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

FULL PUBLIC REPORT

Polymer in Sancure OM-945

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

This Full 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:

Street Address:	334 - 336 Illawarra Road MARRICKVILLE NSW 2204, AUSTRALIA.
Postal Address:	GPO Box 58, SYDNEY NSW 2001, AUSTRALIA.
TEL:	+ 61 2 8577 8800
FAX	+ 61 2 8577 8888
Website:	www.nicnas.gov.au

**Director
NICNAS**

FULL PUBLIC REPORT**Polymer in Sancure OM-945****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

Holder of the original assessment certificate (No. 2407, PLC/653):

Lubrizol International, Inc (ABN 52 073 495 603)

28 River St.

Silverwater NSW 2128

Applicant for an extension of the original assessment certificate:

Amtrade International Pty Ltd (ABN 49 006 409 936)

Level 6, 574 St Kilda Rd. Melbourne VIC 3004

NOTIFICATION CATEGORY

Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Manufacture/Import Volume

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

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

Water Solubility

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

Currently notified in Canada

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

XDP-2875

Sancure OM 945 (Dispersion containing 45% of notified polymer)

Z-73 (Dispersion containing 45% of notified polymer))

MOLECULAR WEIGHT

Number Average Molecular Weight (Mn) >10000

REACTIVE FUNCTIONAL GROUPS

The notified polymer may contain moderate or high concern groups. Given the complex nature of this polymer it is not possible to calculate and FGEW. However, from the information supplied it is clear that any residual cationic functionality is neutralised with the excess of anionic groups, and overall the polymer is polyanionic.

3. PLC CRITERIA JUSTIFICATION

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</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

The notified polymer is never isolated from solution. Limited physicochemical data was provided for an aqueous dispersion containing ~ 45% notified polymer.

4.1	Appearance at 20°C and 101.3 kPa: Milky white liquid	
4.2	Melting Point/Glass Transition Temp	Not applicable. The notified polymer is manufactured and supplied as dispersion in water and is never isolated.
	Density	1060 kg/m ³ at 20°C
	Water Solubility	Not determined. The product is an emulsion of 45% polymer in water. The notified polymer is manufactured and supplied as dispersion in water. Overall the hydrophobic components are expected to outweigh the small proportion of hydrophilic functionalities, and water solubility will be lower.
	Dissociation constant	Contains anionic functionalities expected to have typical acidity
	Particle Size	Not applicable. The notified polymer is manufactured and supplied as dispersion in water.
	Reactivity	Stable under normal environmental conditions
	Degradation Products	None under normal conditions of use. Contains potentially hydrolysable groups but unlikely to occurs in the environmental pH range (4-9).

5. INTRODUCTION AND USE INFORMATION

5.1 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>	<i>Tonnes</i>	<i>Tonnes</i>	<i>Tonnes</i>	<i>Tonnes</i>
(Original and Extension Applicant)	3-10	30-100	30-100	30-100	30-100

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

Polymer in Sancure OM-945 will not be manufactured in Australia. It will be imported by ship through ports in Sydney and Melbourne and possibly by air. The imported product will arrive in Australia in sealed 205L drums or totes containing 45% of the notified polymer that will be transported to the customers by road. Once at the customer site the notified polymer will be blended into finished products such as paints and wood floor varnishes/finishes containing 4.5 to 45% of Polymer in Sancure OM-945. The containers with the blended products containing the notified polymer would likely be transported from the customers warehouse for distribution to retail shops by road.

Reformulation/manufacture processes

At the customer site(s) the notified polymer will be blended into finished products containing 4.5 to 45% for use by professionals and 4.5% to 28% of notified polymer for use by individual consumers. Mixing with additives will involve manual or semi-automatic transferring of the notified polymer from

the 205L containers into closed mixing systems. The final end-use products will be automatically pumped into drums or pails for industrial use and into 0.5 -4L cans for consumer use. The use of personal protective equipment such as an apron, gloves and safety glasses is recommended in the MSDS.

Use

The notified polymer will be used as primary resin or a binder in paint formulations and as coating for wood finishes at concentrations from 4.5% to 45%. Consumer products for these end uses are expected to contain up to 28% notified polymer. The most likely method of application is by roller or brushes. The floor coating may be spread in large scale operations by simply spreading the product onto the floor via a spreader or squeegee.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

6.1.1 OCCUPATIONAL EXPOSURE

Dermal and ocular exposure may potentially occur during reformulation and repackaging processes involving the notified polymer. However, exposure to significant amounts of the notified polymer is limited because of the semi-automated processes, the engineering controls in place, and personal protective equipment worn by workers.

Dermal and accidental ocular exposure to up to 45% notified polymer may also occur during application of the paint and floor coating. Exposure would be limited if personal protective equipment, for example overalls and protective gloves is worn.

PUBLIC EXPOSURE

The notified polymer will not be sold to the public except in the form of finished articles.

The scenarios by which the public may be exposed to the notified polymer would involve home use of do-it-yourself paints and the floor varnishes/finishes containing 4.5% to 28% of notified polymer. Dermal and accidental ocular exposure is possible during the use. Even though public will be using these products significantly less often than workers exposure may be significant due to the lack of expertise handling of similar products. Exposure can be limited by using personal protective equipment, for example overalls and protective gloves.

6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard. High molecular weight polymers have potential to cause lung overloading effects.

The health hazards of the constituents and hazardous impurities, additives and adjuvants in the product by which the notified polymer will be introduced to Australia, are listed in the MSDS.

6.3. Human Health Risk Assessment

Occupational Health and Safety

Although exposure to the notified polymer could occur during blending and application of the paints and wood floor finishes, the risk to workers is considered to be low due to the intrinsic low hazard of the notified polymer. Significant inhalation exposure to the notified polymer during the application modes described is not expected and the risk of lung overloading effects is expected to be low. Suitable engineering controls and PPE should be used to limit inhalation exposure if the paint is spray applied.

Public Health

The public will be exposed to the notified polymer during use of paints and wood floor finishes by do-it-yourself handyman. There is potential for dermal exposure during the application process and ocular exposure may occur from splashing or spattering of the product from rollers. However, the risk to public health is considered to be low due to the predicted low hazard of the notified polymer. Suitable PPE should be used to limit inhalation exposure if the paint is spray applied.

Extension Applicant

Use of the notified polymer will not change under the proposed extension, and there is no change in the introduction volume proposed; therefore risk assessment is expected to be very similar to those for the original submission.

7.1. Exposure Assessment

7.1.1 ENVIRONMENTAL RELEASE

The notifier polymer will not be manufactured in Australia. It will be used as a binder or primary resin in paint formulations and as a coating for interior wood finishes.

During reformulation the notified polymer will be blended with other additives (solvents, driers, resins, etc.) to prepare a finished paint or coating. After blending the final product, the material is pumped directly from the tote or drum to a blend tank where it will be diluted with water and other additives to form the final product containing between 4.5 to 45% of the notified polymer.

After blending the final product would be pumped to a storage tank or to shipping containers. The final product will be shipped to customers in 205 L drums for industrial applications or in 0.5 L or 4 L cans for customer use.

There will be small amount of residual polymer (~1%) left in the drums and losses of < 1.0% would result during reformulation process. The water used to rinse drums and/or equipment during reformulation and repackaging can be added to the blend (the water from rinsing empty containers) or send to waste water treatment facility. However, major customers conducting reformulation procedures are expected to have procedure in place to handle wastewater. Other residual may remain in drums, dried and disposed to landfill.

The primary use of the notified polymer is floor coating (this product contain 30 to 45% of the notified chemical) and also for paints (this product contain 4.5 to 25% of the notified chemical). Waste resulting from cleaning of rollers or tools used to apply the coating (up to 5%) will be likely to be flushed down drains and enter the sewer system.

Predicted Environmental Concentration (PEC) for the Aquatic Compartment		
Annual quantity of chemical released to sewer	6000	kg/year
Days per year where release occurs	260	days/year
Daily chemical release:	23.1	kg/day
Water use	200.0	L/person/day
Population of Australia (Millions)	20.496	million
Daily effluent production:	4,099	ML
Dilution Factor – River	1.0	
Dilution Factor – Ocean	10.0	
PEC - River:	5.77	µg/L
PEC - Ocean:	0.58	µg/L

The floor coating containing the notifier polymer will dry to form an inert coating on the floor. It will gradually wear due to human traffic or it may be sanded. The sanded floor will produced solid particle

that will be disposed of solid waste entering landfill.

ENVIRONMENTAL FATE

In the longer term, most of notified polymer used in floor coating will eventually reach the environment by incineration or landfill disposal. During incineration, the notified chemical would be destroyed in furnaces and converted to water vapour, nitrous oxides and oxides of carbon. If any material is disposed of in landfill the break down of polymer may have the potential to leach through soil and enter the groundwater (based on the water solubility). However, over time, the notified polymer should degrade by biotic and abiotic processes to form simple carbon and oxygen containing compounds.

In the STPs, it is expected that the notified polymer will partition to the particulate phase as well as to the water column because the polymer water solubility (45% dispersible).

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrients elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of polymer backbones. This is unlikely to apply to the notified polymer. Further, the toxicity to algae is likely to be reduced due to the presence of calcium ions, which would bind to the functional group

7.3. Environmental Risk Assessment

About 6000 kg per year is expected to enter the STPs due to reformulation and application process (Australian wide), which will produce a PEC of 5.77 µg/L/day. However, low risk to the aquatic compartment is expected because adverse ecotoxicological effects are unlikely for a polyanionic polymer of high molecular weight.

Extension Applicant

Use of the notified polymer will not change under the proposed extension, and there is no increase in the introduction volume proposed, the fate of the chemical and the environmental impact are expected to be very similar to those for the original submission.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

8.2. Level of Concern for Public Health

There is No Significant Concern to public health when used in the proposed manner.

8.3. Level of Concern for the Environment

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

9. MATERIAL SAFETY DATA SHEET

The notifier has provided MSDS for a product containing the notified polymer, as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

10. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- No specific engineering controls, work practices or personal protective equipment are required for the safe use of the notified polymer itself under the conditions described, 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.

- If products containing the notified polymer are spray applied this should be in accordance with the NOHSC National Guidance Material for Spray Painting
- 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.

Public Health

- If consumer products containing the notified polymer are recommended for spray application suitable instructions to limit inhalation exposure should be included on the label.

Disposal

- The notified polymer should be disposed as not hazardous waste, eg landfill.

Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by ventilate spill area; prevent entry to sewer and waterways.

10.1. Secondary Notification

The Director, NICNAS 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.