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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION
AND ASSESSMENT SCHEME**

FULL PUBLIC REPORT

Polymer in Bayhydrol VP LS 2342

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT**Polymer in Bayhydrol VP LS 2342****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT

Bayer Hodgsons Pty. Ltd. (ABN 58 071 919 116)
Unit 1, 31 Hill Road, Homebush Bay NSW 2127

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
- Other names
- CAS Number
- Molecular formula
- Structural formula
- Mean of identification
- Weight percentage of polymer species with MW <1000 & MW <500
- NAMW & WAMW
- Charge Density
- Polymer constituents
- Residual monomers and impurities
- FGEW
- Import volume
- Identity of sites for imported product containing notified polymer.
- Purity

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows:

- Melting Point
- Flammability Limits

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT

None

NOTIFICATION IN OTHER COUNTRIES

- Complies with requirements of EINECS (Europe)
- MITI No. 7-863 (Japan)
- Pre-manufacturing Notice in USA

2. IDENTITY OF CHEMICAL

MARKETING NAME

Polymer in Bayhydrol VP LS 2342

METHODS OF DETECTION AND DETERMINATION

ANALYTICAL Infrared Spectroscopy
METHOD
Remarks
TEST FACILITY Not known

3. COMPOSITION

4. INTRODUCTION AND USE INFORMATION

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

The product containing the notified polymer will be fully imported into Australia.

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>	10-30	10-100	10-100	10-100	30-100

USE

Component of product Bayhydrol VP LS 2342 (35%) which is used as a binder in the formulation of water-reducible coatings and sealers for wood and wood substrates such as floors, furniture and industrial coatings. Bayhydrol VP LS 2342 is blended by customers with solvents and other coating components to give a final concentration of the notified polymer of 32%.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

TRANSPORTATION AND PACKAGING

The notified polymer will be imported in closed head 205L drums or 1000L Intermediate Bulk Containers. Following importation, the notified polymer (in Bayhydrol VP LS 2342) will be transported by road to individual manufacturing (reformulation) customer sites. The reformulated product is repackaged in cans, pails and drums and transported to the end user.

5.2. Operation Description

The notified polymer will be imported as a component of the product, Bayhydrol VP LS 2342, comprising 35% of the product. It will be reformulated with solvents and other coating components to give a final formulation containing the notified polymer at a concentration of 32%. The final product is used as a sealer for wood and wood substrates such as floors, furniture and industrial coatings. It is applied by brush, roller, and spray.

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>
Dock/Transport	6-12	8 hours/day	12 days/year
Warehouse/Store	1-2	8 hours/day	12 days/year
Blending	1-4	3 hours/day	20 days/year
Testing	1	3 hours/day	20 days/year
Filling	1	3 hours/day	20 days/year
Dispatch	1	<1 hour/day	Daily
End user - Industrial	1	8 hours/day	200 days/year
End user – Trade/Domestic	1	8 hours/day	100 days/year

Exposure Details

It is envisaged that workers involved in the importation, interim warehousing, and transportation to customer sites would only be exposed to the notified polymer in the event of an accident.

Worker exposure may occur during the reformulation of Bayhydrol VP LS 2342 into the final formulation predominantly by the dermal route, although ocular exposure may occur in the case of accidental spillage and splashing. Inhalation exposure to the notified polymer is not expected due to the engineering controls employed.

Workers involved in the blending of the product may be exposed dermally to the notified product through drips and spills of the product during transfer of Bayhydrol VP LS 2342 into the vat. This may occur while connecting/disconnecting hoses or through splashes occurring during pouring.

Workers involved in quality assurance will be exposed dermally to the product during sampling and testing of the reformulated product.

Workers involved in the filling of containers with reformulated product will be dermally exposed to the notified polymer due to drips and spills while filling containers.

The most likely route of exposure during brush/roller application by the end user is via the dermal route. Ocular exposure may also occur in the event of accidental spillage and splashing.

Spray application represents the worst-case scenario of exposure as the spraying process produces a dense aerosol of coating particles which can potentially lead to exposure to the notified polymer by dermal, ocular and inhalation routes.

5.4. Release

RELEASE OF CHEMICAL AT SITE

During the reformulation (or manufacture) of the varnish containing the notified polymer, the notifier estimates that up to 350 kg per annum of notified polymer waste will be generated. This will be derived from:

Residues in the import containers:	≤ 175 kg/annum
Equipment cleaning:	≤ 140 kg/annum
Spills:	≤ 35 kg/annum

RELEASE OF CHEMICAL FROM USE

During the application of the varnish containing the notified polymer, it is possible that up to 70 tonnes per annum of notified polymer waste will be generated as a result of overspray. However, in practice the majority of the varnish will be applied to flooring where overspray is reduced or eliminated through use of brushes and/or rollers and therefore wastes generated are expected to be lower.

5.5. Disposal

Solid wastes will be disposed of in landfill. Wastes resulting from the washing of brushes and spray equipment will be washed in water and will be disposed of into the sewer or more likely poured onto the ground.

5.6. Public exposure

The notifier states that although there is potential to market the product containing the notified polymer as a Do-It-Yourself product, there are no plans to do so at the time of notification. Some members of the public could, in theory, be introduced to the product containing the notified polymer through professional trade associates, however this is believed to be an unlikely scenario.

The public will be dermally exposed to the notified polymer via the surfaces coated with the product; however the polymer will be bound in an inert matrix and as such is biologically unavailable.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa

The product Bayhydrol VP LS 2342 (containing the notified polymer) is an off-white turbid liquid.

Melting Point

Remarks Not conducted; notified polymer is an amorphous resin.

Density 1031 kg/m³ at 20°C

Remarks Density provided is that of the product Bayhydrol VP LS 2342 from MSDS

Water Solubility

Remarks The solubility of the polymer in water is expected to be relatively low based on its monomer composition. However, the notifier indicates that the notified polymer is miscible as dispersion most likely a colloidal suspension due to its very small particle size.

Particle Size 60-80 nm

Remarks Measured by Laser Correlation Spectroscopy

Flammability

Remarks Not conducted

Explosive Properties Not explosive

Remarks

Degradation Products None

Remarks

Loss of monomers, other reactants, additives impurities

Remarks On drying/hardening of the product, triethylamine, a neutralising agent, is released.

ADDITIONAL TESTS

Hydrolysis as a Function of pH Not determined

Remarks The notified polymer contains urea, urethane and ester groups that are capable of hydrolysis under extreme conditions. However, in the environmental pH range of 4-9, significant hydrolysis is unlikely to occur.

Partition Coefficient (n-octanol/water) Not determined

Remarks The notified polymer is likely to partition into the organic phase due to its low expected water solubility.

Adsorption/Desorption Not determined

Remarks The notified polymer's expected low water solubility may be indicative of a relatively high K_{oc}. However, it may be relatively mobile in soil due to its small particle size.

Dissociation Constant Not determined

Remarks	The notified polymer contains a fully dissociated carboxylic acid group which will become protonated at low pH.
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Vapour Pressure	2.9 Kpa @ 20°C
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Remarks	Vapour pressure provided is that of the product Bayhydrol VP LS 2342 from MSDS.
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7. TOXICOLOGICAL INVESTIGATIONS

No toxicological data were submitted.

8. ECOTOXICOLOGICAL INVESTIGATIONS

No ecotoxicological data were submitted.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Exposure

The notified polymer in solid wastes resulting from spills and application of the varnish will be disposed of in landfill. At the end of their useful lives objects such as flooring and furniture to which the varnish containing the notified polymer has been applied will also be disposed to landfill, as will empty import drums. The small amount of wastes generated from the cleaning of equipment, such as brushes, rollers and spray guns, used in the application of the varnish formulation will be disposed either into the sewer or poured onto the ground.

Fate

In landfill and when disposed of onto the ground, the notified polymer is expected to eventually become part of the soil matrix and slowly decompose to give water vapour and oxides of carbon and nitrogen. The notified polymer is miscible in water so that it may be mobile in the aquatic compartment. However, it will eventually partition to sediment and decompose through the processes described above.

The polymer is not expected to cross biological membranes, due to its high molecular weight and predicted low water solubility, and as such should not bioaccumulate (Connell 1989).

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 varnish formulation applied to the wooden floors and furniture. 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

Workers involved in the importation, interim warehousing, and transportation to customer sites are unlikely to be exposed to the notified chemical except in the event of an accident where containers may be breached.

Dermal and ocular exposure may occur during the formulation process which includes blending, testing and repackaging of reformulated products.

Dermal and ocular exposure may also occur during brush and roller application.

The spraying process produces a dense aerosol of coating particles, which can potentially lead to high-level exposure to the notified polymer by the dermal, ocular and inhalation routes. Exposure to significant amounts of the notified polymer is limited, however due to engineering controls such as the use of spray booths during application, and exhaust extraction during the formulation process. Exposure is also limited by personal protective equipment worn by workers including impervious gloves, goggles, coveralls and respiratory protection. After application the coating containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure.

Triethylamine is released during the drying of the coatings and workers may be exposed to triethylamine on freshly coated articles. Dermal exposure through direct contact with the article is the most likely route of exposure however inhalation exposure to low concentrations may also occur.

9.2.2. Public health – exposure assessment

The notified polymer may in the future be available to the general public however this is not the case at time of notification and as such is not considered in this assessment.

Members of the public may come into contact with products containing the notified polymer however the polymer is not bioavailable in this form.

9.2.3. Human health - effects assessment

No toxicological data for the notified polymer was provided, however the notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

Triethylamine, which is released from the coating during curing, is a hazardous substance according to the NOHSC *Approved Criteria for Classifying Hazardous Substances* (1999a). It is corrosive, and is harmful by inhalation, in contact with skin and if swallowed.

9.2.4. Occupational health and safety – risk characterisation

The OHS risk presented by the notified polymer is expected to be low as the polymer is present only in low concentrations and is of low hazard. The notified polymer may be present in formulations containing hazardous ingredients such as n-methyl-2-pyrrolidone and triethylamine. In cases where hazardous ingredients are present, appropriate personal protective equipment and engineering controls will be required. If these formulations are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances* (1999a), workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Employers should ensure that the NOHSC exposure standard for triethylamine is not exceeded.

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 matrix and 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* (1999a).

10.2. Environmental risk assessment

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

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 used as proposed by the information supplied in this notification.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the product containing the 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 product containing the 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.
- Employers should ensure that the NOHSC exposure standard for triethylamine, released during curing of the formulated product containing the notified polymer, is not exceeded.
- The use of the product containing the polymer should be in accordance with the NOHSC *National Guidance Material for Spray Painting* (NOHSC, 1999b) where appropriate.
- 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* (1999a), workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

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 paint down the drain. Unwanted paint should be brushed out on newspaper, allowed to dry and then disposed of via domestic waste collections. Empty paint 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 paint containers via domestic recycling programs may differ between local authorities. Check with your local council first.

Disposal

- The notified polymer should be disposed of in landfill.

Emergency procedures

- Spills/release of the notified polymer should be contained, absorbed and disposed in accordance with state regulations.

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.
 - If Do-It-Yourself products become available for use by the public, further information may be required in order to assess the hazards to public health.
- 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.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

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