

File No PLC/923

August 2010

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT
SCHEME
(NICNAS)**

FULL PUBLIC REPORT

Polymer in Polygreen F Series

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Department of Health and Ageing, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Department of the Environment, Water, Heritage and the Arts.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at 334-336 Illawarra Road, Marrickville NSW 2204.

This Full 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**

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FULL PUBLIC REPORT**Polymer in Polygreen F Series****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Elastochem Australia Pty Ltd (ABN 54 373 800 650)
262 Highett Road
Highett, VIC

NOTIFICATION CATEGORY

Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: Chemical Name, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities and Import Volume.

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Polygreen F series (including 6101, 6012, 6015, 6018, 6510 and 6512)
Polygreen 63

MOLECULAR WEIGHT (MW)

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

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION*Criterion*

Molecular Weight Requirements
Functional Group Equivalent Weight (FGEW) Requirements
Low Charge Density
Approved Elements Only
Stable Under Normal Conditions of Use
Not Water Absorbing
Not a Hazard Substance or Dangerous Good

Criterion met

Yes
Yes
Yes
Yes
Yes
Yes
Yes

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa:	Viscous liquid
Melting Point/Glass Transition Temp	10.4°C
Density	961 kg/m ³ at 30°C
Water Solubility	Not determined. The notified polymer is expected to have low water solubility based on the predominantly hydrophobic structure
Dissociation Constant	Not determined. The notified polymer does not contain any readily dissociable functions.
Reactivity	The notified polymer contains hydrolysable functional groups, but hydrolysis is expected to be slow in the environmental pH range (4-9)
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	≤ 500	≤ 500	≤ 2,000	≤ 2,000	≤ 2,000

Use

The notified polymer will be used in the manufacture of flexible polyurethane foam.

The notified polymer will be transferred from bulk storage vessels via dedicated pipes into a closed mixing vessel where it is combined with other ingredients to produce a polyurethane foam mixture. While the foam mixture is still reacting it is deposited onto an enclosed conveyor with vapour extraction where it forms the polyurethane foam. The finished polyurethane foam is used in the manufacture of products such as furniture, bedding and carpet underlay.

Mode of Introduction and Disposal

The notified polymer will be imported as a raw material (100% concentration) through the ports of Brisbane, Melbourne and Sydney.

6. HUMAN HEALTH IMPLICATIONS

Hazard Characterisation

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. This is supported by toxicological endpoints observed in testing conducted on the notified polymer.

<i>Endpoint</i>	<i>Result</i>	<i>Effects Observed?</i>	<i>Test Guideline</i>
Rat, acute oral	LD50 > 2000 mg/kg bw	no	OECD TG 423
Rabbit, skin irritation	slightly-irritating	yes	OECD TG 404
Rabbit, eye irritation	non-irritating	yes	OECD TG 405

All results were indicative of low hazard.

The notified polymer was slightly irritating to the skin with mean erythema scores for the three test animals of 1, 2 and 0.7 for the 24, 48 and 72 hour observations combined. No oedema formation was observed and all effects were resolved by 7 days after application.

In the eye irritation study on the notified polymer only minor (score of 1) conjunctival irritation was seen in 1 of 3 test animals at the 1 hour observation. No other adverse effects were seen in the study.

Occupational Health and Safety Risk Assessment

Dermal and ocular exposure may occur during transfer of the notified polymer (100% concentration) from storage to the mixing tank during the foam manufacture process. However, exposure to significant amounts of the notified polymer will be limited because of the automated processes, enclosed mixing tanks and personal protective equipment worn by workers.

Workers may come into dermal contact with polyurethane foam containing the notified polymer. However, in this final form, the notified polymer will be incorporated into the solid polymer matrix and hence not bioavailable.

Although exposure could occur, the notified polymer is not considered to pose an unacceptable risk to the health of workers due to the control measures and the low hazard profile of the notified polymer.

Public Health Risk Assessment

There is potential for dermal exposure by the public to polyurethane foams that contain the notified polymer. The notified polymer will be incorporated into a polymer matrix and hence not bioavailable. Given exposure to the notified polymer in polyurethane foams is expected to be negligible and the low hazard profile of the notified polymer the risk to public health is not considered to be unacceptable.

7. ENVIRONMENTAL IMPLICATIONS

Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

Environmental Risk Assessment

Environmental release of the notified polymer is unlikely during importation, storage and transportation. Manufacturers will blend the notified polymer with other components to produce polyurethane foam products at their facilities. Releases from the foam manufacturing facilities are anticipated to be limited given the use of closed-loop pipe-work and disposal of wastes from residues in drums and spills to landfill. Potentially contaminated wash water from spill clean-up, scrubbers and equipment cleaning will be discharged into an on-site wastewater treatment plant where the notified polymer will partition mainly to the sludge which will be disposed of to landfill. The high molecular weight of the polymer indicates a low potential for bioaccumulation. After curing, the notified polymer will be irreversibly cross-linked within the foam as part of the manufacturing process and hence will be neither bioavailable nor mobile. Most of the notified polymer will be incorporated into foam articles and will go to landfill at the end of their useful lives. In landfill, the notified polymer will undergo slow degradation processes via biotic and abiotic pathways, eventually forming water and oxides of carbon. Based on the reported use pattern and requirement to cross-link, the notified polymer is not expected to pose a risk to the environment.

8. CONCLUSIONS AND RECOMMENDATIONS

Human health risk assessment

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

Environmental risk assessment

Based on the reported use pattern, the notified polymer is not expected to pose a risk to the environment.

Recommendations

CONTROL MEASURES

Occupational Health and Safety

- 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.

- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer as introduced:
 - Avoid skin contact
- A copy of the MSDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Disposal

- The notified polymer should be disposed of to landfill.

Emergency procedures

- Spills or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

Regulatory Obligations

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 the manufacture of flexible polyurethane foam, 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 chemical 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 MSDS of the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.