

NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME (NICNAS)

POLYMER OF LOW CONCERN PUBLIC REPORT

Polymer in RHEOVIS HS 1303

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 and Energy.

This Public Report is 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	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
PLC/1472	BASF Australia Ltd	Polymer in RHEOVIS HS 1303	No	< 50 tonnes per annum	Component of architectural paints and 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 SDS should be easily accessible to employees.
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the *Globally Harmonised System of 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

- Where reuse or recycling are not appropriate, dispose of the notified polymer in an environmentally sound manner in accordance with relevant Commonwealth, state, territory and local government legislation.

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 component of architectural paints and 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.

Safety Data Sheet

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

ASSESSMENT DETAILS

1. APPLICANT AND NOTIFICATION DETAILS

Applicants

BASF Australia Ltd (ABN: 62 008 437 867)
Level 12, 28 Freshwater Place
SOUTHBANK VIC 3006

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 import volume.

2. IDENTITY OF POLYMER

Marketing Name

RHEOVIS HS 1303 (contains the notified polymer at < 30% concentration)

Molecular Weight

Number Average Molecular Weight (Mn) is > 10,000 g/mol

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	White liquid*
Melting Point (solidification temperature)	< 0 °C*
Density	1,030 kg/m ³ at 20 °C*
Water Solubility	Not determined. Expected to be water dispersible based on the presence of hydrophilic functionalities and its use in water-based products
Dissociation Constant	The notified polymer contains anionic functionalities which are expected to be ionised in the environmental pH range (4 - 9)
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

*For RHEOVIS HS 1393 containing the notified polymer at < 30% concentration in aqueous solution

5. INTRODUCTION AND USE INFORMATION

Maximum Introduction Volume of Notified Chemical (100%) Over Next 5 Years

Year	1	2	3	4	5
Tonnes	< 30	< 30	< 50	< 50	< 50

Use

The notified polymer will not be manufactured in Australia. It will be imported as a component of RHEOVIS HS 1303 as an emulsion in water at < 30% concentration. The product will be reformulated to produce water-based architectural paints and coatings containing the notified polymer at < 5% concentration.

The paints and coatings containing the notified polymer at < 5% concentration will be used by both professional painters and DIY users. The paints will be applied by brush or roller. Spray application by professional and DIY users is anticipated not to be possible as the notified polymer will be used as a high shear thickener (rheology modifier) in paints and coatings.

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.

Although not considered in this risk assessment, NICNAS notes that the notified polymer contains residual monomers that are classified as hazardous according to the *Globally Harmonised System of Classification and Labelling of Chemicals (GHS)*, as adopted for industrial chemicals in Australia.

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 the nutrient needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This is unlikely to apply to the notified polymer and so is therefore, not considered to be an over-chelation hazard to algae.

The notified polymer will be imported as a component of a formulation to produce water-based architectural paints and coatings. Formulation of the notified polymer into paint and coating products will involve transfer of notified polymer by metered dosing to mixing vessel and blending in an enclosed area. Accidental spills of the notified polymer (estimated to be up to 1% of the annual volume of the notified polymer) during import, transport, reformulation, storage and use are expected to be absorbed onto a suitable material and collected for disposal in accordance with local government regulations. Wastes from cleaning of the equipment and residues in containers containing the notified polymer will be captured, cured and disposed of to landfill.

A significant proportion of the products containing the notified polymer (75% of the annual volume of the notified polymer) will be available to the public as Do-It-Yourself (DIY) product. DIY users are expected to apply products by brushes and rollers, using similar practices to professional users. However, up to 5% of the notified polymer used by DIY users may be incorrectly disposed of to the sewer, drains or ground from waste and washing of application equipment. Assuming the releases occur nationwide and equally over the entire year, the predicted environmental concentration (PEC) for rivers is estimated as 1.05 µg/L ($0.75 \times 0.05 \times 50\,000\text{ kg} \div (200\text{ L per person per day} \times 24.4\text{ million persons} \times 365\text{ days})$).

The anionic polymers that are most toxic to algae are known to have EC₅₀ values of > 1 mg/L (Boethling & Nahbolz, 1997). As this is likely to be the most sensitive species an assessment factor of

100 is used to estimate the predicted no effect concentration (PNEC). Therefore the PNEC is likely to be $> 10 \mu\text{g/L}$ and hence the release of the notified polymer from incorrect disposal to sewer is unlikely to lead to eco-toxicologically relevant concentrations in the aquatic environment.

The notified polymer in paints and coatings cured on the substrate will share the fate of the coated article, which ultimately is expected to be disposed of to landfill. A small proportion of the notified polymer may remain as residues in end-use containers (estimated to be up to 5% of the annual volume of notified polymer). These residues are expected to be disposed of to landfill along with the containers in accordance with local regulations. In landfill, the notified polymer will be present as cured matrix, which will be neither bioavailable nor mobile. The notified polymer is not expected to bioaccumulate due to its high molecular weight. The notified polymer in landfill and water is expected to eventually degrade via biotic and abiotic processes to form water and oxides of carbon.

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

BIBLIOGRAPHY

Boethling, RS & Nabholz VJ (1997) Environmental Assessment of polymers under the U.S. Toxic Substances Control Act. In: Hamilton, JD Sutcliffe R ed. Ecological Assessment of Polymers Strategies for Product Stewardship and Regulatory Programs, 1st ed. New York, Van Nostrand Reinhold, pp 187-234.