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

FULL PUBLIC REPORT

Amodel HPA

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**Director
Chemicals Notification and Assessment**

TABLE OF CONTENTS

FULL PUBLIC REPORT	4
1. APPLICANT AND NOTIFICATION DETAILS	4
2. IDENTITY OF CHEMICAL	4
3. COMPOSITION.....	4
4. INTRODUCTION AND USE INFORMATION	4
5. PROCESS AND RELEASE INFORMATION	5
5.1. Distribution, Transport and Storage.....	5
5.2. Operation Description	5
5.3. Occupational exposure.....	6
5.4. Release	6
5.5. Disposal	6
5.6. Public exposure.....	6
6. PHYSICAL AND CHEMICAL PROPERTIES	7
7. TOXICOLOGICAL INVESTIGATIONS.....	7
8. ENVIRONMENT.....	8
9. RISK ASSESSMENT	8
9.1. Environment.....	8
9.1.1. Environment – exposure assessment	8
9.1.2. Environment – hazard assessment.....	8
9.1.3. Environment – risk characterisation.....	8
9.2. Human health.....	8
9.2.1. Occupational health and safety – exposure assessment.....	8
9.2.2. Public health – exposure assessment.....	8
9.2.3. Human health - effects assessment	8
9.2.4. Occupational health and safety – risk characterisation.....	9
9.2.5. Public health – risk characterisation.....	9
10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS.....	9
10.1. Hazard classification.....	9
10.2. Environmental risk assessment	9
10.3. Human health risk assessment.....	9
10.3.1. Occupational health and safety.....	9
10.3.2. Public health.....	9
11. MATERIAL SAFETY DATA SHEET	9
11.1. Material Safety Data Sheet	9
11.2. Label	9
12. RECOMMENDATIONS.....	10
12.1. Secondary notification	10
13. BIBLIOGRAPHY	10

FULL PUBLIC REPORT

Amodel HPA

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Polymers International Australia Proprietary Ltd (ABN 92 069 883 825)
2/58-66 Malcolm Road
Braeside Vic 3195

NOTIFICATION CATEGORY

The notified polymer meets the PLC criteria.

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; Spectral data; Polymer composition.

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

USA, 1993

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

AMODEL HPA

3. COMPOSITION

DEGREE OF PURITY

High

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The notified polymer will not be manufactured, reformulated or repackaged in Australia. It will be imported as powder or solid pellets (measuring 2.7 mm in diameter and 3.0 mm in length), ready for moulding and extrusion into end use products.

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>
<i>Tonnes</i>	1	5	10	22	50

USE

The notified polymer will be used in the manufacture of injection-moulded parts for automobiles, hoses

and tubing, seals, wire and cable industrial parts, electrical connectors, and extruded fibres or films for a variety of industrial applications.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY
Not stated

IDENTITY OF MANUFACTURER/RECIPIENTS
Polymers International Australia Proprietary Ltd (ABN 92 069 883 825)
2/58-66 Malcolm Road
Braeside Vic 3195

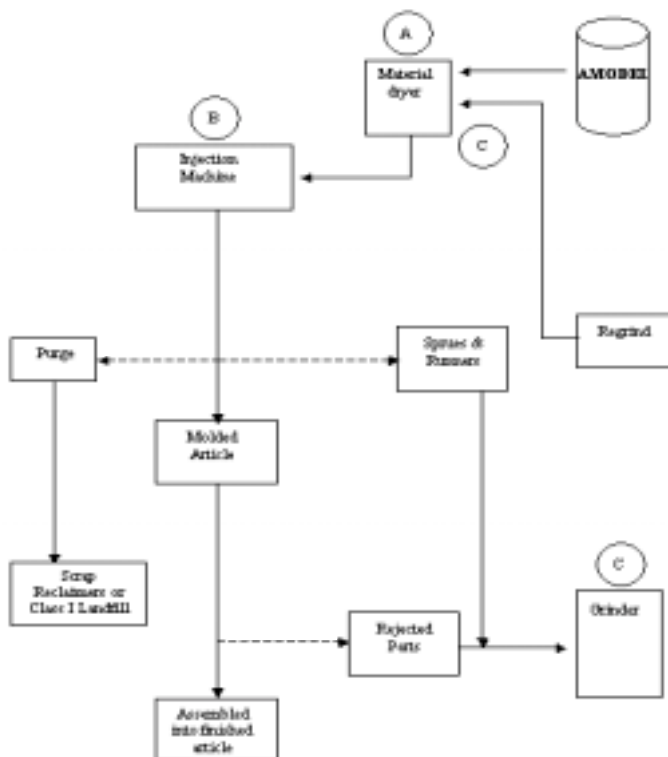
TRANSPORTATION AND PACKAGING

The notified polymer will be imported from USA in 25 kg multi-layered bags and 500kg multi-layered boxes at a concentration between 80 - 90%. No reformulation of the notified polymer is expected in Australia, as it will be used as supplied from overseas. The notifier will distribute the notified polymer to moulders throughout Australia.

5.2. Operation Description

The notified polymer will be imported in a powder or solid pellet form ready for forming into end use products. The pellets are added to the feeding hopper on the moulding machine and dispensed automatically at the desired rate into the hopper of an injection-moulding machine. Once heated, the melted pellets are moulded to form the desired article. Rejected moulded articles are re-ground.

The following diagram represents the manufacturing process for injection moulded Amodel HPA.



A – possible exposure to spillage at hopper loader for dryer

B – possible exposure to spillage at injection machine

C – possible exposure to dust generated by grinding

5.3. Occupational exposure

Number and Category of Workers

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
Waterside workers	Not provided	None expected	None expected
Hopper loader	1	Not provided	1/month
Injection machine operator	1	>12 hours/day	<180 days/year
Grinder operator	1	Not provided	1/2 weeks

Exposure Details

Dermal contact to the polymer, and inhalation and ocular exposure to polymer dust is possible when adding the polymer to the feeding hopper and regrinding rejected moulded articles. Dermal contact to spillage at the injection machine can also occur during switch over from one material to another. The injection moulding process is usually automated and enclosed with adequate ventilation in place. Dust collectors are installed at the hopper receiver and grinder blades. Cleaning up procedures involve vacuuming of pellets and dust generated during manufacture of moulded articles. Protective equipment includes, protective clothing, gloves, eye protection and appropriate respiratory protection. If high dust concentrations are generated, respirator is also recommended.

5.4. Release

RELEASE OF CHEMICAL AT SITE

It is anticipated that the majority of wastes generated will be collected, reground and reused in the moulding process. However, the notifier expects up to 250 kg per annum of the notified polymer will be disposed of to landfill.

The moulding machines will be purged periodically producing scrap which will either be recycled into other products or disposed of to landfill. Empty import containers containing residual polymer will be disposed of to landfill.

RELEASE OF CHEMICAL FROM USE

The majority of the notified polymer will be incorporated into moulded and extruded articles that will, at the end of their useful lives be disposed of to landfill. The polymer is not expected to cross biological membranes, due to its high molecular weight and low water solubility, and as such should not bioaccumulate (Connell, 1990).

5.5. Disposal

Wastes from moulded and extruded article manufacture will be disposed of to landfill, together with import containers and any residual polymer they contain.

In landfill, it is expected that the polymer will become associated with the soil matrix and not leach into the aquatic compartment due to its low water solubility. Although not expected to be readily biodegradable, the polymer products will eventually degrade through biotic and abiotic processes to give water vapour and oxides of carbon and nitrogen.

5.6. Public exposure

The public is unlikely to be exposed to the notified polymer during transport, storage and manufacture of moulded articles, except in the event of an accidental spill. In the event of accidental spill, follow the precautions stipulated in the MSDS provided. Containment procedures include, removal of spills by mechanical means (vacuuming and/or sweeping) and disposed of them in accordance with all applicable regulations. Avoid producing dust since high dust concentrations have a potential for combustion or explosion.

The public may make dermal contact with moulded articles; however, in this form the notified polymer in moulded articles is not available for exposure.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa Opaque, or colour pellets, or powder

Melting Point/Freezing Point 310 °C

Density 115 kg/m³

Water Solubility <1 mg/L

Remarks The notified polymer (10 g) was added to deionised water (15 mL) and shaken for 24 h at room temperature. The aqueous solution was then decanted, the recovered volume determined and concentrated to 2 mL by gentle heating at 50 °C. The concentrated solution was analysed by gas chromatography for extractable chemicals prior to being evaporated to dryness and the weight of residue determined.

Hydrolysis as a Function of pH Not determined

Remarks The notified polymer contains ester and amide linkages that could be expected to undergo hydrolysis under extreme pH conditions. However, in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur.

Partition Coefficient (n-octanol/water) Not determined

Remarks The notified polymers low water solubility is indicative of partitioning into the octanol phase.

Adsorption/Desorption Not determined

Remarks The notified polymer is expected to be relatively immobile in soil due to its low water solubility.

Dissociation Constant Not determined

Remarks The notified polymer contains carboxylic acid units which are expected to have typical acidity.

Particle Size Not determined

Remarks The pelletised form of the notified polymer has a diameter of 2.7 mm and 3.0 mm in length.

Flammability Not flammable

Explosive Properties Not determined

Remarks High dust concentrations have a potential for combustion or explosion.

Degradation Products None

Loss of monomers, other reactants, additives impurities
None

7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted.

8. ENVIRONMENT

No ecotoxicological data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Wastes from moulded and extruded article manufacture will be disposed of to landfill. Similarly, empty import containers and any residual polymer they contain will also be disposed of to landfill. In landfill, the polymer will become associated with the soil matrix and not leach into the aquatic compartment due to its low water solubility. Although not expected to be readily biodegradable, the polymer will eventually degrade through biotic and abiotic processes to give water vapour and oxides of carbon and nitrogen. Overall, under normal usage there will be no release to the aquatic environment.

9.1.2. Environment – hazard assessment

No ecotoxicological data were submitted for the notified polymer. Due to its high molecular weight and low water solubility, the polymer is not expected to cross biological membranes, and therefore not expected to bioaccumulate.

9.1.3. Environment – risk characterisation

The majority of the notified polymer will be used to manufacture various injection moulded and extruded articles. Once moulded, the notified polymer is expected to be inert and is unlikely to pose a risk to the environment.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Dermal, ocular and inhalation exposure can occur during transfer operations, and extrusion and moulding processes. However, the polymer is imported as pellets of non-respirable size, therefore, inhalation exposure is expected to be low. Once the pellets are extruded, the polymer will be molten, then harden and not be bioavailable. In addition, the high molecular weight of the polymer will preclude absorption through the skin.

Exposure to significant amounts of the notified polymer is limited because of the largely enclosed and automated injection moulding process, engineering controls in place and personal protective equipment worn by workers.

During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

9.2.2. Public health – exposure assessment

The notified polymer is intended only for use in industry.

The notified polymer will not be sold to the public except in the form of moulded finished articles. There is potential for extensive public exposure to articles comprised wholly or partly of the notified polymer. In this form, the notified polymer becomes inert and passage across biological membranes is not anticipated. Therefore, the notified polymer is not expected to result in significant exposure to the public.

9.2.3. Human health - effects assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

The MSDS indicates that dusts generated from the notified polymer may cause mechanical

irritation to the eyes, and to the respiratory tract if inhaled. Repeated or prolonged skin contact may result in irritation and/or dermatitis. Ingestion of the polymer can cause gastrointestinal irritation.

9.2.4. Occupational health and safety – risk characterisation

The OHS risk presented by the notified polymer is expected to be low, given the low hazard of the polymer, the largely enclosed and automated injection moulding process, and the protective measures including local exhaust ventilation, protective clothing, protective eyewear, impervious gloves, and respiratory protection, used during extrusion and moulding.

There is little potential for significant occupational exposure to the notified polymer in the transport and storage of the polymer solution other than in the event of an accidental spill.

The notified polymer may be present in formulations containing hazardous ingredients. If these formulations are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

9.2.5. Public health – risk characterisation

The notified polymer will not be available to the public. Members of the public may make dermal contact with products containing the notified polymer. However, the risk to public health will be negligible because the notified polymer is bound within a chemically stable matrix and is unlikely to be bioavailable.

10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

10.1. Hazard classification

Based on the available data the notified polymer is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances* (NOHSC, 1999).

10.2. Environmental risk assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

10.3. Human health risk assessment

10.3.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

10.3.2. Public health

There is Negligible Concern to public health when the notified polymer is used as a component of extruded/moulded articles.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

11.2. Label

The label for the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

12. 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.
- 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 NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

12.1. Secondary notification

The Director of Chemicals Notification and Assessment 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 any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.

13. BIBLIOGRAPHY

Connell D. W. (1990) General characteristics of organic compounds which exhibit bioaccumulation. In Connell D. W., (Ed) Bioaccumulation of Xenobiotic Compounds. CRC Press, Boca Raton, USA.

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