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

**FULL PUBLIC REPORT**

**Polymer in LAROMER LR 8949**

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**Director  
NICNAS**

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<b>Polymer in LAROMER LR 8949</b>
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**1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

BASF Australia Ltd (ABN 62 008 437 867) of 500 Princess Highway Noble Park VIC 3174.

NOTIFICATION CATEGORY

Limited: Polymer with NAMW  $\geq 1000$  (greater than 1 tonne per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical identity

Spectral data

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

Variation to the schedule of data requirements is claimed as follows:

Water solubility

Melting point

Flammability limits

Autoignition temperature

Explosivity

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

None

**2. IDENTITY OF CHEMICAL**

MARKETING NAME(S)

LAROMER LR 8949 (Aqueous dispersion containing 40% notified polymer).

**3. COMPOSITION**

DEGREE OF PURITY

> 99%

DEGRADATION PRODUCTS

The notified polymer is 40% dispersion in water and is comparatively stable to heat. Carbon oxides and nitrogen oxides are probable decomposition products.

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES

None

**4. INTRODUCTION AND USE INFORMATION**

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

Import only, the notified polymer will not be manufactured in Australia.

## 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>	1-10	1-10	1-10	1-10	1-10

USE

Component of UV curable primers for timber coatings.

## 5. PROCESS AND RELEASE INFORMATION

### 5.1. Distribution, transport and storage

PORT OF ENTRY

Melbourne

IDENTITY OF MANUFACTURER/RECIPIENTS

BASF Australia Ltd will import the notified polymer solution. This will be transported to a coating formulation site in NSW.

TRANSPORTATION AND PACKAGING

The notified polymer will be imported as a 40% aqueous dispersion in 200 kg metal drums with removable lids. It will be transported by road to coating formulation site in NSW. The finished coating containing 30-40% notified polymer will be transported by road in 20 L closed head high density polyethylene drums to an industrial timber manufacturer.

### 5.2. Operation description

The notified polymer dispersion in water will be formulated into a timber coating. During coating formulation, the water dispersion containing 40% notified polymer will be pumped into the mixing tank along with other ingredients. The final coating product containing 30-40% notified polymer will be packed into 20 litre closed head high density polyethylene drums. The blending and packing operations are automated and enclosed under local exhaust ventilation.

The final coating product will be on sold to an industrial timber manufacturer. The coating will be applied to the timber by roller coating in a closed system. The coating will be cured through exposure to UV light after application. The coating product will not be available for use by general public.

### 5.3. Occupational exposure

*Number and Category of Workers*

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration (hours/day)</i>	<i>Exposure Frequency (days/year)</i>
Transport and storage	4	3	3
Chemist (Research)	3	6	50
Production operators	3	7.5	50
Quality control	2	1	15
Packaging	3	7.5	50
Timber coating operators	5	1	200

*Exposure Details*

*Transport and storage*

Approximately 2 dockside and warehouse workers per shipment will be involved in transporting the notified polymer dispersion from the wharf to the coating formulation site and placing the pallets of product into their warehouses. Dockside and warehouse workers may handle shipments for 3 hours per day.

Another two warehouse workers in the coating formulator warehouse will be involved in transferring pallets from the warehouse to the manufacturing area.

Dockside and warehouse workers routinely wear uniforms and safety shoes. They are not expected to

have any contact with the notified polymer, except in the case of spills.

#### *Coating formulation*

The notifier has provided an estimate of the number of workers involved in the manufacture of coating product. The notified polymer dispersion in water (40% notified polymer) is pumped into a mixing vessel. There is potential for dermal and accidental ocular exposure to drips and spills of the polymer solution to occur during mixing/blending. Workers involved in this process are expected to wear overalls, impervious gloves and goggles. As the packing operations are automated and enclosed under local exhaust ventilation, exposure to the notified polymer is not expected during packing.

#### *Makeup (batch adjust) stage and QC testing stage*

At this stage, the batch (30-40% notified polymer) is adjusted for viscosity and quality control tests are also performed. There is potential for dermal exposure to drips and spills of polymer solution to occur during this time. The workers use the same handling and control measures as described above. The final coating will contain 30-40% of the notified polymer.

#### *Timber coating*

Timber coating application (industrial) involves the use of automated roller coating equipment in a closed environment. There is potential for worker exposure to 30-40% notified polymer because of accidental spillage when connecting the drums to the coating equipment. Workers could also be exposed during cleaning of the equipment. Workers wear overalls, impervious gloves and goggles.

### **5.4. Release**

#### **RELEASE OF CHEMICAL AT SITE**

The notified polymer will be imported as a 40% aqueous dispersion in 200 kg metal drums with removable lids. This will be reblended at a site in NSW and the new blend pumped to 20 L polyethylene drums. Exposure may occur if import containers are accidentally breached, or there may be minor release from cleaning and maintenance of mixing equipment. The former scenario is considered unlikely. Minimal loss is expected through disposal of used packaging and maintenance of mixing equipment. The notifier states that residues in drums and processing equipment will be removed by solvent washing, with washings collected and disposed of by licensed waste contractors.

#### **RELEASE OF CHEMICAL FROM USE**

There will be little release generated from the roller coating process as drips and excess are captured and recycled as part of the process. The notifier states that residues in drums and processing equipment will be removed by solvent washing, with washings collected and disposed of by licensed waste contractors. Therefore, there should be no release of the notified polymer resulting from use.

### **5.5. Disposal**

The notifier has estimated that approximately 500 mL of the notified polymer will be washed from each of the 200 kg drums and approximately 200 mL from the 20 L drums, for an annual total of approximately 125 L. Residues washed from drums and processing equipment will be disposed of by licensed waste contractors.

### **5.6. Public exposure**

The imported product containing the notified polymer is intended for industrial use only and will not be available to the public.

Public exposure to the notified polymer (in products) as a result of transportation within Australia is unlikely unless there is an accident. The material safety data sheets (MSDS) supplied for the commercial product have adequate instructions for clean-up and disposal of any accidental spills and therefore public exposure as a result of a transport accident is likely to be negligible.

Public exposure to the notified polymer may occur after it has been applied to timber. At that time the coating is cured and the notified polymer is not bioavailable.

## 6. PHYSICAL AND CHEMICAL PROPERTIES

The polymer is not isolated from solution and therefore it is not possible to determine physicochemical properties for the notified polymer itself. Limited physicochemical data has been provided for Laromer LR 8949 (an aqueous dispersion containing 40% notified polymer).

<b>Appearance at 20°C and 101.3 kPa</b>	Milky white liquid (Laromer LR 8949)
<b>Melting Point/Freezing Point</b>	Not applicable
Remarks	Aqueous dispersion. The notified polymer is never isolated from water.
<b>Boiling Point</b>	100°C at 101.3 kPa (Laromer LR 8949)
Remarks	Boiling point of water. From the MSDS, test report not seen by NICNAS.
<b>Density</b>	1000 kg/m <sup>3</sup> at 20°C Laromer LR 8949)
Remarks	From the MSDS, test report not seen by NICNAS.
<b>Vapour Pressure</b>	Not determined
Remarks	Aqueous dispersion. Vapour pressure of solution expected to be similar to that of water.
<b>Water Solubility</b>	Insoluble
Remarks	The notified polymer is surface active and miscible with water, forming a turbid liquid, but not soluble. This is consistent with its largely hydrophobic structure.
<b>Hydrolysis as a Function of pH</b>	Not determined.
Remarks	The notified polymer is insoluble in water. The notified polymer has hydrolysable groups but this will not occur in the environmental pH range of 4-9
<b>Partition Coefficient (n-octanol/water)</b>	Not determined due to method limitations (surface active)
<b>Adsorption/Desorption</b>	Not determined
Remarks	Expected to adsorb to soils due to surface active nature of polymer
<b>Dissociation Constant</b>	Not determined
Remarks	Low water solubility, but has small amount of cationic and anionic functionality, expected to have typical basicities and acidities.
<b>Particle Size</b>	Not determined
Remarks	Notified polymer is introduced in solution.
<b>Flash Point</b>	>149°C (Laromer LR 8949)
Remarks	From the MSDS, test report not seen by NICNAS.
<b>Flammability Limits</b>	Not determined
Remarks	Not expected to be flammable as introduced in an aqueous dispersion.
<b>Autoignition Temperature</b>	Not determined

METHOD

Remarks

TEST FACILITY

Not applicable as polymer introduced as aqueous dispersion.

**Explosive Properties**

Not determined

METHOD

Remarks

TEST FACILITY

Not expected to be explosive. From examination of the structure, there are no chemical groups that would infer explosive properties.

**Reactivity**

Remarks

Stable under normal temperature and environmental conditions. Not expected to undergo decomposition or degradation at normal temperatures.



## **7. TOXICOLOGICAL INVESTIGATIONS**

No toxicity data was submitted.

## **8. ENVIRONMENT**

### **8.1. Environmental fate**

No environmental fate data were submitted

### **8.2. Ecotoxicological investigations**

No ecotoxicity data were submitted

## **9. RISK ASSESSMENT**

### **9.1. Environment**

#### **9.1.1. Environment – exposure assessment**

Transport and import containers will be washed with cleaning solvents, and washing waste sent for disposal by licensed waste contractors.

The notified polymer will be used in industrial timber coatings. The coating will be applied to the timber by roller coating in a closed system. The notifier has indicated that residues in processing equipment are removed by solvent washing, with such washing wastes collected for disposal by licensed waste contractors. For this reason, there is expected to be little or no release to waste water or to the aquatic environment.

The coating will be cured through exposure to UV light after application. It is expected that timber coated with the notified polymer will eventually be disposed of to landfill, or occasionally incinerated.

#### **9.1.2. Environment – effects assessment**

The notified polymer contains a potentially cationic group and pendant high concern functional groups. The notified polymer has a functional group equivalent weight of less than 5000 and is dispersible in water. Cationic polymers can be highly toxic to aquatic organisms, as they adsorb to biological membranes that are anionic, and are known to disrupt gill tissue in fish. Algae, with high surface areas, tend to be fairly sensitive to low molecular weight polycationics (Boethling and Nabholz 1997).

The notified polymer is expected to sorb to soil and is therefore likely to partially partition to sludge in sewage treatment plants.

#### **9.1.3. Environment – risk characterisation**

Although the notified polymer may be highly toxic to aquatic organisms, it is unlikely to reach the aquatic environment except as a result of accidental spills. Any liquid waste will be collected by licensed waste disposal contractors, which commonly incinerate waste. For this reason, risk to aquatic organisms is expected to be low. Once cured, the notified polymer may be disposed of to landfill, and coated timber may also end up in landfill. As the notified polymer is not expected to leach from the cured form, environmental risk is therefore expected to be low.

### **9.2. Human health**

#### **9.2.1. Occupational health and safety – exposure assessment**

##### *Transport and storage*

Worker exposure to the notified polymer during transportation and storage is expected to be very low except in the case of accidental spillage or leakage from containers.

##### *Coating formulation*

There is potential of dermal and ocular exposure of workers to the notified polymer at a concentration of  $\leq 40\%$  through drips, spills and splashes during coating formulation. Exposure will be reduced by the engineering controls present and personal protective equipment (PPE) is expected to be worn by operators at risk of exposure. Due to the automated nature of the packing process, exposure to the notified chemical during this process is expected to be negligible.

##### *Makeup (batch adjust) stage and QC testing stage*

There is potential for dermal exposure to the notified polymer at a concentration of 30-40% during sampling and testing of the notified polymer. However, exposure is expected to be low due to the relatively small amounts involved and the use of PPE.

#### *Timber coating*

Due to the automated nature of the coating process, minimal exposure to the notified polymer is expected. Exposure due to accidental spillage and during cleaning would be limited by the use of PPE. After application and curing of the coating on timber products, the notified polymer is unlikely to be bioavailable and as such exposure to the notified polymer from contact with the timber is expected to be negligible.

#### **9.2.2. Public health – exposure assessment**

The notified polymer is intended for an industrial user and will not be available for general consumer use. Members of the public may make dermal contact with products produced from the timber coated with the notified polymer. However, exposure is expected to be negligible because the notified polymer is bound within a chemically stable matrix and unlikely to become bioavailable.

#### **9.2.3. Human health – effects assessment**

No toxicological data have been provided for the notified polymer and therefore the substance cannot be classified in accordance with the NOHSC Approved Criteria for Classifying Hazardous Substances (NOHSC, 2004).

The polymer has a high number average molecular weight ( $M_n$ ) of  $>1000$ , and is unlikely to cross biological membranes. The notified polymer contains pendant high concern functional groups, resulting in probable irritant and sensitising properties. The notifier has also indicated the notified polymer belongs to a class of UV curing polymers, which are known potential skin sensitisers.

#### **9.2.4. Occupational health and safety – risk characterisation**

The major route of exposure to workers involved in coating formulation and coating application is expected to be dermal, although accidental ocular exposure could occur. Due to the engineering controls present (enclosed automated systems), exposure is expected to be minimal, however, exposure may occur during transfer of the notified polymer and formulated coating product, QC sampling, cleaning of tanks and containers and general maintenance. The risk of irritant effects to the skin and eyes and the potential for skin sensitisation would be reduced by the use of coveralls, protective eyewear and impervious gloves. As inhalation exposure to the notified chemical is not expected, the risk of respiratory irritant or sensitisation effects is considered to be low.

#### **9.2.5. Public health – risk characterisation**

Public exposure to the notified polymer is expected to be negligible and therefore the risk to public health is expected to be negligible.

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

#### **10.1. Hazard classification**

No toxicological data have been provided for the notified polymer and therefore the substance cannot be classified in accordance with the NOHSC Approved Criteria for Classifying Hazardous Substances (NOHSC, 2004).

and

The classification of notified polymer using the Globally Harmonised System for the Classification and Labelling of Chemicals (GHS) (United Nations 2003) cannot be presented as no toxicity data were submitted.

## 10.2. Environmental risk assessment

The chemical 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 is 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 when the notified polymer is used in the proposed manner.

## 11. MATERIAL SAFETY DATA SHEET

### 11.1. Material Safety Data Sheet

The MSDS of the product containing the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC 2003). It is published here as a matter of public record. The accuracy of the information on the MSDS remains the responsibility of the applicant.

### 11.2. Label

The label for the product containing the notified polymer provided by the notifier was in accordance with the NOHSC *National Code of Practice for the Labelling of Workplace Substances* (NOHSC 1994). The accuracy of the information on the label remains the responsibility of the applicant.

## 12. RECOMMENDATIONS

### REGULATORY CONTROLS

#### Health Surveillance

- As the notified polymer is a potential skin sensitiser, employers should carry out health surveillance for any worker who has been identified in the workplace risk assessment as having a significant risk of sensitisation.

### CONTROL MEASURES

#### Occupational Health and Safety

- Employers should implement the following isolation and engineering controls to minimise occupational exposure to the notified polymer:
  - Enclosed coating application system.
  - Closed tanks and lines for coating formulation and transfer of the notified polymer as introduced and in the formulated coating product.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer as introduced and in formulated coating products:
  - Avoid skin and eye contact
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:
  - Impermeable gloves
  - Safety glasses or goggles
  - Industrial clothing/Coveralls

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

- The notified polymer and products containing the notified polymer must not be released to wastewater, drains, streams, or natural waterbodies.

#### Disposal

- The notified polymer should be disposed of by incineration or, when cured, to landfill. Liquid wastes containing the polymer must not be disposed of to landfill until the polymer is cured.

#### Emergency procedures

- Spills of the products containing the notified polymer should be contained with sand or earth, and then disposed of to landfill.
- Prevent product from entering drains.

#### Transport and Storage

- A copy of the MSDS should be easily accessible to the party responsible for transport and storage.

### 12.1. 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 Section 64(1) of the Act; if
  - if there are changes to manufacturing and use such that there will potentially be release of the notified polymer to water; or
  - the timber coating is applied manuallyor
- (2) Under Section 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.

## 13. BIBLIOGRAPHY

- Boethling, R.S. and Nabholz, J.V. (1997) Environmental Assessment of Polymers Under the U.S. Toxic Substances Control Act. *In* Ecological Assessment of Polymers. Hamilton, J.D. & Sutcliffe, R. (Eds). Van Nostrand Reinhold, NY, USA.
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