to capture emissions during the decanting stage. The use of personal protective equipment such as protective clothing, safety goggles and protective gloves is expected to minimise the potential for dermal and ocular exposure.

The notifier will send empty product containers to either landfill or an approved container reprocessor. The solids from the waste water treatment systems, containing the notified polymer, will be disposed to landfill.

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

Public Health and Safety Risk Assessment

The notified polymer is for industrial applications and the public is not expected to be exposed to the notified polymer. The risk of the notified polymer to public health is not considered unreasonable, given the assumed low hazard and the assessed use pattern.

7. ENVIRONMENTAL RISK ASSESSMENT

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. This may apply to the notified polymer. However, the toxicity to algae is likely to be reduced due to the presence of calcium ions in the aquatic compartment which will bind to the acid functional groups.

The results from ecotoxicological investigations conducted on the formulated end-use product, containing 23% notified polymer in kerosene, are summarised in the table below. The toxicity of kerosene is taken into account in the following results.

<i>Endpoint</i>	<i>Result</i>	<i>Assessment Conclusion</i>
<u>Fish Toxicity</u>		
<i>Scophthalmus maximus</i> (96 hours)	LL50 > 1,000 mg/L	Not harmful
<u>Invertebrate Toxicity</u>		
<i>Arcatia tonsa</i> (48 hours)	EL50 = 46.3 mg/L	Harmful
<u>Sediment Dwelling Organism Toxicity</u>		
<i>Corophium volutator</i> (10 days)	LC50 > 10,000 mg/kg (dry wt)	Unclassifiable
<u>Algal Toxicity</u>		
<i>Skeletonema costatum</i> (72 hours)	E _r LC50 > 1,000 mg/L	Not harmful

The notified polymer will be imported as a component of a finished end-use product and will not be reformulated in Australia. Therefore, no environmental release is expected from manufacture or reformulation in Australia. Re-packing, sampling or dosing operations will take place on industrial sites using appropriate equipment designed to reduce possible spills and leaks. Therefore, a significant release of the notified polymer from these operations is not expected. Any residual polymer or spills will be sent to an approved landfill or waste treatment facility.

The product containing the notified polymer will be automatically pumped from the containers to a holding tank, where the product will be diluted with water by mechanical agitation. Then, the diluted product in the mixture will be added to the wastewater stream by automatic dosing. As the function of the notified polymer is as a flocculent, the environmental release of the notified polymer from use will be associated with the sludge produced by the wastewater treatment. As a result, the majority of the notified polymer will end up in landfill in the form of residues, collected spills or sewage sludge.

The notified polymer has a predominately hydrophobic structure and is expected to have very low water solubility. The notified polymer is not expected to be readily biodegradable. It is also not expected to cross biological membranes due to its high molecular weight and low water solubility and is therefore not expected to bioaccumulate. In landfill, the notified polymer is expected to eventually degrade via abiotic and biotic pathways to form water and oxides of carbon.

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.