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

FULL PUBLIC REPORT

Polymer A-177

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT

Polymer A-177

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Bonakemi Australia Pty Ltd
C/- Swedish Trade Council
25th floor, 44 Market St
Sydney 2000

Ezi Floor Products
36 Sydenham Rd
Norwood SA 5067

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
Molecular weight
Structural formula
Molecular formula
Means of identification
Number Average Molecular Weight
Weight Average Molecular Weight
Polymer constituents
Residual monomers and impurities
Reactive Functional Groups- including FGEW

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

US EPA (TSCA) 1995

2. IDENTITY OF CHEMICAL

MARKETING NAME

Polymer A-177

METHODS OF DETECTION AND DETERMINATION

Infra-red spectrum

MOLECULAR WEIGHT

Number Average Molecular Weight (NAMW): >1000

4. INTRODUCTION AND USE INFORMATION

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

Imported as a component at <30% in a coating formulation where the polymer forms a stable water dispersion.

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>	20	24	28	32	36

USE

Polymer A-177, a component in floor lacquer products, is to be imported to Australia as a stable dispersion in water. The imported product containing notified polymer will not require reformulation or repackaging as it will be imported in sealed product containers ready for retail sale.

The notified polymer is intended for use as a permanent coating for the protection of finished hardwood and other types of finished wooden floors. The coated surface will be sanded with abrasive paper before application of further coats. One coat of the product is applied evenly at an application rate of 8-10 m²/L using a clean soft cloth, sponge, roller or a suitable applicator. The treated surface is allowed to dry for approximately 30 minutes.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

IDENTITY OF MANUFACTURER/RECIPIENTS

No reformulation or re-packaging will occur in Australia.

TRANSPORTATION AND PACKAGING

Products containing the notified polymer will be imported in 5 L polyethylene containers. These will be transferred by road to a single customer site for each applicant, followed by distribution to retail outlets for commercial and public sale.

5.2. Operation Description

Wooden floors should be sanded before application of floor finishes containing the notified polymer by roller, smooth cloth or other application method. Coatings should be sanded between each application. Residual waste on application equipment (0.1 kg) will be removed at cleaning and washed into the sewer. Residual waste in packaging (<1%) will be disposed of to landfill. Waste will also be generated from sanding operations between applications, which will probably be disposed of to landfill.

5.4. Release

RELEASE OF CHEMICAL AT SITE

No re-packaging or reformulation to the product will occur in Australia as they will be imported in sealed product container ready for retail sale. Therefore, the release of chemicals at site is not considered.

RELEASE OF CHEMICAL FROM USE

The end use environmental impact would predominantly be due to the cleaning of application equipment. The majority of the notified polymer will be applied to floors. It is anticipated by the notifier that approximately 0.1 kg of end-use residual material, containing 30 g of the notified polymer may be washed down a drain during cleaning. This presumably applies to individual sponges and rollers, whereas soft cloth may be disposed of through landfill. Less than 1% of the polymer will remain as liquid residue in an empty container.

5.5. Disposal

The container will be disposed of to landfill according to local state legislation. It is indicated that on

contact with the atmosphere liquid residue will solidify and the notified polymer will bind to the container in a stable form that would not leach when disposed as landfill.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Clear solid When handled before drying, the polymer appears white in colour
Melting Point	
Remarks	The material goes through a phase transition stage rather than a true melting point. The glass temperature is <20°C.
Density	1.0-1.2 kg/dm ³
Water Solubility	The polymer is not soluble in water. It forms an aqueous dispersion.
Particle Size	4-150 nm
Remarks	Malvern Instruments Ltd, UK. The notified polymer is not in dry, particulate form in Australia.
Flammability	Not flammable (waterborne coating)
Remarks	In its dry form, the notified polymer is combustible
Explosive Properties	None known
Loss of monomers, other reactants, additives impurities	
Remarks	The product reacts by oxidative drying (polymerisation) with the surrounding air when the water has evaporated.

ADDITIONAL TESTS

Hydrolysis as a Function of pH	Not determined
Remarks	The notified polymer contains functional groups that could be expected to undergo hydrolysis under extreme pH. 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 polymer's low water solubility and its hydrophobic nature 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 its low water solubility.
Dissociation Constant	Not determined
Remarks	The notified polymer does not contain any groups that are expected to dissociate except at acidic pH (~4).

7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted.

8. ECOTOXICOLOGICAL INVESTIGATIONS

No ecotoxicological data were provided..

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Release

Refer to Sections 5.2 and 5.4

Fate

The notified polymer in waste from application equipment cleaning will be disposed of into the sewer. Empty import containers and any solidified residual polymer that it contains will be disposed of into landfill. Used flooring coated with the polymer may be recycled but eventually be landfilled.

The polymer is not water-soluble and therefore is not mobile in either the terrestrial or aquatic compartments. The notified polymer is likely to slowly degrade and become associated with the soil matrix and sediments. Due to its high molecular weight and low water solubility, the polymer is not expected to bioaccumulate (Connell 1990).

9.1.2. Environment – hazard assessment

No ecotoxicological data were submitted.

9.1.3. Environment – risk characterisation

The majority of the notified polymer will be incorporated into a stable coating when applied to the wooden floors. Waste polymer disposed of to landfill will slowly degrade and eventually become incorporated into soil. Based on limited environmental exposure, the likely risk to the environment is expected to be low.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Categories of workers likely to be exposed to the notified polymer are those involved in transport, storage, re-packing and application.

In the despatch departments, four workers routinely store and package unopened containers for redistribution. During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

Exposure to the notified polymer may occur to more than 100 contract and do-it-yourself handymen who would apply the floor finishes containing the notified polymer. Dermal and ocular exposure may occur when applying by roller, smooth cloth or other suitable applicator depending on the product to be applied. Inhalation exposure to vapours may occur as the top finish will spread over large surfaces. During sanding and cutting, there is a possible isocyanate release.

After application and once dried, the coating containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

9.2.2. Public health – exposure assessment

It is expected that during transport, storage and commercial use, exposure of the general public to the notified polymer will be low, except in the event of an accidental spill.

Public exposure to wooden floor coatings containing the notified polymer is expected to be widespread but infrequent i.e. limited to periods of renovation and coating of wooden flooring. The likely routes of exposure would be dermal and inhalation, with the possibility of oral and ocular exposure. Dermal contact with dried coatings on wooden floors will also occur.

9.2.3. Human health - effects assessment

No toxicology reports were submitted with the application. Since the notified polymer is considered a PLC, the health hazards are assessed as low. According to the supplied MSDSs for BonaTech Mega and BonaTech Parkett Freshen Up, the products may cause eye and respiratory irritation and oral ingestion may cause discomfort. Chronic exposure may cause skin irritation with prolonged or repeated contact.

9.2.4. Occupational health and safety – risk characterisation

Occupational exposure is expected to occur mainly during application. However, the notified polymer is of low hazard and hence the OHS risk presented by the notified polymer is expected to be low.

When using industrial sanders or cutting hardened coatings, small quantities of isocyanate particulates may be released to the atmosphere upon exposure of the coating to high temperatures. If temperature elevation occurs, exhaust ventilation is required to maintain the isocyanate concentration below the Time weighted average at 0.02 mg/m³ and Short term exposure limit at 0.07 mg/m³. During sanding or cutting operations, workers should wear full face airline respirator or self contained apparatus, safety glasses or goggles and long sleeved clothing. A protective filter should be worn when sanding to prevent inhalation of wood and coating dust.

However, the notified polymer may be present in formulations containing hazardous ingredients and workers are expected to wear appropriate personal protective equipment when handling those formulations.

9.2.5. Public health – risk characterisation

The notified polymer is of high molecular weight and unlikely to penetrate biological membranes. Consequently, the toxicological risk from the infrequent application of coatings for wooden floors containing <30% w/w of the notified polymer to members of the public is likely to be low. The notified polymer in dried coatings on wooden floors will be encapsulated within an inert, very high molecular weight film matrix. This will render the notified polymer biologically unavailable, consequently public health risk to the notified chemical from dried surface coating films is considered to be low.

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*.

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 Low Concern to public health when used according to proposed instructions.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the notified polymer in products provided by the notifier were in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). They are 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 in products provided by the notifier were 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.
 - If temperature elevation occurs, exhaust ventilation is required to maintain the isocyanate concentration below the Time weighted average at 0.02 mg/m³ and Short term exposure limit at 0.07 mg/m³.
 - During sanding or cutting operations, workers should wear full face airline respirator or self contained apparatus, safety glasses or goggles and long sleeved clothing.
 - 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.

Public Health

First aid instructions: Contaminated eyes and skin should be flushed with running water, emesis should not be induced if ingested, and removal to fresh air should occur following inhalation exposure.

Environment

- The following control measures should be implemented by end users to minimise environmental exposure during use of the notified polymer:
 - Do not pour leftover product down the drain. Unwanted product should be allowed to dry and then disposed of via domestic waste collections. Empty containers should be left open in a well ventilated area to dry out. When dry, recycle steel containers via steel can recycling programs. Disposal of empty containers via

domestic recycling programs may differ between local authorities. Check with your local council first.

Disposal

- The dried notified polymer should be disposed of in landfill.

Storage

- The notified polymer should be stored in a well ventilated frost-free area away from ignition sources, oxidising agents, foodstuffs and clothing. It should be kept in plastic, glass or non-rusting containers, which should be kept closed when not in use.

Emergency procedures

- Spills/release of the notified polymer should be handled by extinguishing or removing all sources of ignition and stopping the leak if safe to do so. Contain the spill and absorb with sawdust, sand or earth. Place used absorbent in suitable sealed containers (plastic is recommended) and follow state or local regulations for the disposal of the waste. Clean area with soap and water. Do not allow product to enter drains, sewers or watercourses-inform local authorities if this occurs.

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 Subsection 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 Subsection 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.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

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