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

FULL PUBLIC REPORT

Polymer in Amberlite SR1L Na

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT

Polymer in Amberlite SR1L Na

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

Rohm and Haas Australia Pty Ltd of 4th Floor, 969 Burke Road, Camberwell, VIC 3124

NOTIFICATION CATEGORY

Synthetic 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 formula

Structural formula

Polymer constituents

Import volume

Detailed use

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

No

NOTIFICATION IN OTHER COUNTRIES

Japan, Canada, Korea, Phillipines and USA

2. IDENTITY OF CHEMICAL

Number-average molecular weight: > 10000

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

The notified polymer is an ion exchange resin and will be used to demineralise feed water prior to its use in boilers and similar industrial applications.

3-10 tonnes of notified polymer will be imported in the first year, rising to 10-30 tonnes per year after year 5.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

IDENTITY OF MANUFACTURE

Not manufactured in Australia

TRANSPORTATION AND PACKAGING

The notified polymer will be imported in 200 Litre plastic drums and will be stored under cover at McColl's transport depot at Laverton, Victoria.

5.2. Operation Description

The notified polymer will be imported as an ingredient of Amberlite SR1L Na at a concentration of 55% in the form of an aqueous slurry of beads. In Australia, the ion exchange beads are packed into filter columns (tubes) made of steel and lined with rubber. The ends of the filter columns are sealed with stainless steel mesh to hold the polymer beads in place. Water is passed through the filter columns to demineralize the water prior to being used in the plant.

The notified polymer will be used to demineralise feed water prior to its use in boilers and similar industrial application.

5.3. Occupational exposure

Number and Category of Workers

Category of Workers	Number	Exposure Duration
Exposure Frequency		
Waterside Workers	5	
Transport and Warehouse Workers	10-20	
Exchange Resin Column Handlers	10-15	3 hrs/day
20 days/year		

End Use

Worker exposure to the notified polymer in Amberlite SR1L Na will be during pumping operations while loading and unloading filter columns and handling pump hoses. Possible routes of exposure are via dermal and eye contact. Workers will use PPE, e.g. coverall, gloves, safety boots and safety goggles.

5.4. Environmental exposure

- The notified polymer will not be manufactured or reformulated in Australia.
- Imported end product is a slurry so in the event of an accidental leakage, clean-up procedures (containment and manual collection) are expected to efficiently remove the majority of the released notified polymer. Annually, it is estimated that 1% will be lost due to spills during transport, handling and filling of filter columns, ie 200 kg. Any spilt material will be collected and placed in sealed containers ready for disposal to landfill.
- The notified polymer is an ion exchange resin that will be used in filter columns to demineralise boiler feed water. The filter columns are not cleaned between emptying and refilling with resin, so no waste cleaning stream is created.
- Empty import drums will be retained for filling with spent resin (including notified polymer). The drums containing the spent resin will be disposed of to landfill. Thus approximately 99% of the notified polymer will be disposed of to landfill.

Exposure Assessment

- The notified polymer has a low water solubility and, as a result, will be immobile in both the terrestrial and aquatic compartments.

- Any of the notified polymer that is released from the landfilled drums is expected to associate with the soil matrix and sediments and slowly degrade through abiotic and biotic processes to water vapour, sodium and oxides of carbon and sulphur.

The notified polymer is not expected to cross biological membranes due to its very high molecular weight and low water solubility and is therefore not expected to bioaccumulate (Connell 1989).

5.5. Disposal

Once it has reached of its serviceable life, the beads are removed from the columns by either gravity feed or pumping from the filter columns into drums prior to disposal to landfill.

5.6. Public exposure

No public exposure is expected to occur.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Amber beads in an aqueous slurry
Melting Point/Glass Transition Temp	Not determined but is expected to be > 100°C
Specific gravity	< 1. Aqueous slurry is approximately 0.8
Water Solubility	<p>< 5 mg/L at 20°C</p> <p>One (1) gram of the analogue polymer was accurately weighed and added to Milli-Q water (900 mL) with constant stirring. Samples of the solution taken after 0.5, 1, 2, 3, 4, 5, 6 h and 1, 6, and 7 days were analysed for total organic carbon (TOC) content. The readings varied between 2.8-4.2 ppm and would include other water soluble components. Based on the analogue data, the notified polymer is classified as being slightly soluble (Mensink 1995). This result should be viewed with some caution as the analogue, while containing the same polymer backbone, is cationic rather than anionic.</p>
Flammability limits	The notified polymer is in the form of an aqueous slurry and is not flammable. The dry polymer may support combustion.
Autoignition temperature	The notified polymer is not expected to autoignite
Explosive properties	Not explosive
Reactivity	It is polyanionic and expected to react/associate with cationic species in water.

The notified polymer does not contain any hydrolysable groups, and is not expected to undergo hydrolysis in the environmental pH range of 4-9. The notified polymer's low water solubility and likely hydrophobic nature are indicative of partitioning into the octanol phase. The notified polymer is expected to have a high affinity for soil and sediment and be immobile in the environment due to its low water solubility and charged nature. The notified polymer is expected to remain fully dissociated.

7. HUMAN HEALTH IMPLICATIONS

7.1. Toxicology

Toxicological Investigations

No toxicological data were submitted.

Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

7.2. Occupational health and Safety

Occupational exposure

Worker exposure to the notified polymer in Amberlite SR1L Na will be during pumping operations while loading and unloading filter columns and handling pump hoses. Possible routes of exposure are via dermal and eye contact.

7.3. Public Health

The notified polymer will not be available to the general public.

8. ENVIRONMENTAL HAZARDS

8.1. Ecotoxicology

No toxicological data were submitted.

8.2. Environmental Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

9 RISK ASSESSMENT

9.1. Environment

Little of the insoluble ion-exchange resin will be released to the environment during its use. However, most of the notified polymer at the end of its useful life will be contained within drums and disposed of to landfill and, as such, is expected to be immobile and pose little risk to the environment.

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

9.2. Occupational health and safety

The notified polymer may be slightly irritating to skin and eyes, particularly after repeated exposure. Therefore there is risk of irritation when handling the polymer. Therefore, precautions must be taken to prevent skin and eye contact during these operations.

Worker exposure to the notified polymer during transport and storage is only possible in the event of an accidental spillage.

9.3. Public health

As there will be no exposure of the public to the notified polymer, the risk to the public from exposure to the notified polymer is considered low.

10. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

10.2. Environmental risk assessment

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

10.3. Human health risk assessment

10.3.1. Occupational health and safety

There 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.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The notifier has provided MSDS in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets*. The accuracy of the information on the MSDS remains the responsibility of the applicant.

12. RECOMMENDATIONS

Occupational Health and Safety

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer:
 - Local exhaust ventilation
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer:
 - Avoid spills during handling
 - Wear personal protective equipment when cleaning up spills
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
 - Overalls, gloves, safety shoes/boots, and safety goggles/glasses.
 - Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.
- 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.

Environment

Disposal

- The notified polymer should be disposed of to landfill.

Emergency procedures

- Spills/release of the notified polymer should be contained, manually collected and stored in a labelled, sealable container ready for disposal.

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 subsection 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 subsection 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.