

File No: PLC/277

July 2002

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

FULL PUBLIC REPORT

Polymer in Bonatech Traffic

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT**Polymer in Bonatech Traffic****1. APPLICANTS**

Bonakemi Australia Pty Ltd (ACN 096 221 448) c/o Swedish Trade Council of 25 Floor, 44 Market Street Sydney NSW 2000 and Ezi Floor Products (ABN 85 085 852 198) of 36 Sydenham Road Norwood SA 5067 have submitted a notification statement in support of their application for an assessment certificate for the synthetic polymer of low concern (PLC) 'Polymer in Bonatech Traffic'.

2. IDENTITY OF THE CHEMICAL

The chemical name, CAS number, molecular and structural formulae, molecular weight, spectral data and details of the polymer composition have been exempted from publication in the Full Public Report.

Marketing name of imported product: Bonatech Traffic

Number average molecular weight: >1 000

3. POLYMER COMPOSITION AND PURITY

Details of the polymer composition have been exempted from publication in the Full Public Report.

Additives/adjuvants:

Chemical name	Synonym	CAS no.	% Weight	Risk phrases
2-Butoxyethanol	Ethylene glycol monobutyl ether	111-76-2	<10	R20/21/22, R37
2-(2-Butoxyethoxy) ethanol	Diethylene glycol monobutyl ether	112-34-5	<10	R36
N-Methylpyrrolidone	N-methyl-2-pyrrolidone	872-50-4	<10	R36/38

4. PLC JUSTIFICATION

The notified polymer meets the PLC criteria.

5. PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical properties were determined from the product containing 28% of the notified polymer, unless otherwise stated.

Property	Result	Comments
Appearance	White, thin fluent liquid.	
Melting point	160°C	
Density	1 070 kg/m ³	
Water solubility	<5 mg/L	The notifier has provided an English translation of a summary of a German water solubility report conducted according to OECD TG 105. The low water solubility is consistent with the notified polymer's chemical structure.
Particle size	0.24 µm	The imported product is a liquid formulation.
Flammability	>100°C	
Autoignition temperature	Not determined	
Explosive properties	Not expected to be explosive.	
Stability/reactivity	Expected to be stable under normal conditions.	
Hydrolysis as function of pH	Not determined	The notified polymer contains linkages that could be expected to undergo hydrolysis under extreme pH; in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur.
Partition coefficient	Not determined	The notified polymer's low water solubility and hydrophobic nature is indicative of partitioning into the octanol phase.
Adsorption/desorption	Not determined	The notified polymer is expected to be relatively immobile in soil due to the high molecular weight and low water solubility.

Dissociation constant	Not determined	Although no dissociation tests were conducted, the notified polymer is unlikely to undergo dissociation in the environmental pH range of 4 to 9, since there are no acidic or basic groups present.
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6. USE, VOLUME AND FORMULATION

Use: The notified polymer will be used as a component of a two- part mix for floor finishes/coatings.

Manufacture/Import volume:

First year	Second year	Third year	Fourth year	Fifth year
2 tonnes	2.5 tonnes	3 tonnes	4 tonnes	5 tonnes

Formulation details:

The notified polymer is not manufactured in Australia. A two-part ready-to-use product named Bonatech Traffic containing 28% notified polymer will be imported in 4.5 L polyethylene containers.

7. OCCUPATIONAL EXPOSURE

Exposure route	Exposure details	Controls indicated by notifier
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End use

Applicators (more than 100 applicators; exposure time not provided]

Dermal, ocular and inhalation	The two-part product will be mixed and applied with a roller. These applicants will be exposed to the finished product.	Product will be applied in well-ventilated areas. Workers will wear neoprene, viton or nitrile gloves, safety glasses or goggles, and long sleeved clothing.
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Sanders and cutters (number of workers and exposure duration were not provided)

Dermal, ocular and inhalation	Sanding or cutting finished surfaces.	Exhaust ventilation is required. Workers will wear a full-face airline
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respirator or self-contained breathing apparatus, safety glasses or goggles and long sleeved clothing.

A person with proven isocyanate sensitivity should be not further exposed to isocyanates.

Transport and storage

Dock/Transport workers (2-4 workers, 24 deliveries per annum)

Dermal Workers may be exposed only if Long-sleeved protective clothing.
packaging is breached.

Warehouse persons (4 workers)

Dermal Workers may be exposed only if Long-sleeved protective clothing.
packaging is breached.

8. PUBLIC EXPOSURE

Public exposure to the notified chemical through importation, transportation or storage is likely to be negligible. There is no processing or re-packaging within Australia. The product, as a floor finish, will be applied by contractors and do-it-yourself handymen. The product can be applied to large areas using rollers or other applicators. Therefore, the potential for public exposure through product usage is significant. Exposure will be mainly dermal with potential for ocular (through accidental splashing) and inhalation exposure. The notifier advises that treated surfaces subjected to heat or sanding/cutting may release small quantities of isocyanate particles.

9. ENVIRONMENTAL EXPOSURE

9.1. Release

The finish/coating containing the notified polymer will be applied by roller to high traffic flooring areas by professional floor sanders or DIY handymen. It is expected that less than 1% of the formulated product or up to 14 kg per annum of the notified polymer will be lost due to spills and cleaning of the application equipment and will be disposed of into the sewer.

Some residue will also remain in the empty import drums after use. It is estimated that less than 1% of the import volume or up to 14 kg per annum of the notified polymer will remain as residue in the import containers to be disposed to landfill.

The majority of the notified polymer will be applied to floors.

9.2. Fate

The majority of the notified polymer will be crosslinked with other components to form a very high molecular weight and stable floor coating. Therefore, once incorporated into the coating formulation, the notified polymer is expected to be immobile and pose little risk to the environment.

The notified polymer in waste from application equipment cleaning will be disposed of into the sewer. Empty import containers and any residual polymer that they contain will be disposed of into landfill.

At the end of its useful life the coating will be removed by the professional floor sanders and presumably replaced by another coat of a similar product. The coating containing the notified polymer will be broken up into solid particulate matter in the removal process and disposed of to landfill.

The notified polymer is not water-soluble and therefore will not be mobile in either the terrestrial or aquatic compartments. As a consequence of its low water solubility, the notified polymer is expected to eventually associate 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).

10. EVALUATION OF HEALTH EFFECTS DATA

No toxicological data were submitted.

The health hazards of the constituents and hazardous impurities, additives and adjuvants are tabulated below.

Chemical	Health hazards	Regulatory controls
<i>Additives/adjuvants</i>		
2-Butoxyethanol	Harmful by inhalation, in contact with skin and if swallowed, Irritating to respiratory system.	25 ppm or 121 mg/m ³ (TWA).
2-(2-Butoxyethoxy) ethanol	Irritating to eyes	
N-Methylpyrrolidone	Irritating to eyes and skin	

11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA

No ecotoxicological data were provided.

12. ENVIRONMENTAL RISK ASSESSMENT

The majority of the notified polymer will be crosslinked with other components to form a very high molecular weight and stable floor coating. Therefore, once incorporated into the coating formulation, the notified polymer is expected to be immobile and pose little risk to the environment.

The notified polymer in waste from application equipment cleaning will be disposed of into the sewer. Empty import containers and any residual polymer that they contain will be disposed of into landfill.

At the end of its useful life the coating will be removed by the professional floorsanders and presumably replaced by another coat of a similar product. The coating containing the notified polymer will be broken up into solid particulate matter in the removal process and disposed to landfill.

The notified polymer is not water-soluble and therefore will not be mobile in either the terrestrial or aquatic compartments. As a consequence of its low water solubility, the notified polymer is expected to eventually associate with the soil matrix and sediments. Due to its high molecular weight and low water solubility the polymer is not expected to bioaccumulate.

The notified polymer is not likely to present a hazard to the environment when it is stored, transported and used in the proposed manner.

13. HEALTH AND SAFETY RISK ASSESSMENT

13.1. Hazard assessment

No toxicological information has been provided for the notified polymer. However, due to the high molecular weight and low reactivity, the notified polymer is expected to be of low toxicity and not to be absorbed through the skin.

Some organic solvents such as 2-butoxyethanol, 2-(2-butoxyethoxy) ethanol and N-methylpyrrolidone in the product are listed on the NOHSC *List of Designated Hazardous Substances*. The imported product containing the notified polymer is not classified as a hazardous substance based on their concentrations in the product. Toxicological information on the MSDS supplied for the product indicates that the product may cause irritation to mouth, throat, digestive tract, eyes and skin. Prolonged or repeated skin contact may lead to dermatitis. These effects are anticipated to be associated with the solvents present in the product, rather than related to the notified polymer.

13.2. Occupational health and safety

There is little potential for occupational exposure to the notified polymer during transport and storage or sale of the finished product containing the polymer.

The product will be available to contractors through distributors. The two parts of the product will be mixed before use. Application of the floor finish by roller coating may lead to dermal

exposure to the notified polymer and the organic solvents present in the product. Inhalation exposure to organic vapours is also possible. As exposure may be high and irritation of skin, eye and respiratory tract may occur, workers should be protected from contamination with the end use product during use. The personal protective equipment including neoprene, viton or nitrile gloves, safety glasses or goggles and long sleeved clothing are required to reduce the occupational exposure. Considering the protection measures used for applicators, the risk of adverse health effects arising from end use is expected to be low.

Once the applied coating has cured (dried in air), the polymer will not be separately available for exposure or uptake. However, the finished surfaces may generate small quantities of isocyanate particulates in the atmosphere under high temperature or when sanding or cutting. During these operations, dermal, ocular and inhalation exposure may occur. Personal protective equipment including respirator, gloves, eye protection and overalls should be worn. Ventilators should be fitted at the workplaces to control the chemical and dust concentrations below the NOHSC standards. Workers sensitised to isocyanates should avoid contacting the product.

CONCLUSION

The notified polymer is of low risk to occupational health and safety, however, as the imported product may be a slight eye and skin irritant, appropriate control measures need to be taken to reduce risk from exposure to the product during use.

13.3. Public health

There is potential for dermal exposure during the application process and ocular exposure may occur from splashing or spattering of the product from rollers. The MSDS for the product indicates potential for slight skin and eye irritancy.

There is potential for inhalation exposure of product vapours. The MSDS has no information on inhalation toxicity. This may be a cause for concern given that a harmful substance, isocyanates, is given off through heating or sanding/cutting the finished surface. This could potentially cause problems for people with respiratory difficulties or for those who are sensitive to isocyanates.

Based on the above information, it is considered that the notified polymer will not pose a significant risk to public health when used in the proposed manner.

14. MSDS AND LABEL ASSESSMENT

14.1. MSDS

The MSDS of the products containing the polymer provided by the notifiers 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 part of the assessment report. The accuracy of the information on the MSDS remains the responsibility of the applicant.

14.2. Label

The label for the products containing the polymer provided by the notifiers 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.

15. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the product:
 - Sufficient ventilation should be provided to control the concentration of 2-butoxyethanol below the NOHSC exposure standard during application.
 - Sufficient ventilation should be provided to control the dust concentration below the NOHSC exposure standard during sanding/cutting finished surfaces.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the product:
 - Workers applying the product containing the notified polymer should be instructed in their proper handling and use, including information about the additional risks posed by heat during sanding/cutting.
 - Workers sensitised to isocyanates should avoid contacting the product.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the product:
 - protective eyewear
 - industrial clothing
 - industrial footwear and
 - impermeable gloves.
 - respirator is required during sanding/cutting processes.

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

- The following measures should be taken to minimise public exposure to the product:
 - people with respiratory difficulties, or who are sensitive to isocyanates, should avoid use of this product.

Disposal

- Spillage of the notified chemical should be avoided. Spillages should be cleaned up promptly with absorbents which should then be put into containers for disposal.

Emergency procedures

- Spills/release of the notified chemical should be contained as described in the MSDS and the resulting waste disposed of to landfill.

15.1 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.

16. REFERENCES

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

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[NOHSC:1003(1995)]. In: Exposure Standards for Atmospheric Contaminants in the Occupational Environment: Guidance Note and National Exposure Standards. Australian Government Publishing Service, Canberra.

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