

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

POLYMER OF LOW CONCERN PUBLIC REPORT

RHODIBLOC FLA

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**

February 2019

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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/1519	Solvay Interox Pty Ltd	RHODIBLOC FLA	No	≤ 100 tonnes per annum	Cement additive for oil and gas operations

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

- If dusts or aerosols are formed during the use of the notified polymer, engineering controls and respiratory protection should be used to prevent inhalation exposure.

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;
 - the notified polymer is used in coal seam gas operations;or
- (2) Under Section 64(2) of the Act; if
 - the function or use of the notified polymer has changed from cement additive for oil and gas operations, 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 notified polymer and products containing the notified polymer were 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

Solvay Interlox Pty Ltd (ABN: 70 000 882 137)
20 – 22 McPherson Street
BANKSMEADOW NSW 2019

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.

2. IDENTITY OF POLYMER

Marketing Name(s)

RHODIBLOC FLA

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 powder
Melting Point/Glass Transition Temperature	Not determined, expected to be high based on the molecular weight
Density	1,220 kg/m ³ at 20 °C
Water Solubility	Soluble
Dissociation Constant	Not determined, contains functionalities which are expected to dissociate in the environmental pH range of 4 – 9.
Particle Size	Not determined
Reactivity	Stable under normal environmental conditions
Degradation Products	None under normal conditions of use

5. INTRODUCTION AND USE INFORMATION

The notified polymer will not be manufactured in Australia. The notified polymer will be imported into Australia either as a neat powder (RHODIBLOC FLA) in 10 kg lined paper bags or as a component of the formulated products (containing the notified polymer at concentrations of < 30% in water) in 450 L intermediate bulk containers (IBCs) or 1,000 L plastic totes. Initially, 90% of the

introduction volume of the notified polymer (maximum 90 tonnes/year) will be in the formulated products.

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

Year	1	2	3	4	5
Tonnes	≤ 100	≤ 100	≤ 100	≤ 100	≤ 100

Use

The neat form of the notified polymer will be reformulated locally into end use products (at concentrations of < 30%) and repackaged in 450 L IBCs. Typical reformulation operations will involve emptying the notified polymer in powder form from 10 kg bags into a closed and automated mixing tank. When mixing is complete the solution will be pumped into IBCs for storage and transport. The end use products will be transported by boat or barge to off-shore oil and gas exploration platforms for use during the operations.

The notified polymer will be used as a cement additive. The end use products containing the notified polymer will be blended on site with cement slurry and pumped into the space between the outside of the steel casing and the rock formation. The notified polymer is hydrophilic and will aid in preventing water loss from cement slurry. It will also enhance the shear viscosity and stability of cement slurry that can withstand use under high temperature conditions.

The notified polymer or products containing the notified polymer will not be available 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. 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.

The particle size of the notified polymer is not determined. The notified polymer is water soluble with high molecular weight and therefore if inhaled at low levels is likely to be cleared from the upper respiratory tract readily through mucociliary action. Small proportions of the notified polymer may reach the lower respiratory tract, but it should still be readily cleared from the lungs unless high levels are inhaled. When high levels of the notified polymer are inhaled, it is likely to be cleared from the lungs, but this may be slower and temporary respiratory impairment is possible. The expected use of dust masks when handling the powder form of the notified polymer by workers should reduce inhalation exposure levels and hence lower the risk of temporary lung overloading. Given the assumed low hazard and the assessed use pattern, the risk of the notified polymer to occupational and public health is not considered to be unreasonable.

7. ENVIRONMENTAL RISK ASSESSMENT

No ecotoxicological data were submitted for the notified polymer. The notified polymer is amphoteric. Anionic functionalities of 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, leading to chelation of essential nutrients. The notified polymer contains functionality that dilutes the chelating effect, which results in significantly reduced toxicity to algae (Boethling RS & Nabholz VJ, 1997). Cationic functionalities may be toxic to aquatic species but overall the notified polymer has a low charge density. Polymers with a low cationic charge density (FGEW > 5,000) are generally of low concern to the environment.

The neat form of the notified polymer will be reformulated locally into end use products and repackaged. The products are then transported to off-shore oil and gas exploration platforms for use during the operations. Accidental spills of the products containing the notified polymer during import, reformulation, transport or storage are expected to be collected for disposal of in accordance with local government regulations. Empty containers containing residual notified polymer will be rinsed and the rinsate will be added to either subsequent batches during reformulation or added to the cement at the exploration site. The cleaned empty containers will be disposed of in accordance with local government regulations.

After application to the gas or oil well, the notified polymer will be trapped within the solidified cement matrix and will not leach out into the surrounding environment. It will share the fate of the cured cement which is likely to remain permanently within the well structure.

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.

BIBLIOGRAPHY

Boethling, RS & Nabholz VJ (1997) Chapter 10 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.