

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in Bayhydrol® U XP 2698

This Assessment has been compiled in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (the Act) and Regulations. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS) is administered by the Australian Government Department of Health, and conducts the risk assessment for public health and occupational health and safety. The assessment of environmental risk is conducted by the Australian Government Department of the Environment.

For the purposes of subsection 78(1) of the Act, this Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

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**Director
NICNAS**

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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1198	Bayer Material Science	Polymer in Bayhydrol® U XP 2698	No	≤ 15 tonnes per annum	Component of surface coatings

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human Health Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental Risk Assessment

Based on the assumed low hazard and the assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

Health and Safety Recommendations

- 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 (M)SDS should be easily accessible to employees.
- Spray applications should be carried out in accordance with the Safe Work Australia Code of Practice for *Spray Painting and Powder Coating* (SWA, 2013) or relevant State or Territory Code of Practice.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System for the Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation should be in operation.

Disposal

- The notified polymer should be disposed to landfill.

Emergency Procedures

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

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 surface coatings], 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 notified polymer 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.

(Material) Safety Data Sheet

The (M)SDS of the product containing the notified polymer was provided by the applicant. The accuracy of the information on the (M)SDS remains the responsibility of the applicant.

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

Bayer Material Science (ABN: 18 086 237 765)
17-19 Wangara Rd
CHELTENHAM
VIC 3192

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 and manufacture/import volume.

2. IDENTITY OF POLYMER

Marketing Name(s)

Bayhydrol® U XP 2698

Molecular Weight (MW)

Number Average Molecular Weight (Mn) is > 1,000 Da

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	Milky liquid (polymer dispersion in water)
Melting Point/Glass Transition Temp	Not determined
Density	1,070 kg/m ³ at 20 °C
Water Solubility	0.8 g/L (pH 2), 7.3 g/L (pH 7), 8.3 g/L (pH 9) at 40 °C (measured by change in dissolved organic carbon according to OECD TG 120)
Dissociation Constant	The notified polymer is a salt and therefore, it is expected to be ionised under normal environmental conditions (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>
Tonnes	5–15	5–15	5–15	5–15	5–15

Mode of Introduction

The notified polymer will be imported at a concentration of 52% in an aqueous dispersion contained in 205 L drums. It will be reformulated into the first component of a two part water-borne coating system at a concentration of 22%, then sealed in 20 or 40 kg plastic tubs or steel cans. Shortly before use, the two components will be mixed yielding the end use coating product containing a final concentration of the notified polymer at 11%.

Use

The notified polymer will be used as a coating on soft touch surfaces including auto refinish, plastic coating, wood coating and metal surfaces. The coating will be applied to surfaces with a roller or by spray. The products containing the notified polymer (at 11–52% concentration) are intended for use by industrial workers only and will not be sold to the public.

6. HUMAN HEALTH RISK ASSESSMENT

No toxicological data were submitted. The notified polymer meets the PLC criteria and is therefore assumed to be of low hazard. The risk of the notified polymer to occupational and public health is not considered to be unreasonable given the assumed low hazard and the assessed use pattern.

Occupational Health and Safety Risk Assessment

Reformulation

Reformulation of the dispersion containing the notified polymer into the coating component will take place in Australia. This reformulation process will take place in a bunded area with a closed blending tank supplied with local exhaust ventilation. These conditions are expected to reduce the risk of aerosols being released during blending. The reformulated product will then be filled into the interim containers. During the various processes, including connection of filling lines, equipment maintenance, quality control batch adjustment and sample taking, dermal and ocular exposure to the notified polymer from drips, spills and splashes may occur. Absorption through the skin and eyes will be reduced due to the relatively high molecular weight ($M_n > 1,000$ Da) of the notified polymer. The notifier states that exposure to the notified polymer will be minimised by the use of personal protective equipment (PPE) including impervious gloves, goggles, safety boots, cloth hat and coveralls.

End-use – roller application

Prior to use, mixing of the components will be undertaken in a plastic lined roller tray. The coating will be applied to surfaces via a roller. This notifier states that the risk will be minimised by the restriction of end-use products to industrial workers using PPE (including gloves and coveralls). The mixed coating has a limited pot life and will harden over time. Solid residues will be disposed to landfill.

End-use – spray application

The notified polymer has low water solubility. Workers carrying out spray application of coatings containing the notified polymer may have frequent and/or prolonged inhalation exposure. However, as the M_n is significantly less than 10,000 Da there is no concern for lung particle overloading potential. The notifier states that spray applications will occur in an enclosed spray booth supplied with local exhaust ventilation and filter to remove any overspray. Exposure to the notified polymer will be minimised through the use of PPE including impervious gloves, goggles, coveralls and respiratory protections where ventilation is inadequate.

Public Health and Safety Risk Assessment

Products containing the notified polymer will not be sold to the public. Therefore, the public may come into contact with the products only in the unlikely event of a transport accident. The public may come into contact with surfaces that have been coated with products containing the notified polymer. Once cured, the notified polymer is bound within the coating and will not be available for exposure.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted. Anionic polymers are generally of low toxicity to fish and daphnia, however they 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 is not likely to apply to the notified polymer.

During reformulation and the industrial use of coatings containing the notified polymer, the notified polymer may be released to the environment as spills, container residues, and cleaning of equipment. Spills from reformulation and use, and excess coating from mixing equipment and rollers are expected to be collected with inert adsorbent material and placed in sealable containers for appropriate disposal to landfill. The empty containers and cleaned equipment will be rinsed with water and the rinsed water is expected to be released to the sewer. Once the two parts of the coating are mixed, cross-linking of the notified polymer with other components of the coating will take place as the coating cures. Thus, the majority of the release will be in the form of cross-linked polymer.

The fate of the coating cured on the substrate will be shared with the fate of the coated article, which ultimately is expected to be to landfill. In landfill, the notified polymer will be present in high molecular weight cured solids which will be neither bioavailable nor mobile. Furthermore, the notified polymer is also not expected to bioaccumulate due to its high molecular weight. It is expected to eventually degrade in the environment by biotic and abiotic processes to form oxides of carbon and nitrogen, and water vapour. Therefore, based on its assumed low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.