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

FULL PUBLIC REPORT

Bayhydrol UH 2558

This Self Assessment has been compiled by the applicant and adopted by NICNAS 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), administered by the Department of Health and Ageing and the Department of the Environment and Heritage has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

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**Director
NICNAS**

PLC Self Assessment

Bayhydrol UH 2558

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT

Bayer MaterialScience (ABN: 18 086 237 765)
17-19 Wangara Road
Cheltenham, VIC, 3192

NOTIFICATION CATEGORY

Self Assessment: Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details and Import Volume.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

None

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Bayhydrol UH 2558 (<40% notified polymer)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (NAMW) >1000

REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

3. PLC CRITERIA JUSTIFICATION

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

The notified polymer meets the PLC criteria.

4. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20 °C and 101.3 kPa

Water soluble liquid

Density

Approx 1.05 g/mL (1050 kg/m³) at 20°C

Water Solubility

>370 g/L.

Dissociation Constant

The notified polymer is expected to dissociate at environmental pH (4-9)

Reactivity

Stable under normal environmental conditions

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>
<i>Tonnes</i>	≤30	≤100	≤100	≤100	≤100

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will be imported in closed head 205 L drums or 1000 L Intermediate Bulk Containers. Following importation, the notified polymer (in Bayhydrol UH 2558) will be transported by road to individual manufacturing (reformulation) customer sites.

Reformulation/manufacture processes

The notified polymer will be imported as a component of Bayhydrol UH 2558 (<40% notified polymer in water). Reformulation of Bayhydrol UH 2558 will occur at various sites in Australia. It will be reformulated with solvents and other coating components to give a final formulation containing the notified polymer at a concentration of <35%.

At the customer sites, Bayhydrol UH2558 in closed head 205 L drums or 1000 L Intermediate Bulk Containers will be transferred on a pallet by forklift from the warehouse area to the mixing area. These containers will be fitted to transfer equipment (hose and pump) and the required amount of product will be directly fed to the mixing vessel where other ingredients will also be directly fed. The transfer equipment and mixing vessel will be an enclosed system located in a bunded area with minimal potential for losses during these operations. Following the mechanical blending of imported product and the other paint ingredients, quality control testing of a sample of final product will be manually conducted. The mixing area will be equipped with local and general exhaust ventilation.

The reformulated paint product will then be transferred via pipeline into bulk holding tanks located in the bunded area. The reformulated product will be repackaged in cans, pails and drums and transported to the end user by road.

Use

The polymer will be imported as a component of Bayhydrol UH 2558 (<40% notified polymer). Bayhydrol UH2558 will be used as a binder in the formulation of water-reducible coatings and sealers for wood and wood substrates such as floors and furniture. The majority of the product will be used for floor coatings. The reformulated product will be applied by professionals to surfaces using brush, roller and spray.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

It is envisaged that workers involved in the importation, interim warehousing, and transportation to the 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 UH 2558 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 chemical through drips and spills of the product during transfer of Bayhydrol UH 2558 into the vat. This may occur while connecting/disconnecting hoses or through splashes occurring during pouring.

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

Workers involved in the filling of containers with reformulated product may 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 will produce a dense aerosol of coating particles which could potentially lead to exposure to the notified polymer by dermal, ocular and inhalation routes.

Workers may also be exposed to the triethylamine, which is released upon drying of the coating.

Exposure of workers to significant amounts of the notified polymer is expected to be limited by the wearing of personal protective equipment (PPE: impervious gloves, goggles, coveralls and respiratory protection) and through the engineering controls in place. Such controls include the use of spray booths during application and exhaust extraction during the formulation process.

PUBLIC EXPOSURE

The notified polymer will only be available to the public in the form of finished products (surfaces coated with the reformulated product). The polymer will be unavailable for exposure as it will be bound within an inert matrix.

6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

6.3. Human Health Risk Assessment

OCCUPATIONAL HEALTH AND SAFETY

Workers may be exposed to the notified polymer during reformulation and application processes. However, due to the control measures in place to reduce exposure and the expected low hazard of the polymer, the OHS risk presented by the notified polymer is expected to be low.

PUBLIC HEALTH

The notified polymer will not be available to the public. Members of the public may come into contact with product coatings, which will contain the notified polymer. However, the coatings will be dry by then and the polymer will not be bioavailable in this form. Therefore, the risk to public health from exposure to the notified polymer is expected to be low.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

The notified polymer in solid wastes resulting from spills and application of the coating will be disposed of to landfill. The small amount of wastes generated from the cleaning of equipment, such as brushes, rollers and spray guns, used in the application of the coating formulation will be disposed either to the sewer or landfill.

ENVIRONMENTAL FATE

The minor amount of uncured notified polymer which is released to the environment is miscible in water and is expected to be mobile in soil and to partition to the water compartment. Some of the uncured notified polymer in the water compartment will eventually partition to sediment and slowly decompose to give water vapour and oxides of carbon and nitrogen.

Overspray is expected to be trapped by filters which are disposed to landfill. After application, the coating containing the notified polymer is cured into an inert matrix. At the end of their useful lives, objects such as flooring and furniture to which the coating containing the notified polymer has been applied, will be disposed of to landfill. In landfill, the cured notified polymer is expected to eventually become part of the soil matrix and decompose through the processes described above.

The polymer is not expected to cross biological membranes, due to its high molecular weight, and as such should not bioaccumulate.

7.2. Environmental Hazard Characterisation

No ecotoxicological data for the notified polymer were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This does not apply to the notified polymer and it is therefore unlikely to present an overchelation hazard to algae.

7.3. Environmental Risk Assessment

The majority of the notified polymer will be incorporated into a stable cured 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.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

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

8.2. Level of Concern for Public Health

There is No Significant Concern to public health when used in the proposed manner.

8.3. Level of Concern for the Environment

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

9. MATERIAL SAFETY DATA SHEET

9.1. Material Safety Data Sheet

The notifier has provided MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

10. 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.
- Spray applications should be carried out in accordance with the Safe Work Australia *National Guidance Material for Spray Painting* [NOHSC (1999)] or relevant State and Territory Codes of Practice.
- 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.

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 is not exceeded.

Environment

- The following control measures should be implemented by end users to minimize 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 to landfill.

Emergency procedures

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

10.1. 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 a component of coatings for wood and wood substrates for use by workers only, 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.